

DEPARTAMENT DE MARKETING (COMERCIALITZACIÓ I
INVESTIGACIÓ DE MERCATS)

PROPOSAL OF A WEB SITE ENGAGEMENT SCALE AND
RESEARCH MODEL. ANALYSIS OF THE INFLUENCE OF
INTRA WEB SITE COMPARATIVE BEHAVIOUR.

ANTONIO HYDER

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SCALE AND RESEARCH MODEL.
ANALYSIS OF THE INFLUENCE OF
INTRA WEB SITE COMPARATIVE BEHAVIOUR**

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**Departamento de Comercialización e Investigación de Mercados
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filling in a gap with knowledge, and doing this with creativity.
Like placing Debussy on one side & Kraftwerk on the other,
and developing a myriad of excellency in between.

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CHAPTER 1
INTRODUCTION

The technological macroenvironment is one of the most dramatic forces that is shaping people's destiny (Kotler, Armstrong, Wong, Saunders, 2008). After learning how to use technological developments such as television, personal computers, the Internet and Web sites, consumers have, more than ever, new technological developments enforced upon them. As a consequence of the unstoppable force we are more than ever surrounded by an array of electronic technology innovations (Page and Uncles, 2004) to which we constantly have to adapt to (De Marez and Verleye 2004). In particular, part of these innovations is based on information and communication technologies, which have already become part of our daily lives (Li, Browne and Wetherbe, 2006).

The Internet has consolidated into a marketing channel that has opened the door to new kinds of exchanges between buyers and sellers (Hong, Thong and Tam, 2005; McCabe, 2009; Murray and Häubl, 2008). Whilst there are bodies of research dedicated to the study of the online behaviour of consumers, research is still fragmented and appears across a variety of journals (Cheung, Chan and Limayem, 2005; Dennis, Merrilees, Jayawardhena and Wright, 2010; Spink and Jansen, 2008). Online consumer behaviour is the largest area of research within Internet marketing (Schibrowsky, Peltier and Nill, 2007). As online consumer behaviour takes place within a technological context, researchers are starting to recognise the need for combined consumer-technology oriented approaches (Dennis et al., 2010; Spink and Jansen, 2008; Taylor and Strutton, 2009). For a complete understanding of customer behaviour on the online medium it is necessary to encompass aspects from both the consumer and technology viewpoints. Whilst pure online consumer behavioural research has focused on aspects such as attitude, intention and behaviour on the online medium, information systems research has focused on areas such as interface design, usability and interactivity.

The scarcity of such combined approaches represents a potential wealth of research opportunities. Spink and Jansen (2008) affirmed that 'we need a greater interaction across research within different fields, such as human computer interaction, information science, computer science and business to develop an integrated model of users' interactions with Web search engines and Web sites'. Also Taylor and

Strutton (2009) recently claimed that both marketing and information systems research should be combined. In this doctoral thesis we adopt such approach.

The Internet has already surpassed the early adopter stage and has become indispensable for its users (Hoffman, Novak and Venkatesh, 2004). Web sites have become an integral part of many individuals' social lives, many people now use Web sites as their sole source of news and information (Li et al., 2006), and also are a major source for all kinds of commerce-related information (Spink and Jansen, 2007). As the Internet has become more widespread, marketers are faced with a changing environment and changing customer profiles, as it now includes every age group, socioeconomic class and level of technical experience. Competition is more intense and marketers should better understand the processes behind their customers' buying behaviour (Taylor and Strutton, 2009).

One of the characteristics of the Internet is the easiness of switching between Web sites. Accordingly, recent research is looking at ways to consistently keep consumers on Web sites (Li et al., 2006), make them perceive the content of the sites (Rosen and Purinton, 2004), whilst trying to prevent them from switching to other sites for similar purposes (Li, Browne and Wetherbe, 2007). Companies want to design shopping Web sites that are easy for customers so that they can retain them as long as possible on their Web sites, hence exposing them to more product information (Hong et al., 2005).

Recent multidisciplinary research has suggested that successful consumer-technological devices are engaging (O'Brien, 2008). Likewise, recent industry attention is being given to the term *Web site engagement* however, this term is yet to be consolidated within academic literature. To engage is to 'involve (a person or his or her attention) intensely' (Collins Essential English Dictionary, 2006). Despite academic and industry interest towards this construct, there is a scarcity of research around the concept of engagement as applied to Web sites. A Web site engagement scale would be highly beneficial for both academia and industry, especially if engaging consumers on Web sites would lead to consequences of substantial managerial relevancy. It would also be highly beneficial if Web site engagement

could lead to exchange, one of the central issues of marketing (Bagozzi, 1975) between people and technological devices (Stibel, 2005).

In this direction, O'Brien (2008) recently proposed an *engagement with technology* scale applicable to technological devices in general. O'Brien's (2008) engagement with technology scale was built upon *flow theory*. Within the research discipline of online consumer behaviour, flow is considered one of the four most relevant theories of research for the study of online consumer behaviour (Schibrowsky et al., 2007; Taylor and Strutton, 2009). It could be thought that Web site engagement could also be extension of flow, although a Web-specific construct is yet to be suggested.

One of the greatest applications of the Internet is e-commerce, which has had an exponential volume of online shoppers (Goode and Harris, 2007). E-commerce and Web-based retailing are fundamentally transforming the way in which consumers and vendors interact (Jansen and Spink, 2007). Customers are no longer confined to their close physical environment when searching for goods and services: they can now easily browse nationally and internationally. Customers have been empowered (Urban, 2005) and can choose and browse via the Internet. However, whilst online shopping figures demonstrate constant growth, they are not increasing as fast as predicted and many Web sites still fail to reach their financial objectives (Hausman and Siekpe, 2009). Zhou, Dai and Zhang (2007) stated that thanks to scientific research, online practice has improved significantly, although there are still a lot of research questions that remain unsolved. With regards to the commercial applications of the Web, travel is the largest sector of business-to-consumer activity (B2C) (AIMC, 2010). The development of the Internet and of information technology is actually modifying the tourism industry (Law, Qi and Buhalis, 2010). Tourism is one of the fastest growing global business sectors and the Internet is continues to grow in importance in this sector (Andreu, Aldás, Bigné and Mattila, 2009).

Offline consumer behaviour and how sellers present product assortments to consumers have been studied for decades (Bettman and Zins, 1979; Hoch, Bradlow and Wansink, 1999; Payne, 1979; Tversky, 1969). On Web sites, online retailers

tend to emulate offline assortments on the online medium. However, many offline theories cannot be directly applied to the online medium and therefore specific online research is necessary (Lurie, 2004; Steckel, Winer, Bucklin, Dellaert, Dreze, Häubl, Jap, Little, Meyvis, Montgomery and Rangaswamy, 2005). Similarly, whilst choice behaviour is a well-established discipline of marketing in offline environments (e.g. Chernev, 2007; Hamilton, Hong and Chernev, 2007; Hoch et al., 1999; Simonson and Tversky, 1992; Train, 1993; Tversky and Kahneman, 1986), there is a lack of equivalent research within interactive environments (Steckel et al., 2005). In contrast to offline environments, the Internet involves customers to a great degree (Phippen, Sheppard and Furnell, 2004), and new applications have been specifically developed for this medium such as *Web 2.0*, *Web 3.0*, or the *Internet of the things* to which consumers and companies will have to adapt to (European Commission, 2009; World Wide Web Consortium, 2007; 2009). In this direction, it could be argued that new measurements should be developed to take into account the online behaviour of consumers, and should remain valid as technology evolves.

Focusing on how consumers can use the Internet for decision-making, one of the great advantages of Web sites is the opportunity of undertaking online comparisons of products and services (Alba, Lynch, Weitz, Janiszewski, Lutz, Sawyer and Wood, 1997; Ruiz and Sanz, 2009). Consumer choice behaviour and how consumers compare has been widely studied (e.g. Chernev, 2006; Simonson, 1999; Tversky, 1969). As customers have been empowered (Urban, 2005) they can utilise the Internet as a channel for acquiring information for commerce related decision-making. In today's world consumers have a vast choice and this motivates comparison shopping (Ruiz and Sanz, 2009) as one of the advantages of the Internet is that consumers can remotely compare the offerings of different online sellers.

The interactive environment is changing the way in which consumers make decisions (Steckel et al., 2005). Despite the easy access to a myriad of information, economic theory assumes that consumers will keep searching for information as long as the perceived benefit from doing so is larger than the cost involved (Jepsen, 2007; Bettman, Luce and Payne, 1998). Previous research has demonstrated that despite the vast amount of commerce-related information, consumers value convenience

when searching for recreational services such as travel packages. In particular, Öörni (2005) found that when searching for such services, consumers did not always find the Internet convenient and were even willing to pay more in order to avoid making increased efforts to save money, or even we reluctant to discover if it was possible to save money.

Internet companies rely on clickstream data such as *page views*, *session times*, or *clicks* which are well utilised for collecting consumer online behaviour, and which can provide marketers with rich information regarding their decision-making processes (Phippen et al., 2004; Yang and Lai, 2006). Whilst one of the advantages of the Internet is its capability for tracing consumer behaviour for subsequent measurement and interpretation, a recent industry report on online marketing metrics stated that ‘the Web is the most measurable medium in the history of marketing. Now all that's left is figuring out how to measure it’ (McKinsey, 2008). In this direction, there are growing bodies of research regarding the utilisation of clickstreams for the measurement of online consumer behaviour (e.g. Bucklin and Sismeiro, 2003; 2009; Senecal, Nantel and Gharbi, 2005). However research based on clickstreams uses data obtained from computer servers, and do not take into account the feelings of consumers or psychological states of mind such as *flow*.

Whilst Web developments are undertaken with standard programming languages such as HTML, it could be argued that Web design is art work, as there no standard ways of developing sites (Junaini and Sidi, 2007). As a consequence of this, users have to learn how to use each Web site they encounter. This issue could be considered as an overall neglect of the needs of consumers (Hausman and Siekpe, 2009; Junaini and Sidi, 2007; Rosen and Purinton, 2004). Whilst marketing on the Internet requires an explicit knowledge of not only the needs of users, but also the information necessary to meet those needs (Stibel, 2005), from a marketing perspective, if online retailers want to appeal to their customers, they must know what they prefer (Hausman and Siekpe, 2009), therefore it could be argued that it should be first known what to measure and accordingly understand how to do so.

The aim of this doctoral thesis is to contribute to academic research on online consumer behaviour, specifically by suggesting a Web site engagement scale, studying if it is related to consequences with relevant managerial interest and constrating if it is influenced by online comparative behaviour of consumers. Whilst in online research literature there is a lack of integrated models that take into account consumer and technological viewpoints, in this research we will attend the call made by Dennis et al. (2010) who argued that combined consumer-technology models, would better depict online consumer behaviour.

Having provided an overview of the background of this thesis, we shall describe the objectives of this research which are:

1. - To propose a *Web site engagement scale*, valid within the framework of e-commerce Web sites, and to identify its dimensions. Likewise we shall suggest an academic definition of this construct.

Based on the Web site engagement scale we shall develop a model of relationships. Specifically we will:

2. - Analyse the influence of *flow* and non-flow related antecedents on Web site engagement.

3. - Study the influence of consumer online comparative behaviour on Web site engagement.

4. - Determine consequences of Web site engagement with relevant managerial interest.

We expect that the outcomes of this research will make a contribution to the growing body of research on online consumer behaviour, whilst keeping in mind the 2010/12 research priorities of the Marketing Science Institute:

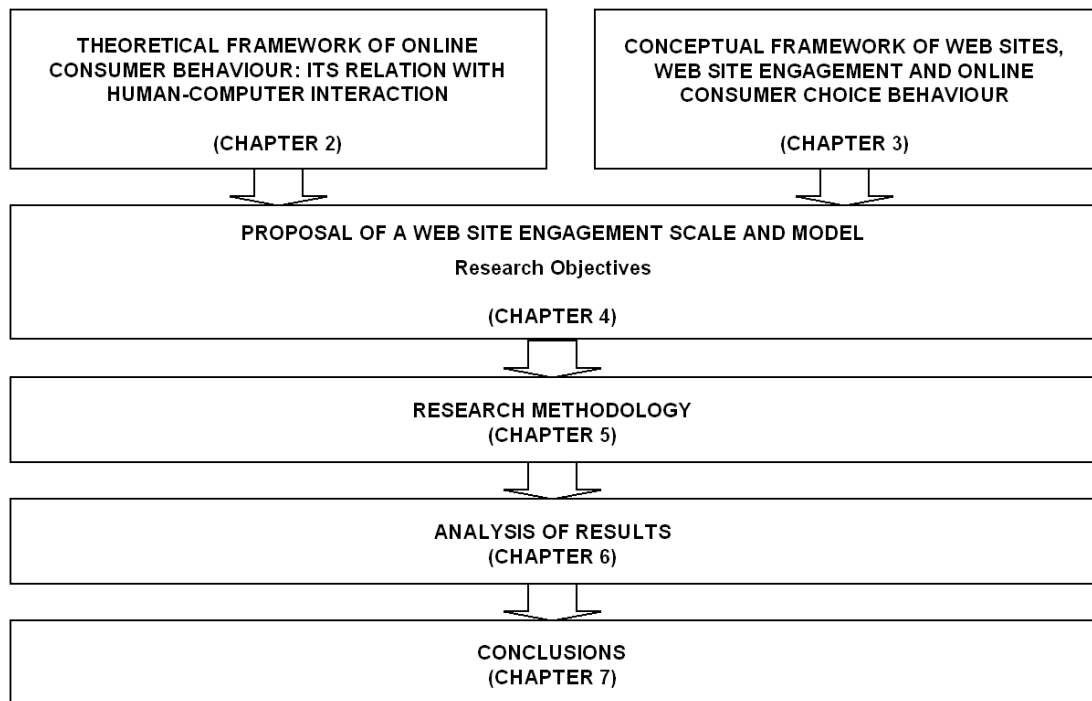
- Customer engagement
(understanding customer experience and behavior)
- Identifying opportunities enabled by technology
(using market information to identify opportunities for profitable growth)

and also the 2008/2010 research priorities:

- Understanding consumer/customer behaviour
(especially in today's digital world)
- New media
(the task of integrating a common value proposition across all media)

In order to contextualise our research objectives, we shall briefly describe the organisation of this research and its main contents, which are illustrated in figure 1.

Figure 1. Organisation of this thesis



Source: Developed for this research

Chapter two will describe relevant theoretical frameworks for the achievement of the research objectives previously described. In particular, the first part of chapter two

will revise existing online consumer behaviour models up to the present. Commencing with a description of well-established classic theories, we will undertake a review of outstanding online consumer behaviour frameworks, followed by a review of recent combined consumer-technology models. We shall then focus on the relevancy of flow theory in the study of consumer behaviour on the Internet. The revision of these theories will serve as a basis for the subsequent suggestion of a Web site engagement measure which is one of the focal points of this thesis.

The third chapter will focus on information systems research relevant to online consumer behaviour and to online choice behaviour, in particular: Web site design, interactivity and information acquisition. We shall then introduce a state of the art theoretical review on the concept of engagement that shall serve as a basis for the development of a Web site engagement scale. This will be followed by a discussion of potential consequences highly regarded by managers that might arise when engaging users with Web sites. The final part of the chapter will focus on research concerning consumer choice which will serve a basis for measuring how consumers make *online comparisons*.

Once the theoretical framework of Web site engagement, its antecedents and consequences has been described, in chapter four we will portray the research objectives of this thesis which will be followed by the proposal a Web site engagement scale and an integrative model of Web site engagement.

In chapter five we will specify the methodology utilised. The research model will be contrasted with data obtained from an experimental Web site that simulates an online travel agency. Both the Web site and the technology upon which it is based have been especially developed for this thesis, and are capable of remotely tracing online consumer behaviour with computer clickstreams. This raw navigational data may be reassembled into variables which can measure consumer comparative behaviour. Such technological variables can then be contrasted with the levels of engagement respondents have experienced with the Web site, for which online surveys shall be used.

The sixth chapter is dedicated to the analysis of data. We will test the formative dimensions of a Web site engagement scale which will then become the core construct of a Web site engagement model. This model will comprise twenty research hypotheses that shall be contrasted utilising partial least squares path modelling. Finally, in chapter seven we discuss the main conceptual conclusions, the methodological and management implications for businesses arising from this doctoral thesis as well as the limitations and recommendations for future research.

CHAPTER 2

THEORETICAL FRAMEWORKS OF ONLINE CONSUMER BEHAVIOUR: IT'S RELATION WITH HUMAN-COMPUTER INTERACTION

2.1. INTRODUCTION

There is no doubt that technology in general and the Internet in particular is shaping the destiny of consumers (Kotler et al., 2008). Even in turbulent times such as the recent economic recession, electronic commerce continues to gain importance with a growth of 11 % in the US during 2009 and a predicted growth of also 11% during 2010 (Forrester Research, 2010).

The Internet has surpassed the early adopter stage and is now a marketing channel that is taken seriously by marketers when fostering exchange between organisations and consumers (Bagozzi, 1975; Hong et al., 2005; McCabe, 2009). However in order to better understand exchange within the Internet medium, recent research has acknowledged the need for combined consumer-technology approaches and for multidisciplinary research (Dennis et al., 2010; Spink and Jansen, 2008; Taylor and Strutton, 2009). Previous researchers had already recognised that online consumer behavioural literature is too fragmented (Cheung et al., 2005; Dennis et al., 2010; Spink and Jansen, 2008; Stibel, 2005; Taylor and Strutton, 2009). The scarcity of online consumer behaviour research frameworks and the inexistence of a combined consumer-technology framework could represent a limitation for the progress of research within this field.

Recently, Dennis et al. (2010) proposed a joint consumer-technology model acknowledging the difficulty of building this model 'from the ground up'. Interestingly, an analysis of the model reveals that its components comprise constructs well studied in other research areas such as consumer *attitude*, product and store image, convenience, variety, as well as social factors. Likewise Taylor and Strutton (2009) affirmed that the marketing discipline would be better positioned to 'lead the study of the next area in online purchasing' should information systems and marketing researchers collaborate together. On one hand this seems to suggest that researchers from both areas are not working together and on the other, this could be the reason why there is a lack of multidisciplinary models, which seem necessary for the progress of the field of online consumer behaviour.

Based on these limitations, in section 2.2 of this chapter we shall go one step further and exemplify the why combined consumer-technology research models are needed, how they are relevant to Internet marketing research in general and to online consumer behaviour in particular. In order to do so, we shall study the similarities between the two relevant perspectives to be taken into account when undertaking research within the context of Web sites: online consumer behaviour and human-computer interaction (section 2.2). Whilst the first research area belongs to the science of marketing, the second is an area from information systems research concerned with how consumers make exchanges. We shall then undertake a review of the most notorious research concerned with consumers' acceptance of technology (section 2.3) which has established the ground for the development of online consumer behaviour models. After revising the most relevant and cited models, we shall refer to specific online consumer behaviour models built upon them. Once these have been described, we shall then concentrate on flow theory (section 2.4) as the dimensions of this construct could eventually serve as a basis for the development of a Web site engagement scale. We shall then review research regarding the hedonic and utilitarian approaches utilised in online research (section 2.5) and how they are influenced by flow. Finally, the chapter will be rounded up with a conclusion (section 2.6).

2.2. RESEARCH ORIENTATIONS FOR THE STUDY OF ONLINE CONSUMER BEHAVIOUR

Recent literature on online consumer behaviour has suggested that multidisciplinary research is necessary for the development of integrated theoretical frameworks of online consumer behaviour (Dennis et al., 2010; ; Spink and Jansen, 2008; Taylor and Strutton, 2009). Spink and Jansen (2008) had already claimed that in order to develop such frameworks, greater research is needed across different fields such as business, information science, information systems and human-computer interaction. Dennis et al. (2010) differentiated between *consumer oriented research* and *technology oriented research* affirming that there is a scarcity of literature that combines these two perspectives into a *consumer-technology research* approach when studying how consumers behave on Web sites. Table 1 illustrates these three principal orientations are utilised when undertaking research within Web-related contexts.

Table 1. Different orientations for study of consumer and Web site research

RESEARCH ORIENTATION	EMPHASISED TOPICS	REPRESENTATION OF RESEARCHERS
Consumer oriented	Demographics, shopping motivation, psychology	Bigné, Ruiz, Aldás and Sanz (2008) Novak, Hoffman and Yung (2000) Ruiz and Sanz (2004)
Technology oriented	Interface, design, content, information, intention to use, navigation	Chen and Hitt (2003) Zhou, Dai and Zhang (2007) Zhang and Galleta (2006)
Combined consumer-technology oriented	Attitude, emotional states, satisfaction, navigation Web atmospherics	Dennis et al. (2010) Taylor and Strutton (2009)

Source: Developed for this research, based on Dennis et al. (2010)

Whilst Web consumer oriented research focuses on consumers' salient beliefs regarding their online behaviour, technology oriented research explains and predicts the consumer-acceptance of online behaviour by examining the technical specifications of Web site stores. These two views do not contradict each other but rather reinforce each other (Zhou et al., 2007).

In attempt to explain with greater clarity the influence of various interdisciplinary concepts on the online behavioural intentions of consumers, Taylor and Strutton (2009) specifically developed a unified integrated framework for the study of online

consumer behaviour that combined both marketing and information systems research. They concluded their contribution suggesting the development of partnerships between information systems and marketing researchers in order to better lead 'the next era of online behavioural research'.

Whereas this thesis is undertaken within the academic discipline of marketing, specifically within the research field of online consumer behaviour, it is worthwhile studying the similarities of consumer and technology approaches for the study of online consumer behaviour due to the potential overlaps that might arise between these two consolidated areas of research. Following the recent calls for combined consumer-technology approaches, we expect that a better understanding of how these two areas are interrelated could contribute to the progress of the research discipline of online consumer behaviour.

In order to develop this doctoral thesis concerned with *online consumer behaviour within Web sites*, we find it imperative to clarify two central components of online consumer behaviour: the *consumer* and *human-computer interaction*. Online consumer behaviour is a research field within marketing science (e.g. Bigné, Ruiz, Aldás and Sanz, 2008; Ruiz and Sanz, 2004) and human-computer interaction is a research field that belongs to the discipline of information systems (e.g. Mu and Galleta, 2007; Zhang and Galleta, 2006). A third component, interactivity, which is considered one of the nexus between consumers and information systems, also belongs to the research field of information systems, and is especially relevant in Web site research from the perspective of consumers (Liu and Shrum, 2009).

These three areas of research are defined as follows:

Online consumer behaviour (OCB) examines customers' online behaviour from a marketing perspective. It is defined as 'those activities involved in obtaining, consuming and disposing of products and services online, including the decision processes that precede and follow these actions' (Kwong, Cheung, Zhu, Limayem and Viehland, 2003).

Human-computer interaction (HCI) is concerned with the study of interaction between people and computers. It has been developed upon a combination of information system disciplines, and is now considered a research discipline on its own. It is defined as 'the design, evaluation and implementation of interactive computing systems for human use, and the study of major phenomena surrounding them' (Hewett, Baecker, Card, Carey, Gasen, Mantei, Perlman, Strong and Verplank, 1996).

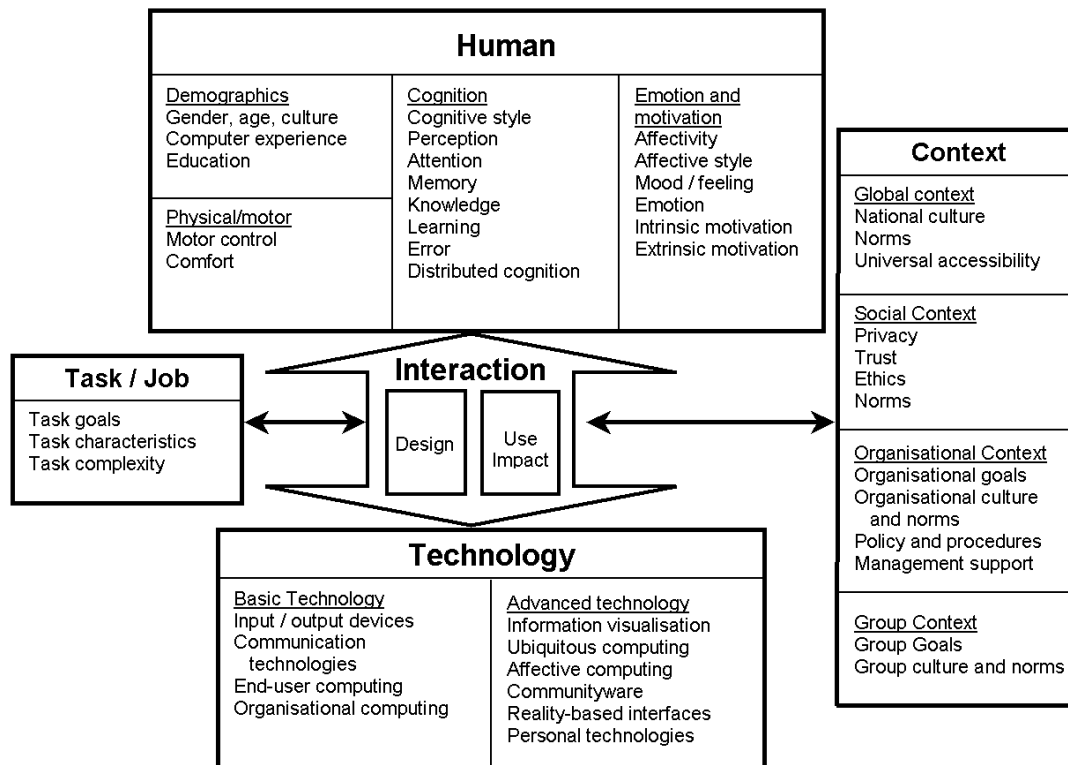
Interactivity within Web sites is defined as the extent of *information exchange* between a Web site and its users. Interactivity is the attribute that most distinguishes Web sites from other media (Huang, 2003) and is as a central driver of online behaviour (Goode and Harris, 2007).

Whilst there is yet no framework that combines previous OCB and HCI research frameworks together, in what follows we shall review existing OCB and HCI research frameworks that describe each of these perspectives separately. First we shall focus on two human-computer interaction theoretical frameworks, and secondly we shall describe a further two, which belong to the research discipline of this thesis, online consumer behaviour. A comparison of these frameworks will allow us to better understand the similarities and overlaps between them.

2.2.1. Human-computer interaction (HCI) theoretical frameworks

HCI research has been built by information systems (IS) scholars on a number of different disciplines, including information systems, communication, business and management, and psychology, amongst other fields (Zhang and Li, 2005). From an IS perspective, Zhang and Galleta (2006) developed a framework based on five fundamental HCI components: human, context, interaction, task and technology. Whilst *human* and *technology* are the base components, *interaction* is the core of interest. Figure 2 illustrates these five components.

Figure 2. An overview of broad human-computer interaction issues



Source: Zhang and Galleta (2006)

The same researchers provided an HCI topic classification, illustrated in table 2. It has two main categories. The first one refers to topics concerning the development of IS and the second is concerned with the use and impact of IS on people. Whilst this classification originates from the IS field, many of the topics it includes are also related to marketing such as *user interface design and development* and *user interface evaluation* within the IT development category, or *emotion, attitude* and the majority of topics included in the IT use and impact category. Table 2 could serve as evidence of how HCI is a multidisciplinary research discipline that not only takes into account pure IS research topics, but it also reveals how IS technology is developed so that it can be used by consumers and people in general.

Having outlined the multidisciplinary nature of human-computer interaction, we shall now describe how online consumer behaviour is also a multidisciplinary field of research. This will then serve a basis for the analysis of the similarities and overlaps between HCI and OCB.

Table 2. Human-computer interaction topic classification

ID	Category	Description and examples
A	IT development	Concerned with issues that occur during IT development and / or implementation that are relevant to the relationship between human and technology. Focus on the process where IT is developed or implemented. The artefact is being worked on before actual use
A1	Development methods and tools	Structured approached, object-oriented approaches, CASE tools, social-cognitive approached for developing IT that consider roles of users and IT personnel
A2	User analyst interaction	User involvement in analysis, user participation, user-analyst differences, user-analyst interaction
A3	Software / hardware development	Programmer / analyst cognition studies, design and development of specific or general applications or devices that consider some human aspects
A4	Software / hardware evaluation	System effectiveness, efficiency, quality, reliability, flexibility and information quality evaluations that consider people as part of the mix
A5	User interface design and development	Interface metaphors, information presentations, multimedia
A6	User interface evaluation	Instrumental usability (e.g. ease of use, low error rate, ease of learning, retention rate, satisfaction), accessibility, information presentation evaluation
A7	User training	User training issues or studies during IT development (prior product release or use)
B	IT use and impact	Concerned with issues that occur when humans use and / or evaluate IT; issues related to the reciprocal influences between IT and humans. The artefact is released and used in a real context
B1	Cognitive belief and behaviour	Self-efficacy, perception, belief, incentives, expectation, intention, behaviour, acceptance, adoption, use
B2	Attitude	Attitude, satisfaction, preference
B3	Learning	Learning models, learning processes, training in general (different from user training as part of system development)
B4	Emotion	Emotion, affect, hedonic quality, flow, enjoyment, humour, intrinsic motivation
B5	Performance	Performance, productivity, effectiveness, efficiency
B6	Trust	Trust, risk, loyalty, security, privacy
B7	Ethics	Ethical belief, ethical behaviour, eEthics
B8	Interpersonal relationship	Conflict, interdependence, agreement / disagreement, interference, tension, leadership, influence
B9	User support	Issues related to information centre, end-user computing support, general user support

Source: Zhang and Galleta (2006)

2.2.2. Online consumer behaviour (OCB) theoretical frameworks

Kwong et al. (2003) defined online consumer behaviour as those activities involved in obtaining, consuming and disposing of products and services online, including the decision processes that precede and follow these actions. Understanding online

consumer behaviour is a starting point for planning marketing strategy in the Internet medium.

The study of online consumer behaviour is gaining in importance due to the proliferation of online shopping (Dennis et al., 2010). Schibrowsky et al. (2007) undertook a literature review of Internet marketing topics, and revealed that whilst the Internet impacts virtually every area of marketing, marketers and consumers are still experimenting with their usage of this medium. They found that 47.5% of total Internet marketing research is focused on online consumer behaviour. In addition they affirmed that an area of future research for the next years is how consumers will use the Internet for marketing-related activities, and suggested that best research is yet to come.

Kwong et al. (2003) proposed a framework for the analysis of online consumer behaviour literature, which is illustrated in figure 3.

Figure 3. Online consumer behaviour framework



Source: Kwong et al. (2003)

It is grounded on a six-stage consumer decision process, based on Engel, Blackwell and Miniard's (1995) framework of the consumer decision model, which is integrated in the inner layer of figure 4. Table 3 provides a description of the six

stages illustrated in the inner layer of figure 4. The second external layer refers to widely cited factors of each of the stages of the online purchase process.

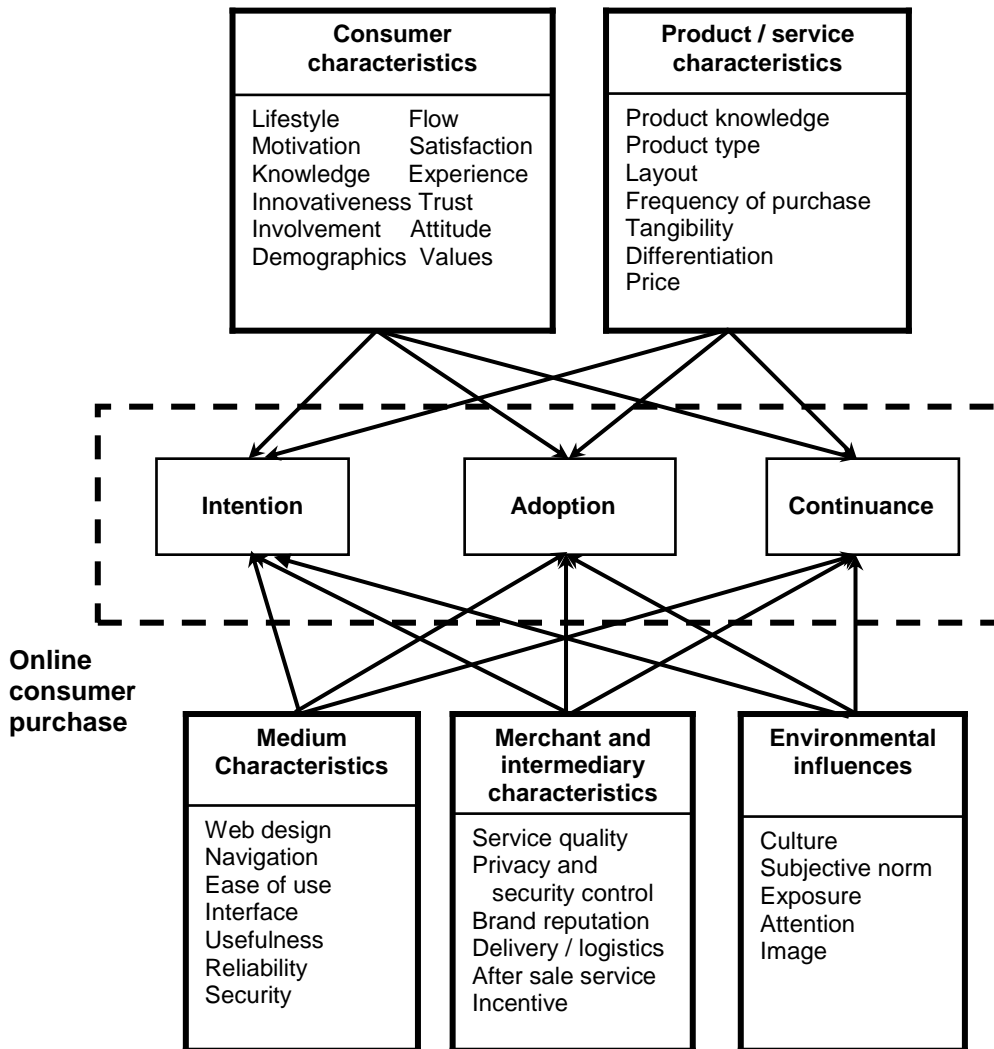
Table 3. Six-stage online consumer behaviour framework

STAGE	DESCRIPTION
Need recognition	The desired state of affairs and the actual situation is sufficient to arouse and activate the decision process
Information search	Once the need activation has occurred, the consumer either searches for information stored in memory or acquires decision-relevant information from the environment
Evaluation	The consumer compares products to come up with the desired alternative and narrows the choice to the preferred alternative
Purchase	Based on a positive decision in the evaluation stage, the preferred alternative is acquired
After purchase evaluation	After the consumer begins to use the product, post-purchase evaluation is based on a comparison of consumer expectations and actual experience
Re-purchase	The results of the after-purchase evaluation will impact re-acquisition behaviour

Adapted from Kwong et al., 2003

Cheung et al. (2005) suggested an alternative online consumer behaviour framework. These researchers found that the literature on online consumer behaviour was very fragmented, hence proposed a unifying OCB framework illustrated in figure 4 with the aim of providing guidance to other researchers investigating online consumer behaviour. It comprises five major areas: consumer characteristics, environmental influences, product/service characteristics, medium characteristics and online merchant and intermediary characteristics. The core of this framework comprises three factors: online consumer purchase intention, adoption and continuance.

Figure 4. Unifying online consumer behaviour framework



Source: Cheung et al. (2005)

Having introduced both the human-computer interaction framework suggested by Zhang and Galleta (2006), and the online consumer behaviour frameworks suggested by Cheung et al (2005) and Kwong et al. (2003), table 4 illustrates how fields from both research areas of OCB and HCI overlap or are very similar across these two major research disciplines. Table 4 has been built by analysing the content of the two HCI frameworks. Then, based on the HCI topic classification of Zhang and Galleta (2006) illustrated in table 2, similar OCB content was organised so that it matched the category that refers to the use of IT and its impact on people. In table 4, the column marked 'category in HCI' comprises the HCI research areas in the column on its right. A similar approach for the OCB frameworks has been utilised.

Table 4. Overlap of consumer and technology research issues

Technology-oriented research		Consumer-oriented research	
Human-computer interaction classification (Zhang and Galleta, 2006)		Online consumer behaviour frameworks (Cheung, 2005; Kwong et al., 2003)	
Category in HCI	Research area in HCI	Research area in OCB	Category in OCB
Attitude	Attitude	Attitude	Consumer characteristics
	Satisfaction	Satisfaction	After purchase evaluation
Cognitive belief and behaviour	Incentives	Incentives	Merchant and intermediary characteristics
	<u>Intention</u>	<u>Intention</u>	Consumer characteristics
	<u>Behaviour</u>	<u>Past experiences / behaviour</u>	Need recognition
	<u>Adoption</u> <u>Acceptance, use</u>	<u>Adoption</u> <u>Adoption</u>	Online consumer purchase
Development methods and tools	Social-cognitive	Social	Need recognition
Emotion	<u>Affect</u> , emotion, enjoyment, flow, hedonic quality, humour	<u>Experience</u>	Consumer characteristics
	Intrinsic motivation	<u>Motivation</u>	
Performance	Effectiveness, efficiency, performance, productivity	<u>Navigation, usefulness</u>	Medium characteristics
Trust	Loyalty, trust, risk, security	<u>Continuance</u> , trust, risk, security	Consumer characteristics Online consumer purchase
User interface design and development	Interface metaphors	<u>Interface</u>	Medium characteristics
	<u>Information presentation</u>	<u>Web site design and content</u>	Information search
		<u>Information presentations</u>	Medium characteristics
	<u>Instrumental usability (Ease of use)</u>	<u>Layout</u>	Product / services characteristics
User interface evaluation	<u>Usability</u>	<u>Ease of use</u>	Medium characteristics
User Support	Issues related to user support, general support and information centre	After sales services	After purchase evaluation Merchant and intermediary characteristics

OVERLAP OF RESEARCH AREAS ¹

Source: Developed for this research

¹The research issues coloured in colour pink illustrate the topics on which we shall focus in this thesis.

The 'research area in OCB' column has been organised so that it matches the 'research area in HCI' column on its left.

As it may be gathered from table 4, amongst the topics that overlap between HCI and OCB research are behaviour, flow, interface and Web site design, navigation and usability. These have been previously considered by online marketing researchers investigating how they influence the behaviour of online consumers (e.g. Hausman and Siekpe, Lee and Kozar, 2008; Li et al., 2007; Novak and Hoffman, 2009). Overlaps also exist regarding the acquisition of online consumer information and measurement and analysis of this information. These topics have been considered in OCB literature when investigating how consumers perform and navigate on Web sites (e.g. Bucklin and Sismeiro, 2009; Senecal et al., 2005; van den Poel and Buckinx, 2005).

Whilst table 4 has illustrated research areas that are similar and overlap across online consumer behaviour and human-computer interaction, there are other HCI areas that overlap with marketing topics that are not represented in the frameworks of Cheung et al. (2003) and Kwong et al. (2003) such as information presentation evaluation (e.g. Hong et al., 2005), information quality evaluations that consider people as part of the mix (e.g. Flavián and Gurrea, 2008), ease of learning (e.g. Johnson, Moe, Fader, Bellman and Lohse, 2004), retention (e.g. Li et al., 2006), accessibility (e.g. Spink and Jansen, 2008), self-efficacy (e.g. Lian and Lin, 2008), perception (e.g. Lee and Kozar, 2008), belief (e.g. Song and Zahedi, 2005), preference (Rosen and Purinton, 2004), privacy (e.g. Lian and Lin, 2008), eEthics (e.g. Ruiz and Sanz, 2008) and interpersonal relationship issues (e.g. Li et al., 2006).

This lack of inclusion of these issues in previous OCB and HCI frameworks could evidence that there are still many research gaps that exist due to the fragmented nature of OCB. This in turn represents substantial opportunities for research within this discipline. Furthermore this shortcoming could serve as further support to the calls of Dennis et al. (2010), Spink and Jansen (2008) and Taylor and Strutton (2009), who affirmed that there is a lack online consumer behaviour models that

should take into account both marketing and technology approaches, that is, there is a scarcity of combined consumer-technology research.

Whilst this thesis is undertaken within the discipline of online consumer behaviour, in what follows we shall dedicate a section to the reviewing previous research models undertaken within this discipline which will then serve as a basis for this thesis. Having evidenced that for the development of online consumer behaviour research it is also necessary to take into account technological-related issues that could affect the discipline of OCB, in the next section we shall describe some of the most referenced technology acceptance models, as well as online consumer behaviour models built upon these.

2.3. CONSUMER-TECHNOLOGY BEHAVIOUR THEORIES

In this section we shall introduce the main behavioural consumer-technology acceptance theories utilised in marketing, following the categorisation suggested by Cheung et al. (2003) and Kwong et al. (2003), as well as further models, some of which have been built upon three classic theories: theory of reasoned action, technology acceptance model and theory of planned behaviour. In total we shall review seventeen consumer behaviour models which are illustrated in table 5. Of these, seven are classic technology acceptance models and ten are specific to OCB. Whilst initial acceptance is an important first step toward realising IT success, long-term IT usage is recently gaining increased attention among researchers (Premkumar and Bhattacharjee, 2008). Accordingly, for Zhou et al. (2007) it is important for online retailers to understand the antecedents of consumer acceptance of online shopping, especially as e-commerce competition is intensified. The revision of these seventeen models will give us a better overall understanding of OCB research.

Table 5. Principal theories referenced in online consumer behaviour research

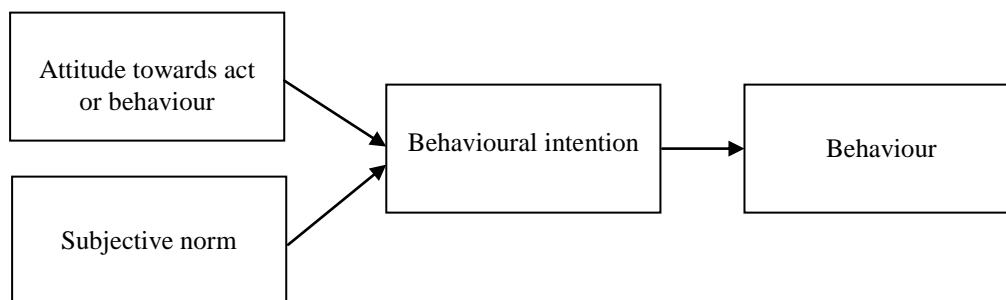
MAIN THEORIES	MODELS BUILT ON MAIN THEORIES
1. Theory of reasoned action (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975)	2. E-consumer behaviour integrated framework (Dennis et al., 2010)
3. Technology acceptance model (Davis, 1989)	4. Consumer personal characteristics extended TAM: CPCETAM (Bigné et al., 2008) 5. Integrative model online purchasing behaviour (Taylor and Strutton, 2009) 6. Online shopping acceptance model: OSAM (Zhou et al., 2007)
7. Theory of planned behaviour (Ajzen, 1991)	8. Extension of the theory of planned behaviour (Pavlou and Fygenson, 2006)
Other consumer behaviour models 9. Innovation diffusion theory (Rogers, 1962) 10. Consumer Decision Model (Engel, Blackwell and Miniard, 1995) 11. Motivation-Ability-Opportunity (Andrews, 1986) 12. Expectation-Confirmation Theory (Oliver, 1980) 14. Lian and Lin integrated model (2008) 15. UTAUT (Venkatesh et al., 2003) 16. Model of Ranaweera, Bansal and McDougall (2008) 17. Model of Constantinides (2004)	
11. Flow theory (Csikszentmihalyi, 1975)	Engagement with technology (O'Brien, 2008) ²

Source: Developed for this research

2.3.1. Theory of reasoned action (Ajzen and Fishbein, 1975)

Theory of reasoned action (TRA) is one of the most influential theories of human behaviour. Drawn from social psychology, it establishes that people's behaviour is driven by their behavioural intentions, which is a function both a person's attitude towards behaviour and the subjective norms that surround that behaviour.

Figure 5. Theory of reasoned action



Source: Fishbein and Ajzen (1975)

² Engagement with technology will be revised in section 3.5.7.

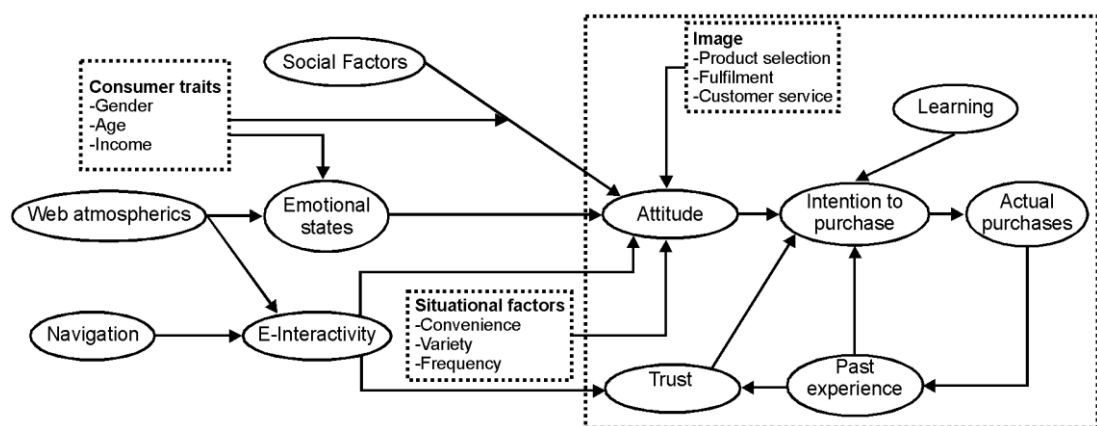
Attitude towards a behaviour refers to the person's positive and / or negative feelings about performing the behaviour. Subjective norms are defined as the subject's perceptions of how others feel about the action to be performed (Fishbein and Ajzen, 1975). Figure 5 illustrates the TRA.

Several highly accepted models have been built upon TRA, including the well-established *technology acceptance model* and *theory of planned behaviour*, as well as specific online models such as the *e-consumer behaviour integrated framework* (Dennis et al., 2010). These models shall be described in the following sections.

2.3.2. E-consumer behaviour integrated framework (Dennis et al., 2010)

Within the context of online consumer behaviour, and based on TRA, Dennis et al. (2010) proposed a unified two-stage model that explains how consumers behave online. A basic model argued that online consumer attitudes are drivers of online consumer behavioural intentions, which in turn lead to actual behaviour. The extended model also took into account online consumers, social and online interactivity aspects. The authors emphasised that usually research has been approached from either consumer-oriented research perspectives or technology-oriented perspective, and whilst both do not contradict each other but rather complement themselves, there is a scarcity of research that combine these two perspectives together.

Figure 6. E-consumer behaviour integrated framework



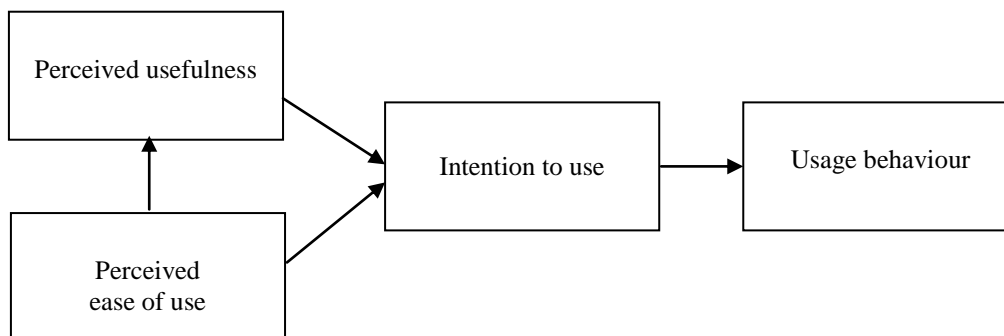
Source: Dennis et al. (2010)

Finally, Dennis et al. (2010) highlighted the fact that online consumer behaviour is a new area of research, and therefore recognised the difficulty of ‘building a complex conceptual model from the ground up’ that does not incorporate all the variables that potentially affect online consumer behaviour. Figure 6 illustrates the two-stage model that comprises the first stage within the dotted area.

2.3.3. Technology acceptance model (Davis, 1989)

Technology acceptance model (TAM) is considered one of the most influential and commonly employed theories for describing a person’s acceptance of information systems. Adapted from the theory of reasoned action, and based upon the beliefs-attitudes-behaviour paradigm of human behaviour (Fishbein and Ajzen, 1975), TAM is a static model, specific to information systems, that considers actual technology usage behaviour as a function of the behavioural intention to use a technology. User intention and behaviour are based on forward-looking expectations of the information systems’ acceptance and usage, and are determined by two variables: perceived usefulness and perceived ease of use. The model is illustrated in figure 7.

Figure 7. Technology acceptance model



Source: Davis (1989)

Numerous empirical investigations have established strong empirical support for TAM (e.g. Karahanna, Straub and Chervany, 1999; Premkumar and Bhattacharjee, 2008; Venkatesh, Morris, Davis and Davis, 2003). Although TAM is technically a model of IT acceptance, it has also been used to examine post-adoptive usage (Premkumar and Bhattacharjee, 2008). Using the TAM framework, also Childers, Carr, Peck and Carson (2001) revealed that navigation, usefulness, ease-of-use, and

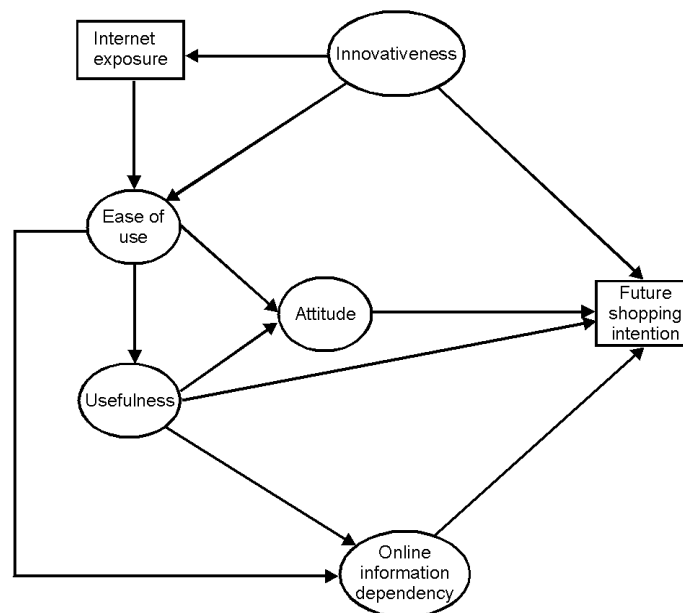
enjoyment predicted online shopping attributes. Singh and Baack (2004) suggested that cultural adaptation is an explanatory variable that should be included in the original TAM model when exploring cross-cultural issues. Also Chung and Tan (2004) suggested playfulness as an antecedent to intention to use.

As subsequent online behavioural research has built upon TAM, in what follows we shall describe three models, by researchers Bigné et al. (2008), Taylor and Strutton (2009) and Zhou et al. (2007).

2.3.4. Consumer personal characteristics extended TAM (Bigné et al., 2008)

Bigné et al. (2008) extended TAM by incorporating both online shopping information dependency and innovativeness factors into an integrated model called *consumer personal characteristics extended TAM* (CPCETAM), an improved model for consumer acceptance of Internet shopping.

Figure 8. Consumer personal characteristics extended TAM



Source: Bigné et al., 2008

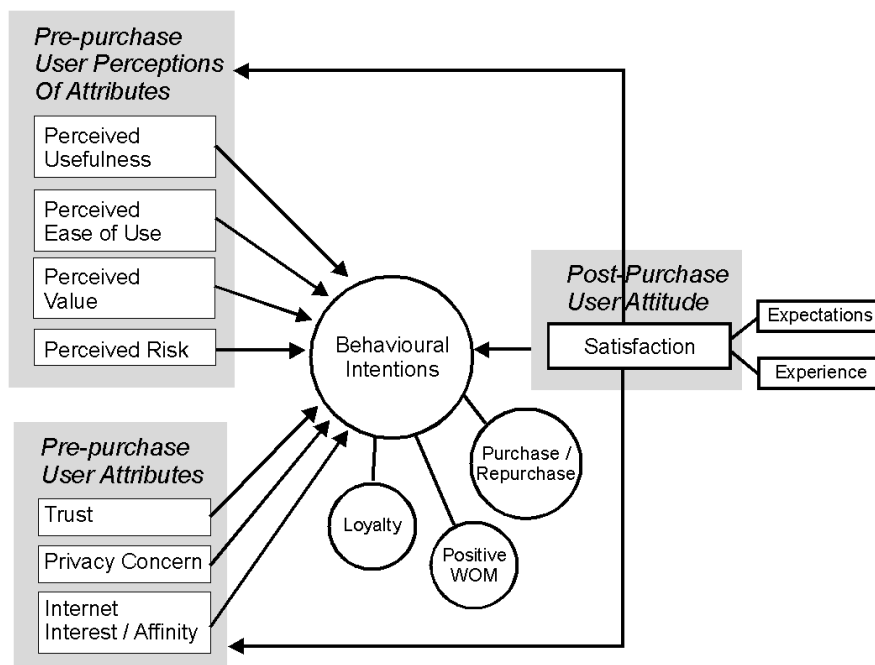
The researchers found that, whilst maintaining the basic TAM hypotheses, consumer innovativeness and online shopping information dependency had a direct and positive influence on future online shopping intention. They also proved that under a condition of high consumer perceived usefulness, easy to use interfaces increased

online shopping information dependence, and revealed that consumer innovativeness positively influenced both Internet exposure and the perception of ease-of-use of the Internet shopping medium. Figure 8 illustrates CPCETAM.

2.3.5. Integrative model of online purchasing behaviour (Taylor and Strutton, 2009)

Taylor and Strutton (2009) have recently highlighted the need to combine two perspectives, both information systems and marketing, in order to create integrative online consumer models. Accordingly, they suggested an integrative model of online purchasing behaviour.

Figure 9. Integrative model of online purchasing behaviour



Source: Taylor and Strutton, 2009

After a review of online consumer behaviour research published in leading marketing and information systems journals during the past decade, they selected 25 studies which were based on either TRA, TPB, TAM or *flow*, and merged them into a unifying Internet marketing framework, suggesting a model that demonstrated how interdisciplinary concepts influence online consumer behavioural intentions to make online purchases. This is one of the first interdisciplinary models of online

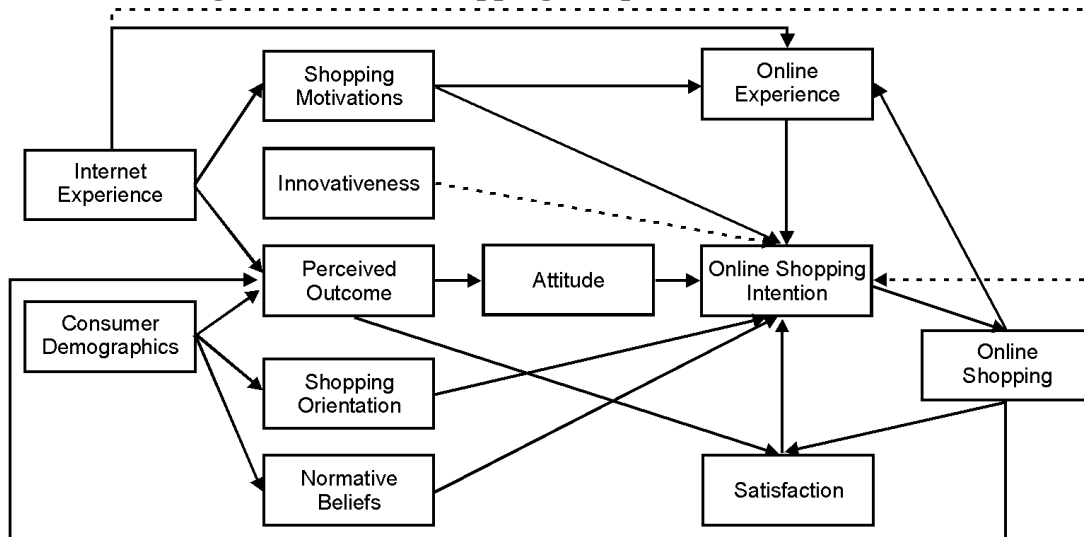
purchasing behaviour, and is represented in figure 9. A literature meta-analysis revealed eight constructs that appeared to influence the behavioural intentions of online consumers. These eight constructs were then classified into three categories: pre-purchase user perception attributes, pre-purchase user attitudes, and post-purchase user attitudes.

The researchers highlighted the fact that consumers are already living in a post-adoption Internet context. As Internet purchasing has become more widespread and diffused, marketers are faced not only with a changing environment, but also with a changing customer profile. No longer are Internet users mostly techsavvy early-adopters. Instead, Internet users encompass every age group, socioeconomic class and level of technical experience. Furthermore, as Internet marketing moves from higher to flatter growth stages, competition for online consumers is due to become even more intense, therefore the researchers suggested that practitioners should understand more about the processes behind customer prospective buying behaviour with dual-perspective models.

2.3.6. Online shopping acceptance model, OSAM (Zhou et al., 2007)

Research has previously identified four determinants of consumer acceptance of online shopping: consumer characteristics, personal perceived values, Web site design and the product being sold (Lian and Lin, 2007). Based on this notion, Zhou et al. (2007) extended a previous online shopping model by Chang, Cheung and Lai (2005) introducing further consumer factors observed in online shopping contexts, and synthesised their findings into a model named *online shopping acceptance model* (OSAM) developed in order to predict consumer acceptance of online shopping. Whilst they focused mainly on consumer factors utilised in online shopping research, they admitted that there are other system, product and service, and vendor-related factors that could be relevant predictors of consumer acceptance of online shopping. OSAM is illustrated in figure 10.

Figure 10. Online shopping acceptance model, OSAM

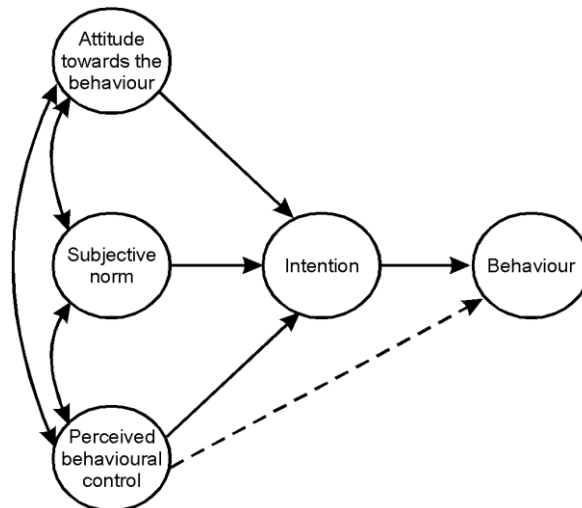


Source: Zhou et al., 2007

2.3.7. Theory of planned behaviour (Ajzen, 1991)

Theory of planned behaviour (TPB) is an extension of TRA that includes an additional construct: perceived behavioural control. Behavioural control is defined as the perceived difficulty of performing behaviour. In this model, attitudes toward behaviour, subjective norm and perceived behavioural control are suggested as antecedents to behavioural intention. The model is illustrated in Figure 11.

Figure 11. Theory of planned behaviour



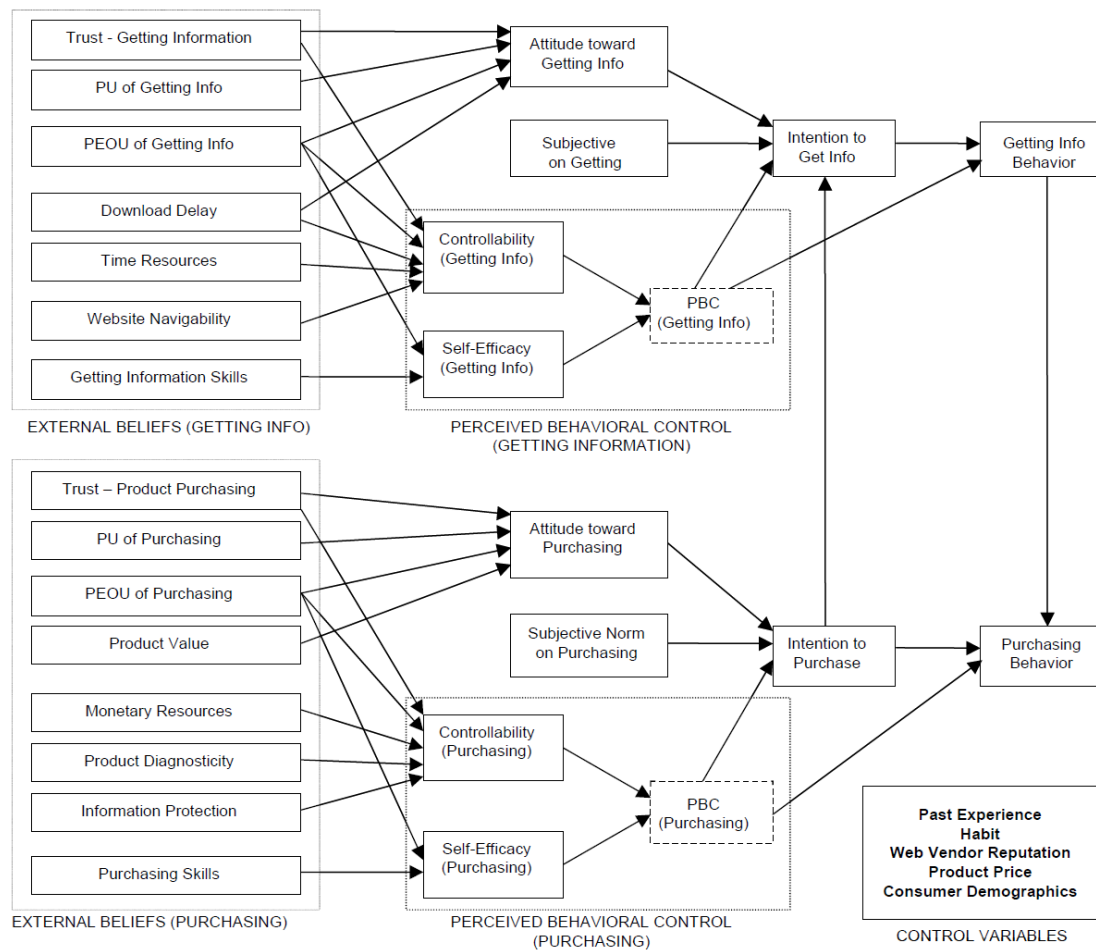
Source: Ajzen, 1991

TPB has been applied to different technologies and has been utilised as a means to understanding individual technology acceptance. Pavlou and Fygenon (2006) built upon the TPB in order to explain and predict the process of consumer e-commerce adoption.

2.3.8. Extension of the theory of planned behaviour to e-commerce adoption (Pavlou and Fygenon, 2006)

This model is specific to consumer e-commerce adoption. The adoption process is captured with two different online consumer behaviours: obtaining information and purchasing products from a Web vendor.

Figure 12. Extension of the theory of planned behaviour to e-commerce adoption



Source: Pavlou and Fygenon (2006)

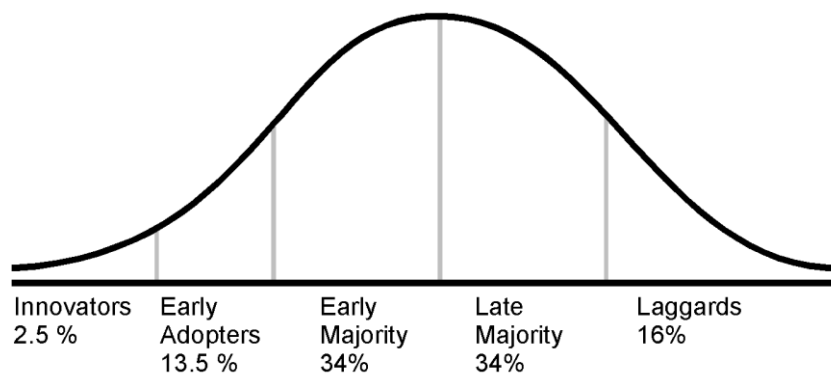
The researchers revealed that trust and technology adoption variables, perceived usefulness and ease of use, are salient beliefs for predicting e-commerce adoption. In addition, technological characteristics (download delay, Web site navigability and information protection), consumer skills, time and monetary resources, and product characteristics (product diagnosticity and product value) add to the explanatory and predictive power of the model, which is illustrated in figure 12.

Having introduced the TAM, TRA and TPB, as well as six OCB-specific models grounded on them, in what follows we shall describe eight further technology acceptance models, from which the first four (Rogers, 1962, Engel et al., 1985; Andrews, 1986 and Oliver, 1980) are widely referenced in consumer behaviour literature. The following four (Lian and Lin, 2008; Venkatesh et al., 2003; Ranaweera, Bansal and McDougall, 2008 and Constantinides, 2004) are online-specific behavioural models.

2.3.9. Innovation diffusion theory (Rogers, 1962)

Innovation diffusion theory suggests that the adopters of a new innovation can be categorised as innovators, early adopters, early majority, late majority and laggards. For different innovations, consumers can fall into different categories. The ability and motivation of adopters depends on their awareness, interest, evaluation, trial and adoption.

Figure 13. The diffusion of innovations



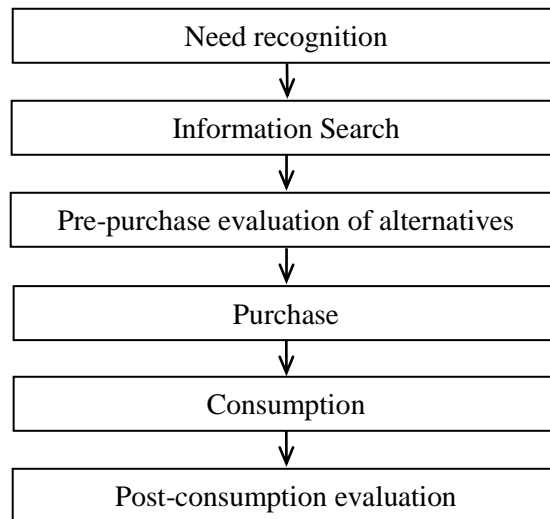
Source: Rogers (1962)

Rogers' research has become widely accepted in technology adoption and communications research (Agarwal and Prasad, 1998; Karahanna et al., 1999; Moore and Bensabat, 1996). The market share of an innovative product will eventually reach the level of saturation after it is adopted by five successive groups of consumers. Figure 13 illustrates this model.

2.3.10. Consumer decision model (Engel, Blackwell and Miniard, 1985)

This is one of the most cited cognitive models. It is also referred to as EBM model, and describes how consumers progress through six key stages in the process of consumption: need recognition, information search, pre-purchase evaluation of alternatives, purchase, consumption and post-consumption evaluation. The model is illustrated in figure 14.

Figure 14. Consumer decision model



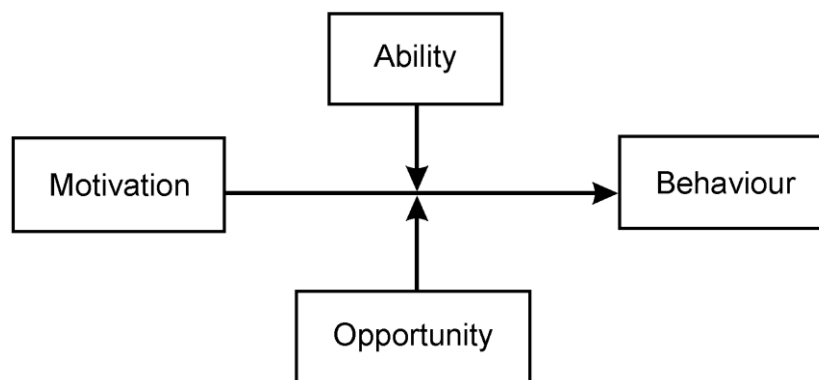
Source: Engel, Blackwell and Miniard (1985)

Based on the EBM model, researchers Teo and Yeong (2003) investigated consumer decision processes undertaken within the context of online shopping and revealed a positive relationship between perceived benefits of search and overall evaluation deal.

2.3.11. Motivation-ability-opportunity

Suggested by Andrews (1986), the motivation-ability-opportunity model (MOA) was developed based on the findings that people engage in progressive levels of processing ranging from superficial to elaborate. It was assembled with three concepts from psychology: *motivation* or the driver towards behaviour; *ability*, that is, the skills and capabilities needed for undertaking behaviour; and *opportunity*, the situational and contextual factors that can affect the performance of behaviour. Figure 15 illustrates the relationship between these concepts. Whilst motivation has a direct influence on behaviour, it is moderated by both ability and opportunity.

Figure 15. Motivation-ability-opportunity



Source: Andrews (1986)

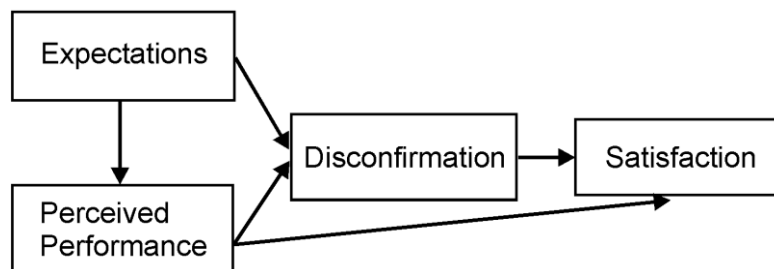
Subsequently, MacInnis and Jaworski (1989) developed a similar six-stage model within the context of advertising, suggesting that parties that communicate have two fundamental challenges when elaborating an effective message: first, to match message content with the level of processing of an audience, and second, to encourage deeper message processing driving individuals towards elaboration.

2.3.12. Expectation-confirmation theory (Oliver, 1980)

Expectation-confirmation theory, proposed by Oliver (1980), explains the determinants of consumer satisfaction and dissatisfaction, and the subsequent retention of products and services. The theory was designed to explain post-adoptive behaviour following consumers' first-hand experience with a particular system, and is grounded on the expectation–disconfirmation–satisfaction paradigm based on prior work of Festinger (1957). It explains that expectations and perceived

performance, mediated by positive or negative disconfirmation, lead to post-purchase satisfaction. Consumers form an initial expectation based on product information, media reports or information from other users. After utilising the product, they form a perception of its performance that can be also viewed as *quality*. The perceived performance is then compared with the initial expectation. When a product outperforms consumer expectation, it is considered as a positive disconfirmation, resulting in post-purchase satisfaction. However, if a product does not meet up to expectations, the consumer is likely to become dissatisfied. Hence this theory suggests that consumer satisfaction with the use of the product or service is determined by post-purchase behaviour, as the level of satisfaction influences consumer intention to continue to use the product or repurchase, or to stop using it in the future (Oliver, 1980). The model is illustrated in figure 16.

Figure 16. Expectation-confirmation theory



Source: Oliver (1980)

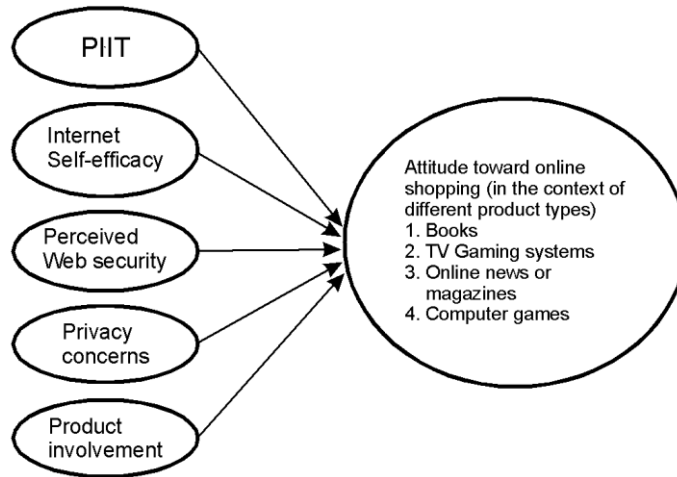
Having described four classic consumer behaviour models, we shall now describe four further models specific to online consumer behaviour.

2.3.13. Lian and Lin integrated model (2008)

Lian and Lin (2008) suggested an integrated model for the determination of online shopping attitudes and validated it within the context of four different products and services. Five consumer characteristic variables were utilised as antecedents to attitudes towards online shopping: personal innovativeness of information technology (PIIT), Internet self-efficacy, perceived Web security, privacy concerns and product involvement. The researchers revealed that consumer characteristics influenced online shopping acceptance. However the relationships were affected by the different types of products. They suggested that when designing an online marketing plan, retailers should consider the characteristics of potential buyers and

the type of products that are suitable for online marketing. The model is illustrated in figure 17.

Figure 17. Lian and Lin integrated model

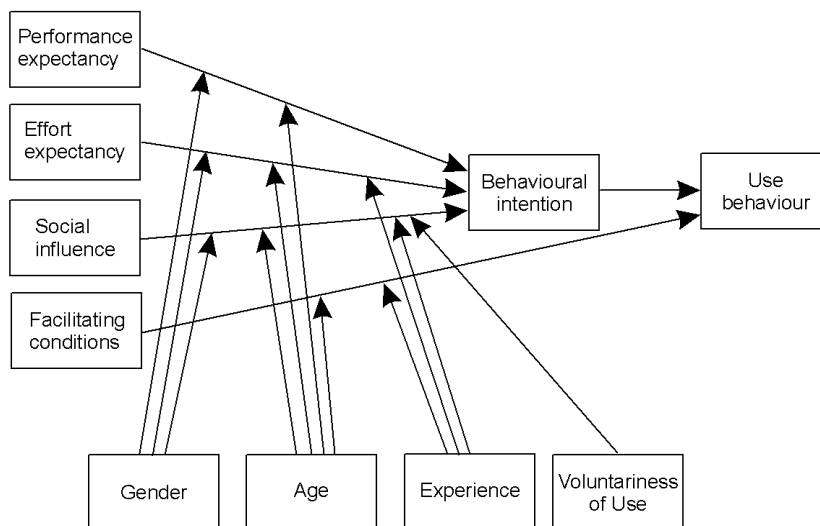


Source: Lian and Lin, 2008

2.3.14. Unified theory of acceptance and use of technology (UTAUT)

Venkatesh, Morris, Davis and Davis (2003) developed the unified theory of acceptance and use of technology (UTAUT) for the assessment of likelihood of success for new technology introductions. It helps to understand drivers of acceptance so that proactive involvement programmes can be designed and targeted at populations of users that may be less inclined to adopt and use new systems. The programmes include marketing and the training of users. Figure 18 illustrates this model.

Figure 18. Unified theory of acceptance and use of technology



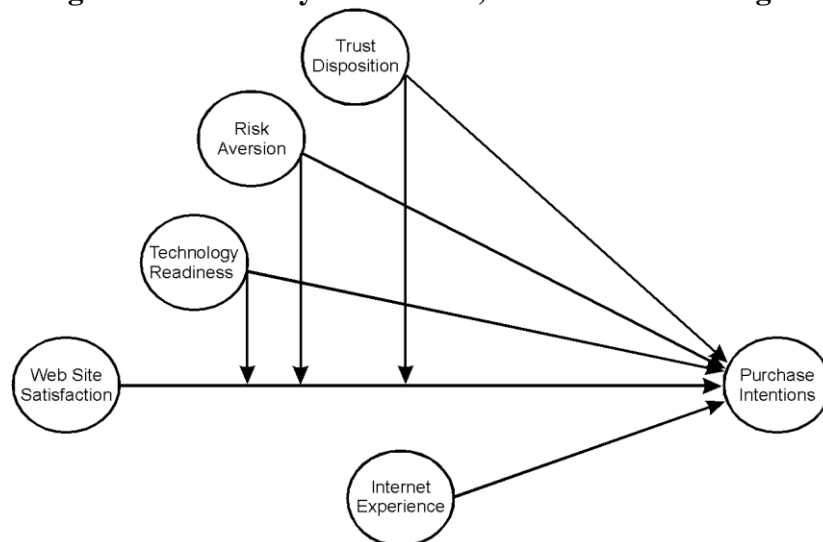
Source: Venkatesh et al., 2003

2.3.15. Model by Ranaweera, Bansal and McDougall (2008)

In this model, the authors suggested that personality aspects of consumers specifically, trust disposition, risk aversion, technology readiness and satisfaction were antecedents to purchase intention. They revealed that these personality characteristics demonstrated a significant influence on online purchase intention.

The model, illustrated in figure 19, suggested that it is crucial for service providers to recognise the opportunities these personality traits offer when identifying potentially lucrative customers, and should understand the challenges that the same traits pose. Managers who are knowledgeable of these traits are likely to gain an advantage over their competitors by customising their Web sites in order to meet distinct aspects of personality. The researchers also affirmed that Web-based service providers with brands that are less known need to invest effort in order to ensure that their Web sites do not just match those of their larger competitors, but should go beyond and offer a unique online experience. This is crucial since the Web site is often the only medium they have for convincing first time visitors of their sites and trying to move them to the purchase stage.

Figure 19. Model by Ranaweera, Bansal and McDougall



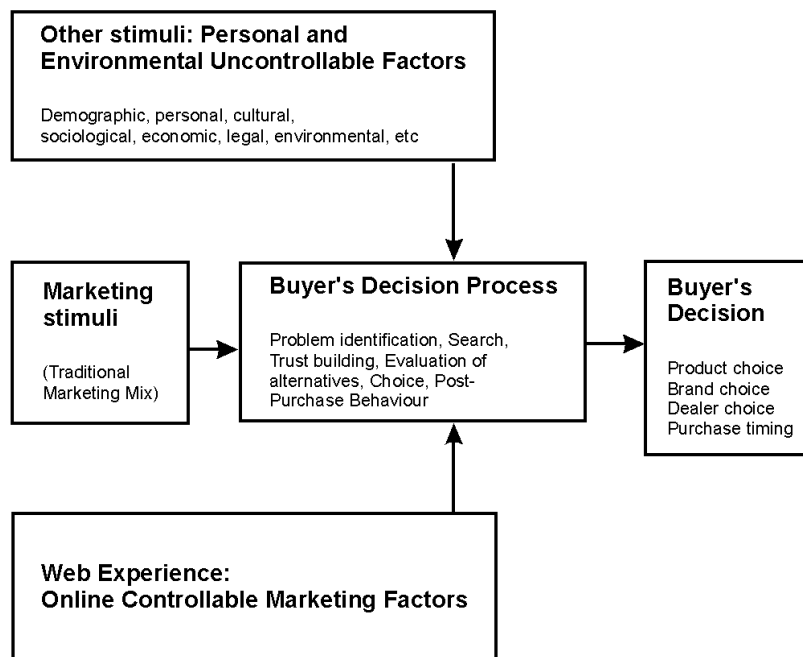
Source: Ranaweera, Bansal and McDougall (2008)

2.3.16. Model by Constantinides (2004)

Constantinides (2004) investigated how to attract and win over consumers in the Internet marketplace. He analysed factors affecting online consumers' behaviour and examined how online marketers can influence the outcome of virtual interaction and the buying process by focusing their marketing efforts on elements that shape customers' Web experience.

This researcher suggested that when developing and delivering an attractive online presence, the first step is to identify of the Web experience components and to understand their role as inputs in the online customer's decision-making process, as they are likely to have the maximum impact on it. He affirmed that click-and-mortar firms that deliver superior Web experiences influence their offline clients' perceptions and attitudes that in turn drive additional traffic to offline stores. The model, illustrated in figure 20, contributes to the theoretical debate regarding the factors that influence online consumer behaviour and shows similarities and differences between traditional and virtual consumers.

Figure 20. Forces influencing the online consumer's behaviour



Source: Constantinides, 2004

In this section we have described seventeen consumer-technology behavioural models of which ten were specific to online consumer behaviour. According to Cheung et al. (2005) and Kwong et al. (2003), TAM, TPB, TRA and flow are the basis for the majority of OCB models. The next section is specifically dedicated to flow theory and how it has been applied by researchers for the study of OCB. Recently Schibrowsky et al. (2007) affirmed that flow is a promising area of online consumer behaviour research. As flow can promote the hedonic and utilitarian qualities of Web sites, these two qualities will be immediately described afterwards.

2.4. FLOW THEORY

This section introduces the concept of *flow*, its evolving definitions throughout time, as well as a description of its dimensions, and its applicability to online consumer behaviour research.

Flow theory was proposed by Mihalyi Csikszentmihalyi (1975) when he was interested in finding out why people participated in *autotelic* activities. The word *autotelic* is derived from the Greek word that means 'doing something for its own sake'. Flow is a state in which 'people are so involved in an activity that nothing else seems to matter'. It can be also explained as 'the holistic sensation that people feel when they act with total involvement' (Csikszentmihalyi, 1975). Once experienced, flow becomes a very desirable state to be in, and is an enjoyable experience that one is motivated to return to, as the experience obtained is highly rewarding in itself. Since Csikszentmihalyi observed that flow occurred in activities such as dancing, meditation or rock climbing, researchers have ongoingly proposed other definitions of flow as it has been applied to new contexts of research. Flow is one of the factors included in the online consumer behaviour framework of Cheung et al. (2005), previously described.

Csikszentmihalyi (1988) affirmed that the flow construct had six dimensions:

1. Autotelic experience.
2. Mergence of activity and awareness.
3. Focused concentration.

4. A sense of being in control.
5. Loss of self-consciousness and feeling of transcendence of self.
6. Transformation of time.

5 years later, Csikszentmihalyi (1993) defined the symptoms and phenomena of flow state as also having three preconditions:

1. Immediate feedback.
2. Clear goals.
3. Personal skills well suited to given challenges.

Table 6 illustrates the six dimensions that compose the core construct of flow, as well as the definition of each dimension.

Table 6. Dimensions of flow

DIMENSIONS	DEFINITION
Autotelic experience	‘The key element of an optimal experience is that it is an end in itself’ (Csikszentmihalyi, 1990)
Mergence of action and awareness	‘People become so involved in what they are doing that the activity becomes spontaneous, almost automatic; they stop being aware of themselves as separate from the actions they are performing.’ (Csikszentmihalyi, 1990)
Concentration	‘Centring of attention on a limited stimulus field’ (Csikszentmihalyi, 1975) ‘Concentration on the task at hand’ (Csikszentmihalyi, 1990)
Perceived control	‘There is the sense that the outcomes of the activity are, in principle, under the person’s own control’ (Csikszentmihalyi, 1988) ‘Lacking the sense of worry about losing control’ (Csikszentmihalyi, 1990) ‘The sense of exercising control in difficulty situations’ (Csikszentmihalyi, 1990)
Transcendence of self	‘Lose temporarily the awareness of self’ (Csikszentmihalyi, 1988) ‘There is not enough attention left over to allow a person to consider either the past or the future, or any other temporarily irrelevant stimuli.’ (Csikszentmihalyi, 1990) ‘The loss of the sense of a self-separate from the world around it is sometimes accompanied by a feeling of union with the environment.’ (Csikszentmihalyi, 1990)
Transformation of time	‘Distorted sense of time.’ (Csikszentmihalyi, 1988) ‘Time no longer seems to pass the way it ordinarily does.’ (Csikszentmihalyi, 1990).

Source: adapted from Guo and Poole (2008)

Different authors have named these six dimensions differently. For instance, autotelic experience has also been referred to as *enjoyment* by Sánchez-Franco (2006), focused concentration has also referred to as *attention* and also as *immersion*

(Li and Browne, 2006; Cowley et al., 2008). Transformation of time has also been referred to as *perceived time* (O'Brien, 2008).

As research on flow theory has progressed, different researchers have measured the construct with different variables. Even different definitions have been suggested. For instance, Chen, Wigand and Nilan (1999) defined flow as a 'psychological state in which an individual feels cognitively efficient, motivated and happy' and Smith and Sivakumar (2004) defined flow as 'a specific experiential state so desirable that one wishes to replicate it as often as possible'. With regards to its dimensions, Trevino and Webster (1992) operationalised flow as the combination of four dimensions: attention, control, curiosity and intrinsic interest. However Webster, Trevino and Ryan (1993) could not differentiate intrinsic interest to curiosity and reduced the number of dimensions from four to three. Novak, Hoffman and Yung (2000) suggested that flow was determined by a different group of dimensions: challenge and arousal, focused attention, interactivity and telepresence, and control and skill. Recently Lu, Zhou and Wang (2009) recognised that 'flow is a complex concept' and suggested it was formed by dimensions enjoyment, concentration, perceived control and curiosity, although in their model they only utilised two dimensions for its measurement: perceived enjoyment and curiosity.

Hoffman and Novak (2009) recently acknowledged the ongoing controversies regarding the lacking of a precise definition of flow in online consumer behaviour research and the dimensions used to measure it empirically, therefore making it even more difficult to apply the concept to practice.

Flow theory has been utilised in research related to information system environments, where users are enjoying positive experiences with computers. Hoffman and Novak's (1996) seminal paper on flow set a benchmark as it was applied for the first time to online consumer research. They conceptualised flow on the Web as a cognitive state experienced during navigation, that is determined by high levels of skill and control, high levels of challenge, focused attention and enhanced by interactivity and telepresence. Computer-mediated environments that are conducive to flow will yield positive attitudes and outcomes for users, and have

broad implications in the learning of hypermedia computer-mediated environments (Hoffman and Novak, 1996).

Many researchers have progressed on the work of Hoffman and Novak (1996). It has been applied to commercial Web sites (Guo and Poole, 2008; Pace, 2004), Internet messaging (Lu et al., 2009), communication (Trevino and Webster 1992) and has also been utilised to explore situational and personality variables associated with computer-based tasks (Woszczyński, Roth and Segars, 2002). Tourism (Filep, 2008) and learning (Ghani, 1995; Guru and Nah, 2001) represent two further areas of research where flow theory has been utilised. Table 7 describes definitions of flow and references to flow theory found in research, the dimensions utilised to measure the construct, the context where the research took place and the methodology utilised. Schibrowsky (2007) suggested that flow theory would be a major area of research of Internet marketing research for both individuals and organisations. Studies by Bridges and Florsheim (2008), Choi, Kim and Kim (2007), Guo and Poole (2008), Hausman and Siekpe (2009), Hoffman and Novak (2009) and Lu et al. (2009) confirm this trend. However, Schibrowsky et al. (2007) argued that although Web research based on flow theory is still a very under-researched area.

In what follows we shall describe research that has been undertaken within the context of flow theory applied to online consumer behaviour.

Chen et al. (1999) suggested that flow theory could be utilised for the improvement of Web design, suggesting that instead of placing emphasis on how the Web technology works, Web design practice and design criteria, Web designers should focus more on users and their internal views: what they are trying to do and where are they trying to go within a Web site. This in turn would facilitate more usable and useful activities. Nel et al. (1999) argued that flow was built with continuous variables ranging from none to intense, and that interactions with some Web sites may be perceived as more encouraging of exploratory behaviours than others. They revealed a high relationship between being in flow state and users' intention to return to a Web site. They also studied flow in transactional sites and in informative sites, demonstrating that flow state is higher on the latter than on the first. In this respect,

as the objective of transactional sites is to make visitors make online purchases, when the visitors have a low purchase intention, they lose flow state and discard using a site. This in turn implies that transactional sites should give attention to create flow experiences if it is sought that sales are to be consolidated a later stage, as visitors may not return to the site, and even develop a desire to be elsewhere on the Web. Flow in online environments has also been found to be positively related to exploratory behaviour, revisit and purchase intentions, and attitude towards Web sites (Novak et al., 2000; Koufaris, 2002; Skadberg and Kimmel, 2004). Sicilia et al. (2005) affirmed that interactivity leads to greater information processing, and this in turn makes consumers experience flow state.

Pace (2004) proposed a grounded theory of flow experiences when users were engaged in information-seeking activities. He referred to flow as the state of mind of 'someone deeply involved in an activity like navigating on the Internet'. As humans are multidimensional, he affirmed that a better understanding of flow could contribute to the development of multidimensional design principles, highlighting that Web design principles based on usability ignore the needs of the whole persona. Koufaris (2002) developed an integrated theoretical framework of online consumer behaviour confirming that an online consumer is both a shopper and a computer user. He demonstrated how both shopping enjoyment and perceived usefulness of the Web site strongly predicted intention to return to a Web site, and also revealed that perceived Web skills and positive challenges were positively related to shopping enjoyment and concentration of online consumers. Huang (2003) utilised four variables to measure flow: focused attention, control, curiosity and interest, affirming that flow is both a cognitive and affective construct. Huizingh and Hoekstra (2003) showed that the hierarchy of effects model, widely used in the assessment of advertising effectiveness, was appropriate for describing the attitudinal changes of consumers after visiting a Web site. In their research they found that the four levels of the hierarchy of effects, attention, cognition, affection and conation, were closely related to the level of flow consumers experience during their visit to Web sites. Consumers who expressed a great amount of flow whilst navigating on a Web site also reported a more positive perception of it.

Table 7. Research on flow theory

RESEARCHERS (1)	DEFINITION OR PASSAGE DESCRIBED IN SOURCE	DIMENSIONS	CONTEXT	METHODOLOGY
Csikszentmihalyi (1975)	<p>‘The holistic sensation that people feel when they act with total involvement’ (p.36).</p> <p>When people are in flow ‘they shift into a common mode of experience when they become absorbed in their activity. This mode is characterized by a narrowing of the focus of awareness, so that irrelevant perceptions and thoughts are filtered out, by loss of self-consciousness, by a responsiveness to clear goals and unambiguous feedback; and by a sense of control over the environment...it is this common activity that people adduce as the main reason for performing the activity’ (p.72)</p>	Absorption, awareness, challenge, feedback, goals, involvement, loss of self-consciousness	Computer games, dancing, meditation, rock climbing, shopping, sports, surgery	Conceptualisation
Csikszentmihalyi and Csikszentmihalyi (1988)	‘The flow experience begins only when challenges and skills are above a certain level, and are in balance’ (p.260)	Autotelic experience, mergence of activity and awareness, focused concentration, a sense of being in control, feeling of transcendence of self, transformation of time.	Bosozoku, daily experience, elderly immigrants, family context, leisure, solitary ordeals, students, work, writing	Conceptualisation
Ghani, Supnick and Rooney (1991)	‘Two key characteristics of flow: the total concentration in an activity and the enjoyment which one derives from an activity...the precondition for flow is a balance between the challenges perceived in a given situation and skills a person brings to it’ (p.230) ‘a related factor is the sense of control over one's environment’ (p.231)	Autotelic experience, concentration, control	Educational graphics software	Experiment on face-to-face vs. computer-mediated groups
Webster, Trevino and Ryan (1993)	‘The flow state is characterized by four dimensions (a) the user perceives a sense of control over the computer interaction, (b) the user perceives that his or her attention is focused on the interaction, (c) the user's curiosity is aroused during the interaction, and (d) the user finds the interaction intrinsically interesting’ (p.413)	Attention focus, control, curiosity, intrinsic interest	Spread sheets and electronic mail	Survey after training course and use of software
Ghani and Deshpande (1994)	‘The two key characteristics of flow are (a) total concentration in an activity and (b) the enjoyment which one derives from an activity. There is an optimum level of challenge relative to a certain skill level. A second factor affecting the experience of flow is a sense of control over one's environment’ (p.383)	Concentration, enjoyment	Human-computer interaction	Understanding users’ reactions and motivations for using applications

Research on flow theory (continuation)

Hoffman and Novak (1996)	'The state occurring during network navigation which is 1) characterized by a seamless sequence of responses facilitated by machine interactivity, 2) intrinsically enjoyable, 3) accompanied by a loss of self-consciousness, and 4) self-reinforcing'	Attention, cognitive joy, control	Hypermedia computer-mediated environments	Conceptualisation
Chen, Wigan and Nilan (1999)	'Psychological state in which an individual feels cognitively efficient, motivated and happy'	Altered sense of time, autotelic experience, awareness, challenges, clear goals, concentration, control, feedback, loss of self-consciousness	Web users	Dichotomous questions and open ended questionnaire
Nel, van Niekerk, Berthon and Davies (1999)	'Players shift into a common mode of experience when they become absorbed in their activity. This mode is characterized by a narrowing of the focus of awareness, so that the irrelevant perceptions and thought are filtered out; by loss of self-consciousness, by responsiveness to clear goals and unambiguous feedback; and by a sense of control over the environment. It is this common flow experience that people adduce as the main reason for performing an activity'	Attention focus, control, curiosity, intrinsic interest	Commercial Web sites	Self-reported questionnaire after comparing four types of Web sites
Agarwal and Karahanna (2000)	'The state in which people are so involved in an activity that nothing else seems to matter'	Control, curiosity, focused immersion, heightened enjoyment, temporal dissociation	Web users	Survey of Web browsing experience
Novak, Novak and Yung (2000)	'Flow is a cognitive state experienced during navigation that is determined by (1) high levels of skill and control (2) high levels of challenge and arousal (3) focused attention (4) is enhanced by interactivity and telepresence'	Uni-dimensional	Web users	Survey of online shopping experience
Koufaris (2002)	'The holistic sensation that people feel when they act with total involvement'	Concentration, shopping enjoyment	Shopping on Web site	Online questionnaire
Huang (2003)	'Flow is defined by the presence of intrinsic motivation or enjoyment in an activity that can be precipitated through focusing attention on the activity and the perception of being in control'	Attention, control, curiosity, interest	Shopping on different Web sites	Survey of online shopping experience
Huizingh and Hoekstra (2003)	'State of deep concentration or concentrated activity; flow experiences are those which seem to make time stand still'	Uni-dimensional	Web users	Survey after search activity
Novak, Hoffman and Duhachek (2003)	Uses the definition of Webster, Trevino and Ryan (1993)	Flow, flow verbatim	Shopping on Web site	Survey of online shopping experience

Research on flow theory (continuation)

Li and Browne (2004)	'The holistic sensation that people feel when they act with total involvement'	Control, curiosity, focused attention, enjoyment, temporal dissociation	Web users	Survey of Web users
Skadberg and Kimmel (2004)	Uses Hoffman and Novak's definition (1996)	Enjoyment, lost track of time, telepresence	Web users	Questionnaire after browsing Web site
Smith and Sivakumar (2004)	'A specific experiential state so desirable that one wishes to replicate it as often as possible'	Duration, intensity	Web shopping	Conceptualisation
Pace (2004)	'Flow is a state of consciousness that is sometimes experienced by people who are deeply involved in an enjoyable activity. The experience is characterized by some common elements: a balance between the challenges of an activity and the skills required to meet those challenges'	Distorted sense of time, joy of discovery, mental alertness, merging of action and awareness, reduced awareness, sense of control, telepresence	Web users	Semi-structured interviews
Siekpe (2005)	Uses Csikszentmihalyi's definitions of 1975 and 1988	Challenges, concentration, curiosity, control	Web users	Survey of online shopping experience
Finneran and Zhang (2005)	'A state of consciousness where a person is so absorbed in an activity that s/he excels in performance without consciously being aware of his or her every movement'	Refers to dimensions used by Ghani (1996), Hoffman and Novak (1996), Chen (2000) and Skadberg and Kimmel (2004) and suggests a reconceptualisation of the dimensions	Computer mediated environments	Conceptualisation
Chen (2006)	'State in which people become absorbed in their activities, while irrelevant thoughts and perceptions are screened out, ... characterized by enjoyable feelings, concentration, immersion, and intensive involvement'	Clear goals, concentration, immediate feedback, loss of self-consciousness, merger of action and awareness, positive affects, sense of potential control, time distortion, telepresence	Web users	Online survey after browsing
Li and Browne (2006)	'The holistic sensation that people feel when they act with total involvement. Flow is conceptualised as an optimal experience state in which an individual's perceived skills match with the perceived challenges of a task or activity'.	Control, curiosity, focused attention, temporal dissociation	Computer mediated environments and online behaviour	Survey with questions recalling their general online experiences
Sánchez-Franco (2006)	'State of mind sometimes experienced by people who are deeply involved in some activity'	Enjoyment and concentration	Web users	Online survey

Research on flow theory (continuation)

Choi, Kim and Kim (2007)	'The holistic sensation people feel when they act with total involvement'	Uni-dimensional	Enterprise resource planning	Mail survey to students enrolled in ERP course
Ilsever, Cyr and Parent (2007)	'Flow is a state of consciousness experienced by individuals who are deeply involved in an enjoyable activity'	Absorption, enjoyment, playfulness, satisfaction	e-commerce setting	Conceptualisation
Filep (2008)	'When a person is in flow, everything comes together for him/her and the person is totally involved in the activity at hand. The activity is highly rewarding in itself'	Action-awareness merging, autotelic experience, challenge, clear goals, loss of self-consciousness, total concentration, transformation of time, sense of control, unambiguous feedback	Tourism	Debriefing workshop
Cowley, Charles, Black and Kickey (2008)	'Heightened and improved state of mind experienced while engaged in a task and performing at their best'.	Challenge, control, concentration, clear goals, feedback, immersion, loss of self-consciousness, transformation of time	Video games	Conceptualisation
Guo and Poole (2008)	'The crucial component of enjoyment. A peculiar dynamic state - the holistic sensation that people feel when they act with total involvement. An ordered, negentropic state of consciousness'	Autotelic experience, concentration, mergence of action and awareness, transformation of time, transcendence of self, perceived control	Web users	Survey after online shopping experience
Hausman and Siekpe (2009)	'A cognitive state experienced during navigation involving machine interactivity, loss of self-consciousness and self-reinforcing'	Control, challenge and arousal, focused attention, interactivity and telepresence	Online shopping	Survey after online shopping experience
Lu, Zhou and Wang (2009)	'The holistic sensation that people feel when they act with total involvement'	Concentration, perceived control, perceived enjoyment	Internet Messaging	Survey of internet messaging experience

(1) Chronologic order

Source: Developed for this research

Ilsever, Cyr, Surrey and Parent (2007) proposed that elements of cognition and design were antecedents to flow. Smith and Sivakumar (2004) suggested investigating how flow facilitated different aspects of Internet shopping behaviour and how this relationship was moderated by consumer related factors, the nature of the product and the nature of the purchase. Siekpe (2005) compared whether challenge, concentration, curiosity and control were a consequence of being in flow state instead or vice versa, concluding that their reflective conceptualisation of flow outperformed their proposed formative model. Also Chen (2006) studied the correlations between positive affect and flow concluding that Web users who attain flow state are likely to experience positive moods, positive affects and enjoyable feelings on the Web. Guo and Pool (2008) tested Csikszentmihalyi's (1998) original model taking into account three preconditions of flow, suggesting that for flow to occur, a task should have a *clear goal*, a *feedback mechanism* and a perceived balance of *challenge and skill*. Their results showed that the perceived complexity of a Web site affected flow through the mediating effects of these three preconditions.

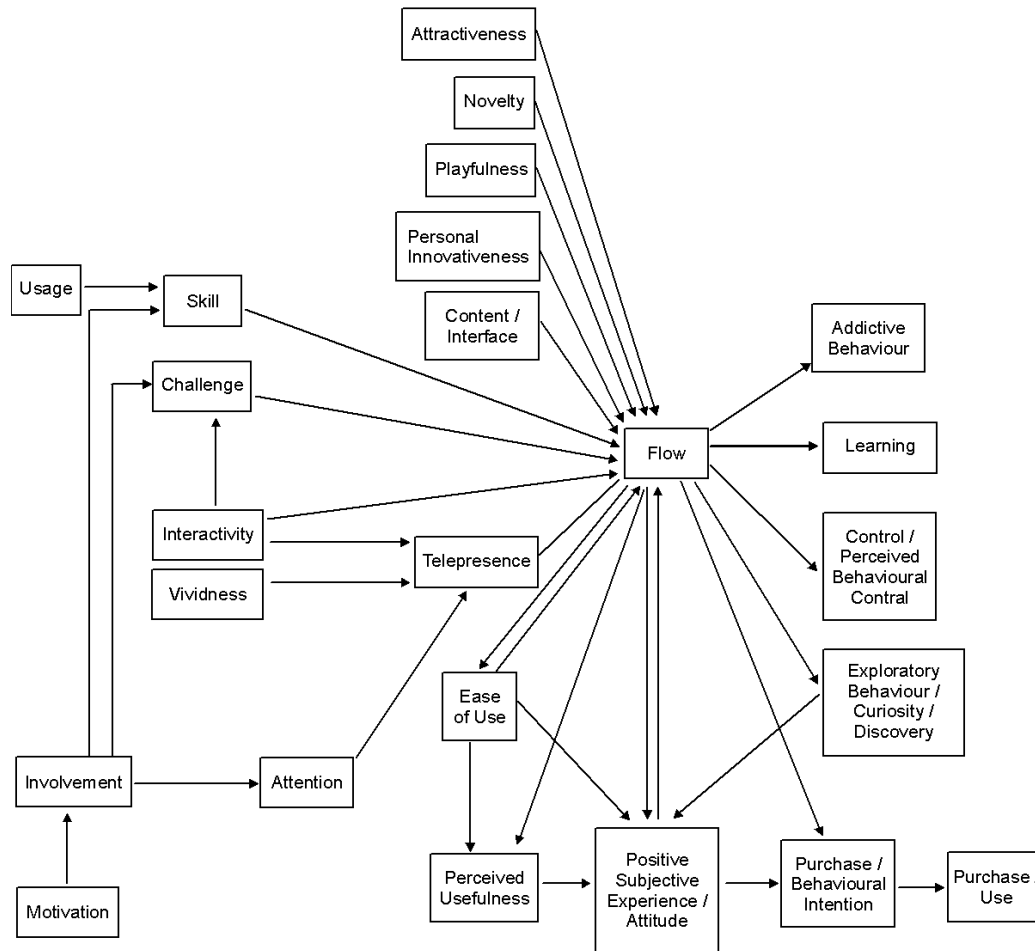
Hausman and Siekpe (2009) also found that perceived flow was positively related to perceived informativeness, to perceived entertainment, to perceived usefulness, intention to return to the Web site and intention to purchase from the Web site. Lu et al. (2009) combined flow theory, theory of planned behaviour and the technology acceptance model, in order to research Chinese users' acceptance of Internet messaging (IM). They only utilised two constructs, perceived enjoyment and concentration, in order to measure the flow experience when assessing the influence on attitude and intention towards using instant messaging. The researchers found that concentration and perceived enjoyment were positively related to the behavioural attitude towards IM, and that concentration and perceived enjoyment were also positively related to the behavioural intention to use IM. They recognised that flow is a complex concept that may include multiple dimensions, and suggested that further studies made within the Internet environment should pay closer attention to it.

Notwithstanding the wide employment and relevancy of flow theory in online consumer behaviour research, authors such as Finneran (2005) and Siekpe (2005) argued that there are discrepancies amongst the various flow models. Also Hoffman and Novak (2009), a decade after their first research article that set the foundation of their widely referenced work on flow, recognised that still not enough is known both about the factors that makes the Web a compelling experience for its users and the relevancy of the outcomes of the flow experience on online consumer outcomes.

The debate over the flow construct has proved that it is difficult to define and utilise in a real business context. Although their original research on flow had served used to address many positive marketing outcomes, there are still many issues that are unresolved. Building upon a model from 1999, Hoffman and Novak (2009) suggested a integrative conceptual model of flow taking into account further empirical studies up to 2009 from authors Agarwal and Karahanna (2000), Choi et al. (2007), Hsu and Lu (2004), Huang (2003), Korzaan (2003), Sánchez-Franco (2006) and Skadberg and Kimmel (2004). The integrative model is illustrated in figure 21.

Hoffman and Novak (2009) recognised that the concept of flow remains unclear, and as a consequence, there has not been an adequate online behavioural progress of empirical studies based on flow theory. This was also pointed out by Choi et al. (2007) who stated ‘the construct of flow is, however, too broad and ill-defined due to the numerous ways it has been operationalised, tested and applied’. It was also highlighted by Guo and Poole (2008) that most models focusing on flow on interactive information technologies were incomplete. Hoffman and Novak (2009) also affirmed that the measurement of flow can be overall classified as unidimensional and multidimensional, recommending the use of the latter whenever possible. They encouraged continuation of research: 1. clarifying the conceptual definition of flow; and 2. identifying the marketing outcomes of the construct. Table 8 summarises conceptual and structural models developed for the context of Internet marketing based on flow theory.

Figure 21. Integrative conceptual model of flow



Source: Hoffman and Novak (2009)

Table 8. Summary of conceptual and structural models of flow theory

RESEARCHERS <i>and model type</i>	ANTECEDENTS	DIMENSIONS OF FLOW	CONSEQUENCES
Agarwal and Karahanna (2000) <i>Structural model</i>	Playfulness, personal innovativeness	Higher-order construct of cognitive absorption: curiosity, control, temporal dissociation, focused immersion, heightened enjoyment	Perceived usefulness, perceived ease-of-use, behavioural intention
Bridges and Florsheim (2008) <i>Empirical model</i>	Telepresence, time distortion, arousal, challenge, skill, control, interactivity, importance	Not directly measured	Pathological Internet use, online buying
Choi, Kim and Kim (2007) <i>Structural model</i>	Learner interface, interaction, instructor attitude toward students, instructor technical competence, content	Unidimensional flow	Attitude toward e-learning, learning Outcomes

Summary of conceptual and structural models of flow theory (continuation)

Chou and Ting (2003) <i>Structural model</i>	Repetitive behaviour	Higher-order construct: empathy and discovery	Addictive behaviour, self-control disorder, obsession, goal confusion
Dailey (2004) <i>Conceptual model</i>	Navigational control	Unidimensional flow	Attitude, Web site approach / avoidance behaviour
Finneran and Zhang (2003) <i>Conceptual model</i>	Artefact, person (trait, state), task	Multi-dimensional construct. Dimensions not specified	Not specified
Hoffman and Novak (1996) <i>Conceptual model</i>	Skill, challenge, interactivity, vividness, involvement, telepresence, focused attention	Unidimensional flow	Increased learning, perceived behavioural control, exploratory mind-set, positive subjective experience
Hsu and Lu (2004) <i>Structural model</i>	Perceived ease of use	Unidimensional flow	Attitude toward playing online game, intention to play online game
Huang (2003) <i>Structural model</i>	Complexity, interactivity, novelty	Multi-dimensional construct (control, attention, curiosity, and interest)	Utilitarian and hedonic Web performance
Huang (2006) <i>Structural model</i>	None specified	Three higher-order constructs: 1) Flow: control, curiosity, enjoyment, interest. 2) Situational involvement: curiosity, interest, risk, attention focus, personal relevance. 3) Enduring involvement: enjoyment, interest, personal relevance, self-relevance	Not specified
Korzaan (2003) <i>Structural model</i>	None specified	Unidimensional flow	Exploratory behaviour, attitude, intention to purchase
Koufaris (2002) <i>Structural model</i>	Product involvement, skill, search mechanisms, challenge	Not directly measured. Instead used control, shopping enjoyment, concentration, perceived usefulness, ease of use	Unplanned purchases, intention to return
Luna, Perrachio and de Juan (2002) <i>Conceptual model</i>	Content characteristics, skill, challenge, perceived control, unambiguous demands, focused attention, attitude toward site	Unidimensional flow	Revisit intention, purchase intention, purchase
Luna, Perrachio, and de Juan (2003) <i>Structural model</i>	Attention, challenge, interactivity, attitude toward site	Unidimensional flow	Purchase intention, revisit intention

Summary of conceptual and structural models of flow theory (continuation)

Novak, Hoffman and Yung (2000) <i>Structural model</i>	Online tenure, skill, control, interactivity, challenge, arousal, importance, focused attention, telepresence, time distortion	Unidimensional flow	Exploratory behaviour (via telepresence)
Pace (2003) <i>Conceptual model</i>	Curiosity, time urgency, goal, usability, skill, challenge, distractions, content interest, progress toward goal, attention focus	Multi-dimensional construct: joy of discovery and learning, reduced awareness of surroundings, time distortion, merging of action and awareness, sense of control, mental alertness, telepresence	None specified
Richard and Chandra (2005) <i>Structural model</i>	Reasons to visit, OSL, skill, challenge, interactivity, navigational cues, need for cognition, site involvement	Not directly measured	Exploratory behaviour, attitude, pre-purchase intention
Sánchez-Franco (2006) <i>Structural model</i>	Usefulness, ease of use	Higher-order construct: enjoyment and concentration	Attitude, intention, usage
Shin (2006) <i>Conceptual model</i>	Skill, challenge, concentration, goal, gender	Higher-order construct: enjoyment, telepresence, focused attention, engagement, time distortion	Achievement, satisfaction
Skadberg and Kimmel (2004) <i>Structural model</i>	Ease of use, speed, attractiveness, interactivity, skill, challenge	Higher-order construct: time distortion and enjoyment	Learning about a place, change of attitude and behaviour
Smith and Sivakumar (2004) <i>Conceptual model</i>	None specified	Flow characterized in terms of intensity and duration	Browsing, one-time purchase, repeat purchase, all moderated by risk, willingness to buy, self-confidence, product characteristics, purchase occasion
Woszczyński, Roth, and Segars (2002) <i>Conceptual model</i>	Openness to experience, OSL, cognitive spontaneity, emotional stability, computer anxiety	Flow state (internal) Playful behaviours (external)	User satisfaction, computer proficiency, personal innovativeness in IT

Source: Hoffman and Novak (2009)

Flow theory has also been considered within tourism research. Filep (2008) used flow theory to study how the tourists experienced satisfactory and engaging moments during tourist visits, and found that aspects of flow produced highly satisfactory outcomes for visitors. He also showed that tourist satisfaction is partially

a product of these dimensions, alongside *eudaimonia* and *surprise*. A similar notion of flow has also been referred to in air travel research: *booking flow* was used to refer to the smoothness of buying and ordering for product or services from a Web site. This is particularly relevant in the air travel industry as airlines should show that they are aware of their customers (Junaini and Sidi, 2007).

Whilst flow is an enjoyable experience that can be achieved whilst navigating on a Web site and can be used to explain and promote both *hedonic* and *utilitarian* qualities of Web sites (Zhang and Li, 2005), the following section explains these two approaches as well as research based on these.

2.5. HEDONIC AND UTILITARIAN APPROACHES IN ONLINE RESEARCH

Whilst offline research has developed research based the relevancy of hedonic and utilitarian aspects of consumer needs (Bigné et al., 2008), these approaches have also been utilised in Web environments, as Web shopping presents an opportunity for creating rich cognitive and aesthetic environments. Childers et al. (2001) found support for distinguishing between two ways of assessing Web performance: hedonic and utilitarian. They suggested that hedonic, immersive aspects of Web play at least an equal role of instrumental or utilitarian aspects of Web, and that both approaches should be taken into account when designing online interactive retail shopping environments.

Hedonic approach. Apart from visiting Web sites for obtaining information, users can also visit for entertainment (Huang, 2003). The hedonic aspect of Web performance is the evaluation of a Web site based on the assessment by users regarding the amount of fun, playfulness, and pleasure they experience or anticipate from a site. It reflects a Web site's entertainment value derived from its sensory attributes, from which users obtain consummatory affective gratification. A Web site performs well hedonically when users perceive the site to be enjoyable in its own right, apart from any performance consequences that may be anticipated (Venkatesh, 2000).

Utilitarian approach. Utilitarian Web performance is the evaluation of a Web site based on the assessment of users regarding the instrumental benefits they derive from its non-sensory attributes (Huang, 2003) and their purchase efficiency (Ruiz and Sanz, 2006). Utilitarian performance results from users visiting a site out of necessity rather than for recreation. Hence, this aspect of performance is judged according to whether the particular purpose is accomplished (Davis et al., 1992; Venkatesh, 2000). The perception of the utility provided by the Internet is greater if consumers have had previous experience with the medium (Ruiz and Sanz, 2006).

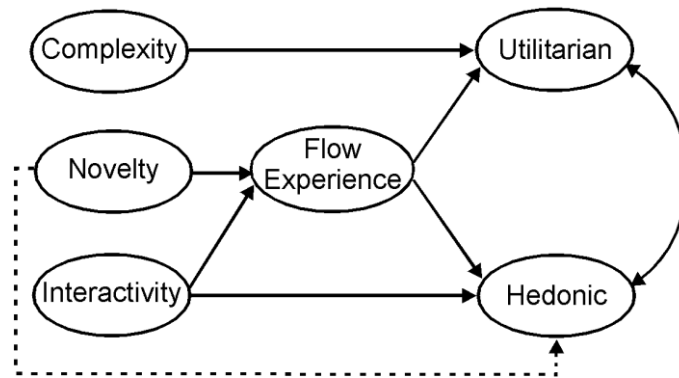
In the following section we shall describe research regarding how these two perspectives have been utilised in online consumer behaviour.

2.5.1. Online consumer research based on Web site hedonic and utilitarian approaches

Ruiz and Sanz (2006) measured utilitarian and hedonic motivations of 5005 respondents who completed an online questionnaire, and found how these six dimensions had influenced the motivations to make online purchases and could be used to assess the future behavioural intention towards using the Internet again. They measured utilitarian motivations with five dimensions: easiness, time saving, variety and size of choice, access to products not available in the local markets and reduction in price. Hedonic motivations were measured with one dimension enquiring trial motivations. The researchers revealed that Internet shoppers valued all five aspects measured with the five dimensions. Based on flow research, Arnold and Reynolds (2003) developed a hedonic shopping motivation scale that consisted of six motivation profiles for shopping: adventure shopping, gratification shopping, idea shopping, role shopping, social shopping and value shopping. The outcomes of the research were that there are five shopping profiles, which they named *gatherers*, *enthusiasts*, *minimalists*, *providers* and *traditionalists*. Also Bridges and Florsheim (2008) undertook research in order to find out if the hedonic and utilitarian elements of flow could lead to increase online purchase. Their results suggested that utilitarian flow elements that facilitate shopping may increase purchase. However they found that the hedonic elements of flow were not related to online buying, although they

were positively related to dimensions related with pathological use of the Internet. In the field of tourism, McCabe (2000) recognised the role of hedonic response in touristic decisions as well as the range of subdecisions in this process and argued that tourism motivation is a multidimensional concept which changes through the travel process. Finally, Huang (2003) developed a model to discover if Web sites could be simultaneously hedonic and utilitarian, revealing a positive correlation between hedonic and utilitarian aspects of Web performance enabling her to affirming that if a Web site satisfies the needs of users in one of the aspects, it will activate the other, which in turn will increase overall satisfaction towards the Web site. In order to measure the hedonic performance of Web sites, she utilised a five item scale: 1. agreeable–disagreeable; 2. entertaining–weary; 3. nice–awful; 4. pleasant–unpleasant; and 5. soothing–aggravating. For the measurement of utilitarian performance, the items used were: 1. correct-wrong; 2. effective-ineffective; 3. ordered-chaotic; 4. reliable-unreliable; and 5. wise-foolish. Figure 22 illustrates her model.

Figure 22. Direct and indirect impacts of Web attributes on the utilitarian and hedonic aspects of Web performance, treating flow as an overall experience



Source: Huang, 2003

2.6. CONCLUSION OF THIS CHAPTER

This chapter was dedicated to the description of bodies of research pertaining to the online behaviour of consumers. These bodies of research have been built upon previous classic models of consumer-technology acceptance. The very much valued classic models are simpler than the recent ones developed for modelling online

consumer behaviour. All models have in common that they try to predict attitude, intention and behaviour. This could serve to underline that technology should be designed for humans, so that humans can develop their attitudes and intentions that lead to actual behaviour.

In this chapter we also compared online consumer behaviour and human-computer interaction theoretical frameworks. There is an outstanding overlap between these two research disciplines and this has been illustrated in table 4. Whilst OCB is a marketing discipline, HCI belongs to the field of information systems and specifically focuses on how interaction is made amongst the users of IS, that is, people. Whilst the framework of Zhang and Galleta (2006) pays special attention to human issues, including cognitive, emotional and motivational, the frameworks suggested by Kwong et al. (2003) and Cheung et al. (2005) do not consider interactivity, which is considered by many researchers as the key advantage of the Internet medium. The similarities and overlaps across the fields of research of OCB and HCI, and the lack of interdisciplinary research evidence the disconnection between them. Perhaps OCB researchers have not been fully aware of the research offered by HCI, or perhaps that HCI researchers are not fully aware of consumer oriented research. Stibel (2005) had previously affirmed that OCB literature is too fragmented.

The scarcity of combined consumer-technology models creates a substantial opportunity for undertaking interdisciplinary research, following the recent calls of Spink and Jansen (2008) and Dennis et al. (2010), who proposed an integrated model and recognised the difficulty of building such a model ‘from the ground up’. Likewise, Taylor and Strutton (2009) suggested that OCB and HCI researchers should collaborate so that OCB research ‘can move forward into the next era’. Accordingly, it seems reasonable to suggest that combined consumer-technology approaches are needed and specifically marketers should ensure that developments are beneficial for consumers in order to foster exchange between technology and consumers.

In OCB research the most referenced models are based on TAM, TPB, TRA and flow theory (Cheung et al., 2005; Kwong et al., 2003). Although flow is a well-established concept that has been applied to experiences with computers and Web sites, there is still a controversy regarding its definition and dimensions as applied to the online world. However it has been recognised as area with thriving growth potential for research within online marketing. The section on flow theory has served as an introduction to the concept of *engagement*, core construct of this thesis. Engagement has been described as a ‘subset of flow’, ‘flow in a more passive state’, and ‘flow without user control’ (Webster and Ahuja, 2004) or related to flow (Chapman et al., 1999). Whilst flow experiences should be taken into account when designing Web sites, it seems that the variables measuring flow within the online medium should be specific for this medium. Likewise, as suggested by Guo and Poole (2008), research for the context of Web sites should also be specific for this context. Despite the importance of flow, Cheung et al. (2005) did include this construct within their OCB framework, but Kwong et al. (2003) did not. Once again, this could serve to evidence the fragmented nature of OCB literature as claimed by Stibel (2005). Finally, in our theoretical review we also gave an insight into how OCB researchers are taking into account the both utilitarian and hedonic qualities of Web sites, and the influence the experience of Web visitors when developing OCB models.

A broad conclusion to this chapter is that, in the particular case of Web sites, researchers from both disciplines, should work together in the development of Web site research, so that *exchange*, one of the fundamentals of marketing (Bagozzi, 1975), can take place amongst online companies and consumers (Taylor and Strutton, 2009). Despite the heterogeneity that exists amongst the design of Web sites Pace (2004), Stibel (2005) already made clear that, unfortunately, for the development of Web sites, most companies simply rely on information presentation models developed by engineers, and ignore the needs of their target consumers and their multidimensionality as people.

CHAPTER 3

CONCEPTUAL FRAMEWORK OF WEB SITES, WEB SITE ENGAGEMENT AND ONLINE CONSUMER CHOICE BEHAVIOUR

3.1. INTRODUCTION

The previous chapter was dedicated to the delimitation of the discipline of online consumer, to the analysis of its principal theories and to evidencing an overlap between online consumer behaviour and human computer interaction research frameworks, as has been illustrated in table 4. This overlap justifies the combined consumer-technology research approach upon we shall ground this thesis. The objective of this chapter is to undertake a consumer-technology theoretical review regarding relevant online marketing research which shall allow us to answer our research question and research issues. Accordingly, in this chapter we will concentrate on some of the overlapping online consumer behaviour / human-computer interaction issues described in table 4. These issues have been summarised in table 9 which has two parts. The first part illustrates the overlapping consumer-technology research areas selected from table 4 on which we will focus, and the second part illustrates further areas of research from marketing and information systems which were not referred to in table 4 but are necessary for the development of this thesis and will be therefore reviewed in this chapter.

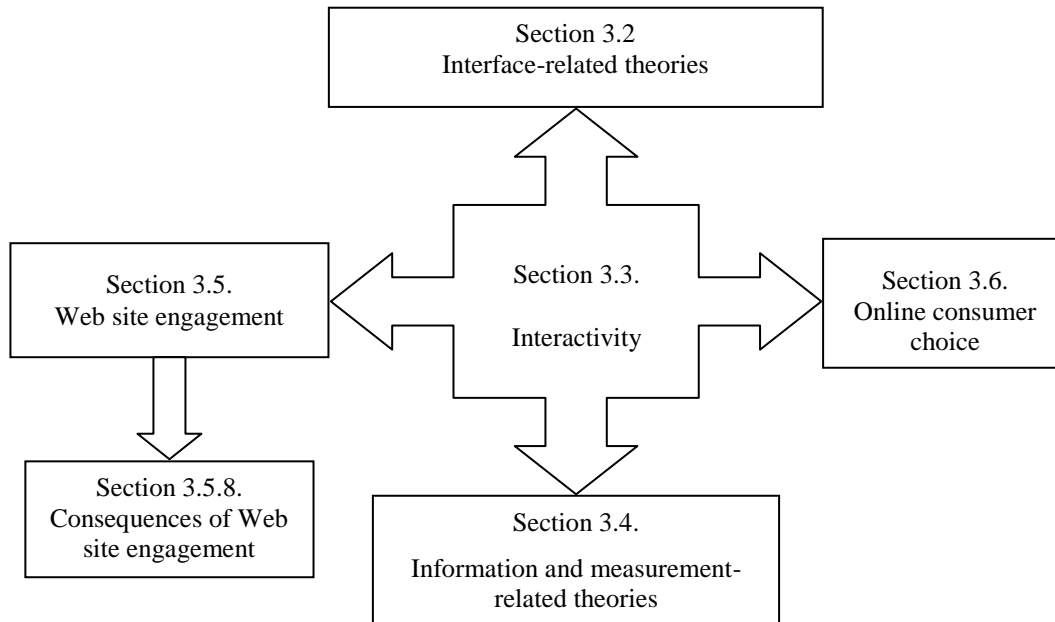
Table 9. Focal research areas utilised in this doctoral thesis

<p>PART 1. OCB-HCI research areas from table 4</p> <ul style="list-style-type: none"> • Intention • Behaviour • Adoption • Affect • Flow • Experience • Motivation • Effectiveness / efficiency / performance / productivity / navigation • Continuance • Interface • Information presentation • Web site design • Information presentations • Layout • Usability / ease of use
<p>PART 2. Further marketing and information systems research</p> <ul style="list-style-type: none"> • Interactivity • Human-computer fit theories • Obtention of information • Information acquisition • Online search • Tracing navigation behaviour

Source: Developed for this research

For an easier comprehension of how these focal areas of research have been organised throughout the rest of this chapter, all the issues comprised within table 9 have been graphically reorganised in figure 23.

Figure 23: Organisation of the theoretical framework of chapter 3



Source: Developed for this research

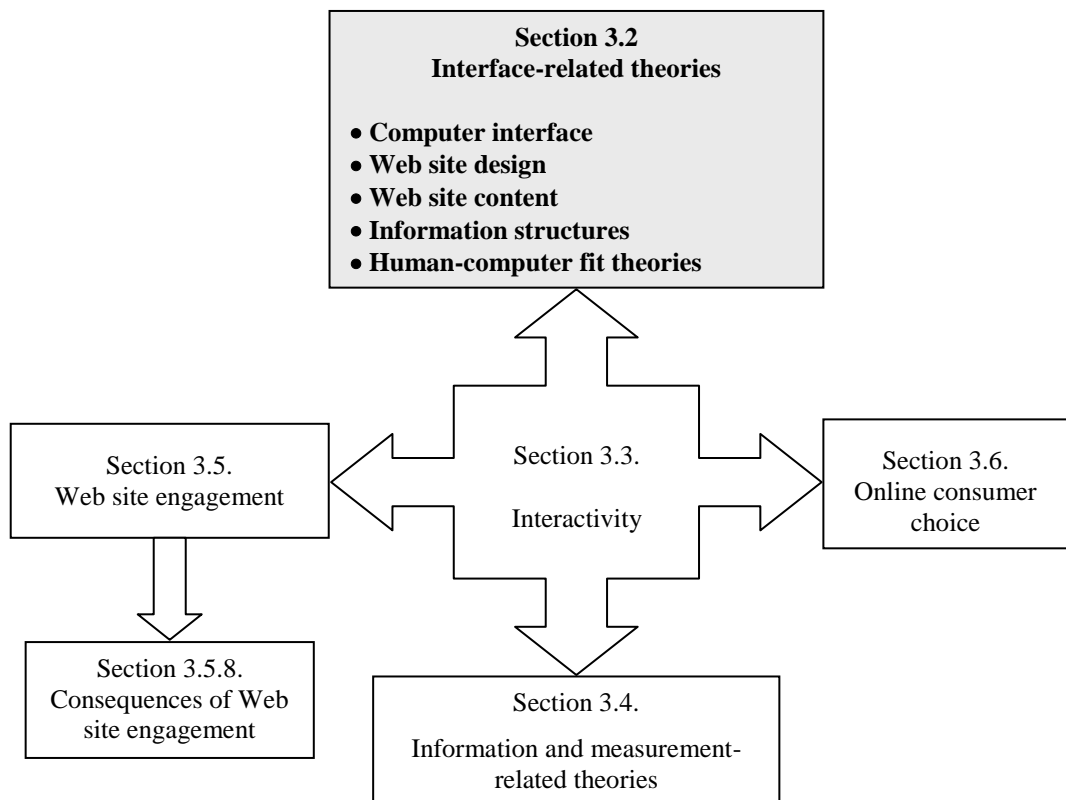
This chapter will therefore concentrate on the implications of Web design and information structures of online consumer behaviour (section 3.2), the implications of interactivity, usability and fit theories on online consumer behaviour (section 3.3), the capability of the Internet for providing information to consumers and to companies and the capability web as a measurable medium (section 3.4). This leads into the core section of this thesis, a theoretical framework of Web site engagement, its dimensions and antecedents (section 3.5). This is followed by a review of potential consequences of Web site engagement with relevant managerial interest (section 3.5.8). We will then review literature on online consumer choice behaviour (section 3.6) and finally we will make a conclusion to this chapter (section 3.7).

3.2. IMPLICATIONS OF WEB DESIGN AND INFORMATION STRUCTURES ON ONLINE CONSUMER BEHAVIOUR

3.2.1. Introduction

This section reviews research regarding technological implications of Web sites of online consumer behaviour. Due to the objectives of this thesis, in this section we concentrate on the implications of visual elements of Web interfaces and Web site design. Accordingly, we shall revise research on interface design, Web site design, information architecture and structure and Web site content. Figure 24 illustrates the connection of this section with the overall theoretical framework of this chapter.

Figure 24: Connection of section 3.2. with the overall theoretical framework of this chapter



Source: Developed for this research

Online shopping environments are playing an increasing role in the overall relationship between marketers and their consumers. Web sites are often the only

source of cues that shoppers have to form impressions and make decisions about their future relationship with a retailer. Research in marketing planning has argued that Web site appearance and site design are central to online exchange, which in turn are critical for the understanding the impact of online shopping environments on consumer response (Demangeot and Broderick, 2006).

Electronic commerce and online shopping, to a great extent, depend upon Web interfaces and how users interact with them (Lohse and Spiller, 1998; Hong et al., 2005). Although designing Web home pages is a challenging task (Singh, Dalal and Spears, 2005), their content should be organised so that their users can receive expected information in the best possible fashion (Stibel, 2005). As there is no standard way of presenting information, and because the presentation of each Web site should depend on its' specific goals, as discussed by Junaini and Sidi (2007), product and user characteristics should be taken into account when designing e-commerce sites. Other researchers argued that different types of information formats are suitable for different types of products, as they influence how consumers process information and solve problems (Hong et al., 2005).

As research has acknowledged that the failure of commercial Web sites is the result of neglected consumer needs, and due to the fact that users have to learn how to use each Web site they utilise (Hausman and Siekpe, 2009; Junaini and Sidi, 2007), the following section reviews research concerning the implications of interface design and Web site design on online consumer behaviour.

3.2.2. Computer interface design

An 'interface is a form of artistic imitation: a *mimesis*' (Laurel, 1986). This researcher compared an interface to a play: the purpose of a play is to induce the emotional and rational engagement of the audience, and similarly an interface must rationally and emotionally engage users in order to satisfactory reach goals. As online consumers have to base their judgment on the product information presented on Web sites, Web interface design plays a significant role in affecting consumers' online shopping performance and attitude towards Web sites (Hong et al., 2005).

How information is displayed directly impacts how it is interpreted and used. At the core of any solution, is the way in which complex information, such as the online information involved in purchasing decisions, is represented. In order to make these representations, it is essential to accurately depict information and enable consumers to understand how that information will be used (Ariely and Simonson 2003; Stibel, 2005). Robust manipulations of user interfaces must be employed to provide a better mental representation of information and consumer goods. By taking advantage of a few key principles from the decision-making and economics literature, online storefronts can be made more user-friendly, and thereby increase sales (Stibel, 2005). Web sites provide the key interface for the use of the Internet. An interface represents the union of information design (i.e., how data is categorised, presented and made meaningful to the user), interaction design (i.e., how the information tells a story), and sensorial design (i.e., the techniques employed to stimulate and utilise the five senses) (Tarafdar and Zhang, 2008).

Consistent research has supported the notion that the manner in which information is presented to consumers has a significant effect on the manner in which they process it. This effect is due to at least two related factors. First, consumers tend to minimise their information processing efforts and are consequently sensitive to any factor, including information presentation format, which affects how easy it is for them to process information. Secondly, information presentation formats makes certain aspects more or less salient and, accordingly, more or less important when making decisions (Simonson, 1999). Lohse and Spiller (1998) acknowledged that the way in which information is displayed can change decisions, and understanding these influences is relevant for the design of interfaces for electronic commerce. Building upon this notion, Hausman and Siekpe (2009) found how both computer factors and human factors positively influenced the informativeness of a Web site.

Recent studies affirm that how potential customers view computer interfaces can lead to a sustainable competitive advantage (Hausman and Siekpe, 2009; Richard, 2005). Users assess positively Web sites based on the organisation of their contents and their informativeness. If online retailers want to appeal to their customers, they

should take into account their preferences and have an understanding of how Web interfaces are perceived (Hausman and Siekpe, 2009). In this direction, Junaini and Sidi (2007) suggested that customers should be consulted in order to create site interfaces that meet their requirements.

Research in human vision and perception had also suggested that the distance of an object from the area of focal attention can determine the amount of attention it receives (Hong et al., 2005). Consumer scanning patterns also have implications for interface design of information systems, especially for those that force consumers to acquire information serially. Displays in which there is more than one product in a row are not likely to be as useful for studying scanning sequence effects and recording eye movement, especially when there are long page listings (Hong et al., 2005). In traditional vision research, experimental tasks are composed of relatively simple activities, such as viewing and recognising, whereas online shopping tasks involve more difficulties, such as the familiarity of consumers with Web sites, previous knowledge of the product category, and personal preferences. Despite these differences, knowledge from vision research can still be valuable in understanding how Web interfaces affect consumers' online shopping behaviour (Hong et al., 2005).

In order to improve online performance, online retailers must assiduously concentrate every aspect of Web site development and execution, including Web site design (Elliot and Speck, 2005) which shall be discussed in the following section.

3.2.3. Web design

Web design is the process of designing a user interface, a Web site architecture, the information delivery method and a mode of feedback. All four components are essential to an effective, usable web site (Brush, 2001).

As a marketing channel, the Internet differs itself from traditional retail formats in many ways. A unique characteristic of online shopping is that consumers cannot

touch or smell products as they usually do in traditional retail outlets, and have to base their judgment on the product information presented on Web sites. As a consequence, Web design plays a significant role in affecting consumers' online shopping performance and attitude towards Web sites (Hong et al., 2005). Web design is also critical for building customer relationships, facilitating customer support and converting online visitors into customers (Hausman and Siekpe, 2009). A successful Web site for electronic commerce is one that attracts customers, makes them feel the site is trustworthy, dependable and reliable, and generates customer satisfaction (Flavián et al., 2008).

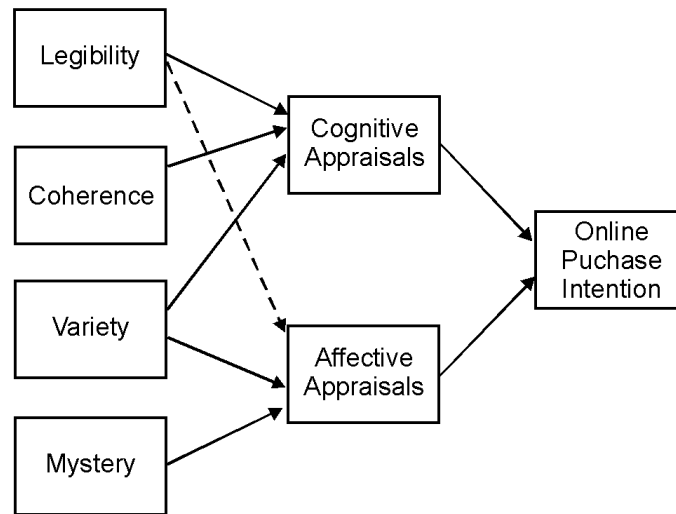
Web site attractiveness is a major factor for determining how long users stay at a particular site. It is known that effective and fascinating catalogues give a good impression to customers. Product image design should match a site's overall theme and style with its intended target audience. The product images used should be of the highest quality to present only the most relevant detail (Barnard and Wesson, 2004; Junaini and Sidi, 2007). Roberts, Rankin, Silver, Moore, Plunkett, Washburn and Wilch-Ringen (2003) affirmed that attractiveness is the strongest factor of an inspiring Web site. Incorporation of attractive Web graphics is also believed to have an impact on the ways in which users perceive Web sites (Junaini and Sidi, 2007). Research has also proved how the visual treatment of products on Web sites affects customer choice, for both novice and expert users (Mandel and Johnson, 2002). Also Jarvenpaa (1990) found that differences in graphical formats accounted for a large proportion of the variance in the acquisition and evaluation of information.

Mandel and Johnson (1999) had previously proved that what visitors are exposed to, has an impact on their purchase behaviour and, consequently, on the sales conversion rates of Web sites. Richard (2005) studied the relationship between online store atmospherics and Web design, and found that these two factors were determinants of the effectiveness of Web sites. Kumar and Bensabat (2002) suggested that communication relationship between users and a Web site can be developed given proper Web site design. They described such a relationship as a *para-social* presence, a sense of understanding, connection, involvement and

interaction between users and a Web site. Rosen and Purinton (2004) affirmed that a Web designer can ‘tap into the cognitive maps individuals employ to make sense of their world thus building sites users feel comfortable returning to again and again’.

Overall impressions of Web design were researched by Flavián et al. (2008), who undertook a heuristic evaluation of Web site design features that could influence consumer perception and behaviour. As an outcome of their research they recommended paying special attention to the following aspects of Web design: smart and good aesthetic site appearance, as this influences credibility; download speeds; simplicity of design that allows freedom of movement, as this in turn would increase satisfaction and purchase intention; control of navigation; organisation of content including a site map; navigation bar and backward button; quality images and of information that should be updated; comprehensive and relevant availability of additional information such as reviews; structure of contents and navigation; presence of a phone number for assistance; possibility of simulated purchase emphasising efficiency of processes in a step-by-step clear and easy fashion; and finally security and privacy issues.

Web site design research has also been approached from a landscape theory perspective. Lee and Kozar (2009) adopted and extended the landscape preference model (Kaplan and Kaplan, 1988) by including factors legibility, coherence, variety, and mystery, and examined their effect on consumer cognitive and affective appraisals and in consequence their impact on purchase intention. They developed a model of usability as a way to understand Web design factors and their effect on the perceptions of online consumers. The model provided guidelines for designing a usable Web site and the metrics needed to evaluate their usability, which can serve to compare one site to other competing alternatives. Their model suggested that people develop a positive attitude towards Web sites that are coherent, legible, varied, and have aspects that inspire their curiosity through mysterious features. They affirmed that these factors influence cognitive and affective appraisals that in turn predict online purchase intention. Figure 25 illustrates their model.

Figure 25. Lee and Kozar's landscape model

Source: Lee and Kozar (2009)

A Web site can also be considered as a representative of a business (Li et al., 2006) as users do not perceive a Web site as separate from the online retailer supporting it. Users do not contact anyone on the vendor's side, but simply rely on the Web site and treat it as a business representative (Gefen, Karahanna and Straub, 2003). In this direction, Anton and Phelps (2002) affirmed that a substantial proportion of firms' communications with their customers occurs through online channels, therefore firms should pay special attention to the definition and management of the physical surroundings of a Web site. Likewise, Palmer (2002) found that Web site design, usability and media richness were closely associated with Web site success, which he measured with user satisfaction, likelihood of return and frequency of use. In this direction, Rosen and Purinton (2004) revealed how Web content positively influenced repeat visits to Web sites. This was also supported by Mohammed, Fisher, Jaworski and Cahill (2001) who suggested that shopping environments are likely to be particularly important in online contexts for brands or sellers that are unknown to consumers. Web site design becomes a critical factor not only when deciding whether or not to purchase on a current visit, but also whether to return to a site at a later time. Also Karson and Fisher (2005) revealed that Internet advertising environments can have a direct effect on the intentions to return to the site in addition to traditional routes via brand attitude. Finally, Lorenzo, Gómez and Mollá

(2007) researched the effects of different Web structures and presentation of products on internal and behavioural responses of consumers. Their results demonstrated that, if Web marketers design stores that do not restrict user navigation and offer navigation designs that allow greater freedom of navigation through multiple links, search windows distributed through a site, and animated layouts such as 360° visualisation of products and video, due both the utilitarian and hedonic Web attributes, this would generate increased positive responses on consumers and as a consequence, sales.

There is a body of research which refers to the influence of the simplicity and complexity of Web design on online consumer behaviour.

3.2.3.1. Simplicity and complexity of Web site design

Simplicity of design has become the mantra of some Web design gurus as it largely affects the design and function of a Web site, therefore Web interfaces should be as simple as possible (Rosen and Purinton, 2004). Flavián et al. (2008) emphasised navigation Web site navigation characterised by simplicity allows customers to have certain degree of freedom which could enhance their satisfaction with the Web site and also purchase intentions. For instance, buttons should be self-explanatory and descriptive. Also Junaini and Sidi (2007) affirmed that nice and clean layouts and a detailed and accurate product description are crucial for site effectiveness.

In contrast, increased Web page complexity contributes to making Web pages more interesting, which in turn influences visitors' attitude towards a Web site (Brumar and Kumar, 2000). These researchers found that at low levels of complexity, Web page complexity had positive effects of a viewer's attitude towards the Web site, but at high levels of complexity, it had a negative effect on the attitude towards it. Geissler, Zinkha and Watson (2006) affirmed that the complexity of a home page is influenced by the size or length of the home page, the number of graphics other than the company logo, the number of links, and the use of motion. Finally, Rosen and Purinton (2004) affirmed that complex Web environments encourage exploration.

Research has also studied the relationship between Web site design and consumer satisfaction.

3.2.3.2. Web site satisfaction

Whilst research has also studied the relationship between Web design and consumer satisfaction, it is not yet clear whether this relationship is consistent. Szymanski and Hise (2000) found significant associations between perceptions of site design and subsequent assessments of e-satisfaction. However, Devaraj, Fan and Kohli (2006) did not find support for Web site design being related to online consumers' satisfaction, although did find evidence for satisfaction being strongly related to consumer preference for operating online. Based on the fact that Web shopping involves a number of phases including the information phase in which customers search for information regarding their intended purchases, McKinney, Yoon and Zahedi (2002) suggested nine constructs for the measurement of customer-Web site satisfaction.

There is also a body of research regarding how impressions of offline stores influence online stores and vice versa.

3.2.3.3. Cross-channel effects of Web site design

Verhagen and van Dolen (2009) studied how impressions of both an online and offline store can influence consumer online purchase intentions. Their empirical results suggested that offline store image perceptions adding to in-store atmospherics were likely to keep customers away from online purchase intentions and provided offline stores with a differential advantage. They also revealed that offline store atmospherics had a negative impact on online purchase intention, but had a positive impact on value for money.

Studying the cross-channel effects of informational Web sites, Tjerling (2007) concluded that online searches positively influenced the money spent per product purchased in the offline world, but lowered the average number of shopping trips customers make. Also Verhoef, Neslin and Vroomen (2007) affirmed that there are

both within and between channel cross-over effects across different shopping tasks. Finally, Kushwaha and Shankar (2005) found that multichannel customers are more valuable.

The influence of Web site content on online consumer behaviour has also been studied by a number of researchers.

3.2.4. Web site content

Web site content plays a critical role in integrated marketing communications content management, and should be dealt in a different way than in offline media (Virtsonis and Harridge-March, 2008). Rosen and Purinton (2004) had warned that computer screens cannot handle the same amount of information as effectively as offline media such as newspapers, and therefore contents should be adequately designed for the online medium. The Web in turn allows that the information contained within Web pages can be reorganised at any time in order to attain greater prominence (Stibel, 2005). Whilst some authors consider Web site information content, organisation and management as key issues for the achievement of success of an online business (Hong et al., 2005), others consider that high quality and accurate information, the goods contained and efficient and attractive navigation are more relevant in online activities (Flavián et al., 2008).

Web sites are capable of presenting up-to-date content (Hausman and Siekpe, 2009; Huang, 2003; Spink and Jansen, 2008) which can be presented to the visitors of a Web site in a personalised manner (Sádaba, 2000). Due to the benefits of reduction of search efforts (Ariely, 2000), and as information attracts consumers (Su, Comer and Lee, 2008), Web content should be often refreshed (Johnson et al., 2004). Likewise the information obtained by consumers should be perceived as beneficial and will search for information as long as their perceived benefit from doing this is larger than the cost involved (Bettman et al., 1998; Jepsen, 2007).

Web site revisits can be encouraged by offering valuable information on the site and by changing some of the content frequently so that there is always something new to

offer (Supphelen and Nysveen, 2001). Chaffey, Mayer, Johnstone and Ellis-Chadwick (2001) suggested that high-quality content, ease of use and frequent updating were determinants of customers' intentions to revisit Web sites. Obsolescence of information is a problem that also prevails in electronic markets (Öörni, 2005). Stigler (1961) attributed the need to search for information due to the desire to have up-to-date information that could have become obsolete, warning that when this occurs, users are faced with the situation of having to undertake larger searches than expected.

The information contained in Web sites must also be legible. This was acknowledged by Lee and Kozar (2009) who concluded that, apart from information content, coherence, diversity and Web site mystery, it was legibility that had the greatest influence when studying the success factors of how Web sites communicate with their consumers. Legibility also invoked positive appraisals.

Based on Kaplan's preference matrix (Kaplan and Kaplan, 1998), Rosen and Purinton (2004) studied how this could be used to understand Web site content as a means for identifying underlying dimensions of Web site design, that in turn could lead to higher likelihood of revisit. Kaplan and Kaplan (1998) revealed that making or *understanding*, and involvement or *exploring*, represent people's two basic informational needs.

Table 10. Kaplan's preference matrix

	Understanding	Exploration
Two-dimensional	Coherence	Complexity
Three-dimensional	Legibility	Mystery

Source: Kaplan and Kaplan (1998)

The matrix, illustrated in table 10, was then utilised by Rosen and Purinton (2004) as a basis for developing a Web site preference scale that analysed the coherence, complexity and legibility of Web sites. The scale is illustrated in table 11.

Table 11. Web site preference scale and Web design features

Coherence	Complexity	Legibility
1. Simplicity of design	1. Variety in content (text and graphics)	1. Mini home page on every subsequent page
2. Easy to read	2. Changing graphics	2. Same menu on every page
3. Use of categories	3. Different categories of text	3. Site map
4. Absence of information overload		
5. Adequate font size		

Source: Rosen and Purinton (2004)

Finally Xu and Kim (2008) investigated how online order effects and market competitive factors affected consumers' attention to online vendors. Their study demonstrated that advantageous virtual locations could help consumers discover a vendor's services and other value added aspects, leading to a better impression and to a higher probability of acceptance.

Having described research regarding how computer interfaces and Web design have an influence on how consumers behave on Web sites, the following section refers to how information structures and architecture on Web sites also influence online consumer behaviour.

3.2.5. Information structures and information architecture

Both information structures and information architecture to mediate the way in which consumers relate to Web sites. Information structures are defined as the presentation and organisation of information about the available alternatives and their attributes (Hong et al., 2005). Information structures differ to *information architecture*, which is a map of the underlying information structures, defined by Davenport (1997) as 'simply a set of aids that match user needs with information resources'. Information architecture is highly relevant in information-rich systems such as Web sites as they contribute significantly to the way in which users interact with their content (Toms, 2002). Web designers can base their overall designs

utilising common structures used in Web sites. These habitual information structures used in Web interface design are illustrated in figure 12.

Table 12. Habitual information structures used in Web interface design

Structure	Researchers
List format	Flavián et al. (2009); Lorenzo et al. (2007); Hong et al. (2005)
Matrix format	Flavián et al. (2009); Lorenzo et al. (2007); Hong et al. (2005)
Latin Square	Hoch et al. (1999)

Source: Developed for this research

3.2.5.1. Impact of information structure on online consumer behaviour

It is known that when the same information is presented in different structures, people tend to have a different perspective of tasks, and consequently perform differently. Understanding and applying different models of presenting information, the ways in which the information will be used, and the processes through which people think about the information, will enable the design of more intuitive and compelling online user experiences (Stibel, 2005). Also Goode and Harris (2007) proved how online presentational consistency, favourable appearance and site design were positively associated with the behavioural intentions of users.

Different presentations, organisation and information content can facilitate or impede the utilisation of information (Rosen and Purinton, 2004). Adequate structures in Web sites makes information more accessible and easier to use, and improves the chances that consumers can adequately assess a potential vendor (Virtsonis and Harridge-March, 2008). Users value the structure of contents that lead to an easier Web site navigation, as simpler navigation allows straight route access through to product categories. This is applicable to users of all levels of skill (Flavián et al., 2008). Hong et al. (2005) studied the impact of the two popular formats which are usually used to organise multiple product information on Web pages. They found differences in user behaviour when products were presented in a *list format*, meaning that only one product in each row is displayed, and when presented in a *matrix format*, that is, when there is more than one product in a row. They revealed that list formats are better for searching on Web sites, and matrix formats are better when browsing. Also Stibel (2005) studied the difference between

simple lists and *hierarchical lists* and concluded that people tend to behave differently when presented with either format. They found that the impact of the design of Web page product listings accounted for 61 percent of the variance in monthly sales, and also explained over than 7 percent in the variation in store traffic. Also Lurie (2004) argued that information structures on Web sites mediate the relationship between the number of alternatives available on a choice set and the quality of decision making. Furthermore, he suggested that information structures affect the amount of effort made by users when acquiring information and examining products in choice sets. As consumers adopt different decision strategies when making decisions, the quality of their decisions are based on the alternatives available. This finding was further supported by Lee et al. (2004). In this direction, Bettman and Zins (1979) had previously revealed that information processing strategies depend on information structures, affirming that, whilst alternative formats lead to processing by alternatives, attribute formats lead to processing by attributes.

3.2.5.2. Impact of information structures in search engine optimisation

Structuring of information also has an impact in Web search engine optimisation, as it allows for the inclusion of more relevant information in search engine results. The more relevant the information for a search engine, the more accessible a Web site will become through them (Virtsonis and Harridge-March, 2008).

Having described how the design of Web sites and information structures influence the online behaviour of consumers, the following final section describes two human-computer fit theories and how should online marketers take into account the demographic profiles of Web users in order to adapt the contents of sites to them.

3.2.6. Human-computer fit theories

Traditionally, humans have been able to effectively adapt to complex environments by adjusting their decision making strategies to the situation they encounter (Murray and Häubl, 2008; Payne, Bettman and Johnson, 1990). In online environments, consumers cognitive maps do not match the processes of computers as currently,

consumers can only navigate the Internet in a top-down fashion, using a singular semantic hierarchy (Stibel, 2005). It has been argued that fitting a human-computer interface to the users and the tasks enhances performance (Te'eni, 2006). However most companies do not take this into account and simply rely on default interfaces and mental models developed by engineers (Stibel, 2005).

In the following two sections we will describe two theories regarding how users' performance can be improved when there is an appropriate fit between humans and computers. In particular we describe cognitive theory and technology task fit theory.

3.2.6.1. Cognitive fit theory (CFT)

This theory was developed by Vessey (1991) with the aim of understanding how the fit between information presentation format of a task and the decision-making task could influence an individual's problem solving performance. Whilst TAM is a model that explains decision of users to adopt a technology, CFT explains the how good is the fit between a user, a computer and the task to be undertaken (Te'eni, 2007). Cognitive fit theory suggests that performance during a decision-making process improves when there is a match between a task representation and a problem representation (i.e. the information presentation format), as the match allows decision-makers to develop a more accurate mental representation of the problem (Speier, 2006). For the most effective and efficient problem solving to take place, the problem representation and any tools or aids employed should all support the strategies required to perform that task (Te'eni and Feldman, 2001). In contrast, when an information presentation format does not match a task, the decision-maker must exert increased cognitive effort to transform the displayed information into a form suitable for solving the particular type of problem. This effort requires additional decision-maker time to develop an accurate mental representation and / or a potentially incomplete mental representation leading to decreased decision accuracy. Cognitive fit theory has been empirically tested in a range of problem solving domains such as problem solving skills and tool, maps, data representation and multimedia (Speier, 2006).

Cognitive fit theory has served as a basis for online consumer behaviour research (Hong et al., 2005; Speier, 2006; Te'eni, 2006). Using the cognitive fit theory as the theoretical framework (Hong et al., 2005) developed a research model to investigate the fit between information formats and shopping tasks, and examined the influence of fit on consumers' online shopping performance and perceptions of shopping experience. They conducted an experiment to examine the effects of two types of popular information formats used on Web sites, list structure and matrix structure, when undertaking searching and browsing shopping tasks, and measured the effort required to make a cognitive decision with a six item measure similar to usability. Their findings demonstrated that when there is a match between shopping task and information format, consumers can search information spaces more efficiently and are able to recall product information better. They also revealed that presenting information organised in a matrix format facilitated searching tasks, and that a list format was better for browsing tasks. Furthermore, they found that when there is a match between an information format and a shopping task, this has no influence on the cognitive effort and the attitude towards using a Web site.

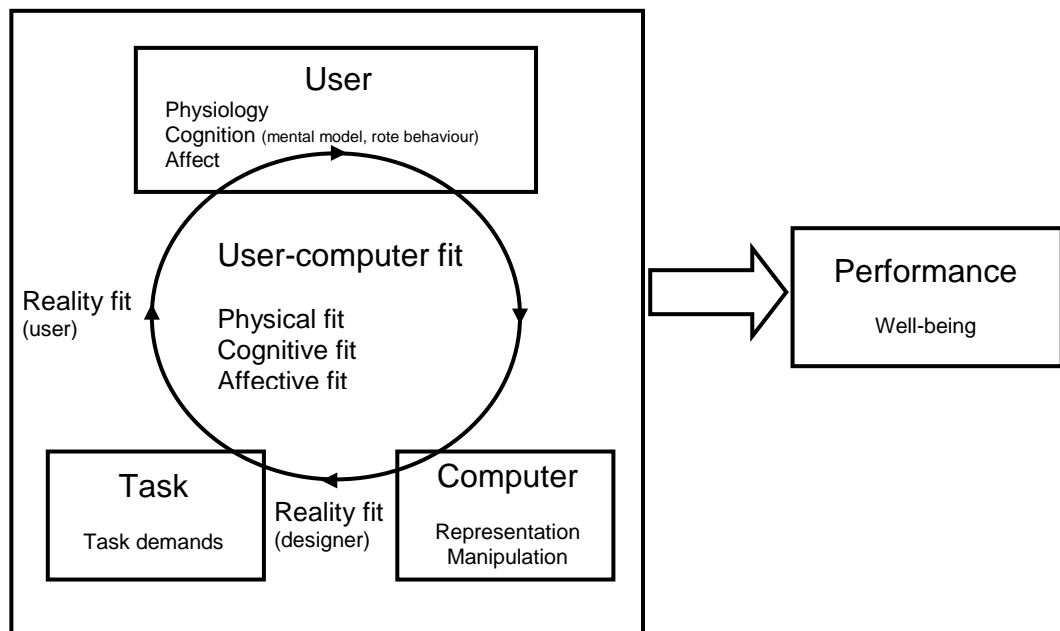
Speier (2006) examined the role of task complexity in decision making by examining how different information presentation formats influenced simple tasks and complex tasks. Simple tasks are those which involve a single operation such as information acquisition or simple information evaluation tasks, and complex tasks are concerned with situations such as decision-making process or the assessment of decision effectiveness when solving complex problems. She concluded that the relationship between information presentation format and decision performance was moderated by the complexity of the task. Also Te'eni (2006) proposed a cognitive framework for studying search behaviour within a Web site, and examined the impact of performance and satisfaction of sites with the following variables: type of site, difficulty of tasks, performance time and accuracy, perceived complexity and Web site satisfaction.

The second of the fit theories is the technology task fit theory.

3.2.6.2. Task technology fit theory (TTF)

The key idea of TTF (Goodhue and Thompson, 1995) is that technology can only have positive impact on performance, if it fits the task that is being supported. Whilst TTF may sound similar to CFT, the granularity of analysis and the scope of the two theories are different: cognitive fit theory places more emphasis on the cognitive processes undertaken by individuals when solving problems, and technology task fit theory studies the relationships among various factors that influence fit, as well as the impact of the fit on other factors such as system utilisation, performance and user attitude. Users can be both individuals and groups. Building upon this theory, Te'eni (2006) proposed a framework for the study of fit which is illustrated in figure 26.

Figure 26. Revised framework for the study of fit theory



Source: Te'eni (2006)

The framework reflects how different types of fit can influence the performance and well-being of users. The core of the model includes three types of fit that can occur between users and computers: *cognitive fit* explains the fit between user, task and computer; *physical fits* refers to the notion of matching the physical designs of input and output devices to the physiology of the user which is the basis of the development of *ergonomic designs*. Good fit should require less effort, reduce health problems and generate positive sensations to users or feelings of physical comfort,

and a poor fit should result in increased muscular effort and physical strain both during and after the activity; finally *affective fit* may be seen as how the overall design of the computer matches the affective state that a user feels or would like to feel or to fit the affective state most appropriate for the actions of the needs of a user. The framework suggests that the outcome of physical, cognitive and affective fit between a user, a computer and a task will have an impact on a user's overall performance and physical and psychological well-being.

Whilst Te'eni (2008) identified that there is a body of research dedicated to how cognition occurs within HCI research, he also acknowledged that there is another rapidly growing research trend regarding how affective fit occurs within HCI. He added that whilst there is a theoretical and practical value in the notion of fit in HCI, progress in this area is limited due the current fragmented and incomplete treatment of fit and shortcomings in its measurement.

The final two bodies of research of this section refers to the demographic profiling online consumers and how Web designs and messages should be developed based on the profiles of their target group of customers.

3.2.6.3. Socio-demographic profiles

Consumer socio-demographic variables have been widely used in order to profile the adopters of the internet as a shopping channel (Bigné and Ruiz, 2006) and classify respondents in online consumer behaviour contexts (Bigné, 2006; Lin, 2007; Van den Poel and Buckinx, 2005). Whilst online shoppers were considered innovators compared to the non-shoppers, the adoption stage of the Internet has already been surpassed (Hoffman et al., 2004). Web sites have become an integral part of many individuals' social lives (Li et al., 2006) and also are a major source for all kinds of commerce related information (Spink and Jansen, 2007).

However, novice and experienced Internet users differ in their behaviour and response to various marketing stimuli (Khasoneh and Sweeney, 2007) therefore the

demographic profiles of users should be considered due their influence on Internet usage and buying behaviour (Bigné, 2006; Park and Jun, 2003, Soopramanien and Robertson, 2007). In order to demographically profile online consumers, researchers have utilised variables such as age (e.g. Lennon et al., 2007), city of residence (Aimc, 2009), gender (e.g. Worthy et al., 2004), level of education (e.g. Lin, 2007), net monthly income (e.g. Bigné, 2006), type of employment (e.g. O'Brien, 2008) and profession (e.g. O'Brien, 2008). Likewise the knowledge of the Internet medium are also considered as variables within online marketing research, such as skill with the Internet (e.g. Mathwick et al., 2004), frequency of use of Internet (e.g. Bigné, 2006), seniority with the Internet (e.g. Bigné, 2006), presence of children (Padmanabhan, et al., 2001) and race (Li et al., 2002).

3.2.6.4. Adaption of Web sites to the profiles of their consumers

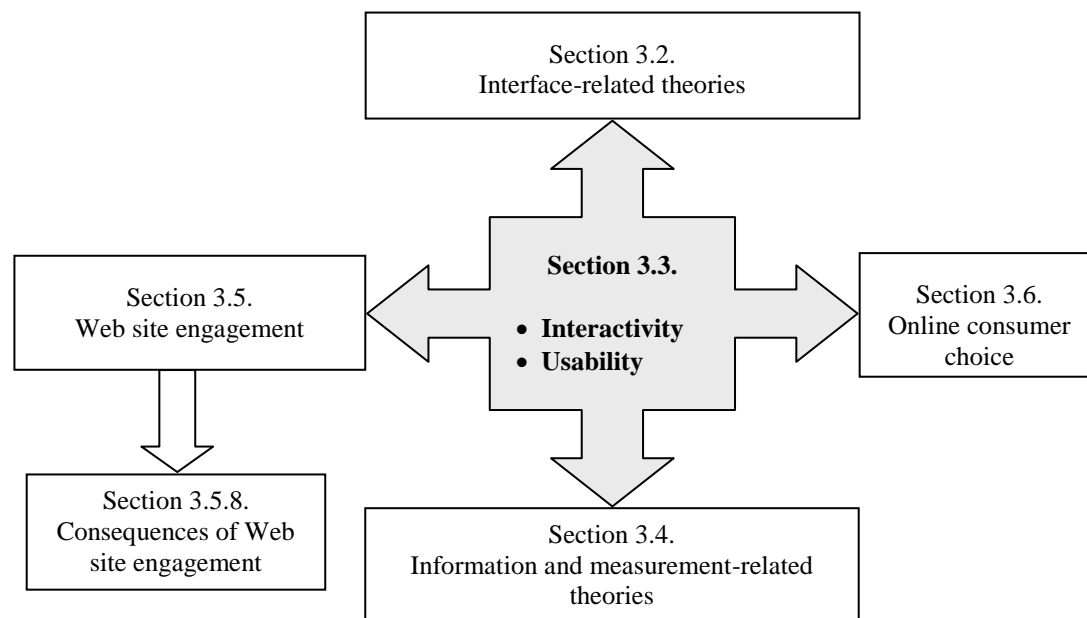
It is known that Web sites should be tailored to suit the intention of each site (Junaini and Sidi, 2007). Products, services and even marketing actions should be adjusted to the profile of visitors in order to influence (potential) customers' visiting and shopping behaviour (van den Poel and Buckinx, 2005). In this direction, Moe and Fader (2001) argued that the more refined the segmentation or profiling of the customer base is, the more efficiently a profitable target segment can be identified. Many sites can also cater to multiple segments. If consumer preferences are distinct amongst different segments, Rosen and Purinton (2004) suggested that different options should be made available to each consumer groups. Simonson (1999) also affirmed that on Web sites it is nowadays much easier to duplicate any successful offering and reach similar targets. Accordingly, Rosen and Purinton (2004) affirmed that online managers should determine how much flexibility must be built into arranging Web site content in order to satisfy its diversity of users. Likewise, the messages comprised each Web site should be designed so that they can be communicated to the right customers (Van den Poel and Lariviere, 2004). A Web site is considered as informative for its purpose when it allows prospective customers to evaluate among alternatives to reach satisfying exchanges (Hausman and Siekpe, 2009).

3.3. IMPLICATIONS OF INTERACTIVITY AND USABILITY ON ONLINE CONSUMER BEHAVIOUR

3.3.1. Introduction

This section describes research concerning the role of interactivity and usability on online consumer behaviour. It is accepted that interactivity drives online behaviour, which in turn influences usability, that is, to how easy it is to use a Web site. These two issues contribute to the exchange between consumers and Web sites. Figure 27 illustrates the connection of this section with the overall theoretical framework of this chapter.

Figure 27: Connection of section 3.3. with the overall theoretical framework of this chapter



Source: Developed for this research

3.3.2. Interactivity

The Web, as a medium that has become primarily a vehicle for human communication and interaction (Pace, 2004), is not just a single one-way channel of controlled content, as it has always stood out as being a highly interactive and complex multi-activity environment (Toms, 2002). Interactivity is considered as a key technological capability for people trying to make sense of large amounts of online information (Jakobovits, 1997; Teo and Yeong, 2003). Likewise Web site

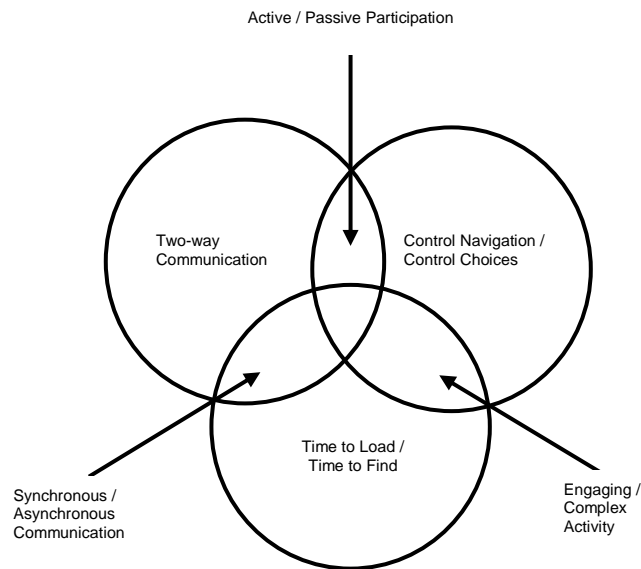
interactivity is the attribute that most distinguishes Web sites from other media, and is also considered as their key advantage (Huang, 2003). Whilst the science of marketing is concerned with exchange (Bagozzi, 1975), Web interactivity refers to the extent that information exchange takes place between a Web site and its users (Huang, 2003).

Online interaction research has established perceived interactivity as a central driver of online behaviour (Goode and Harris, 2007; Li et al., 2001) that facilitates the use of Web sites as marketing tools (Song and Zinkhan, 2008). Because the Web is a computer-driven environment, it can perform a variety of interactive input-output functions. Creating sites that can receive and respond to input from users, is the essence of Web interactivity, as the interactivity offered by such sites enhances users' sense of control in a manner that is not possible with more static technologies (Ha and James, 1998). Interactivity enhances and alters the entertainment experience of users (Bryant and Love, 1996). Potential benefits of interactivity include performance quality, time saving, satisfaction, a sense of fun and engagement (Teo, Oh, Liu and Wei, 2003). Web users also experience interactivity whilst choosing information made available to them on technological devices (O'Brien and Toms, 2008).

The notion of interactivity has been the subject of academic debate since the 1980s (Shrum, Lowrey and Liu, 2009) although still at present there is controversy regarding where interactivity actually takes place. Whilst Song and Zinkhan (2008) suggested that interactivity fully relates to the behaviour of consumers, as it resides in the consumers' eyes and not in an information system itself, Shrum et al. (2009) affirmed that interactivity is a multi-dimensional construct that can reside among different entities. It can be defined both as a structural characteristic of a medium and message, or as a subjective experience perceived by the interacting parties. From a structural perspective, interactivity can be an innate attribute of a medium such as the Internet, or a message or environment within that medium, such as a Web site, created through the design features of the medium or environment (Sicilia, Ruiz and Munuera, 2005). Also Novak (1996) suggested that there are two types of

interactivity: machine interactivity, that refers to the extent that users participate in an online environment in real time, and person interactivity, that occurs between people through a medium or can also be unmediated.

Figure 28. Key dimensions of interactivity



Source: McMillan and Hwang (2002)

A debate regarding different definitions of interactivity can be followed in McMillan and Hwang (2002), who affirmed that interactivity had generally been approached from four different perspectives: 1. the nature of communication exchange; 2. system or channel features; 3. user's perceptions and / or actions; and 4. a combination of these. These researchers proposed a conceptual model that identified three constructs that underlie interactivity: two way-communication, control and time. Figure 28 illustrates the three dimensions of interactivity, where it can be seen how they interrelate and overlap. Similarly, Song and Zinkhan (2008) suggested that perceived interactivity includes three dimensions: 1. perceived communication, 2. perceived control, and 3. perceived responsiveness.

Whilst many interactivity-related studies were initiated during the early stages of the Internet there is a growing body of literature regarding how people interact with and react to computer interfaces, but relatively few studies have specifically studied the impact of interactivity in online shopping environments and the kind of consumer

responses they produce (Demangeot and Broderick, 2006). However, some research regarding online consumer behaviour can be found in literature and in what follows, it will be described.

Teo (2003) proved that increased levels of interactivity on a Web site have positive effects on user's perceived satisfaction, effectiveness, efficiency, value, and overall attitude towards the site. Nagpal and Krishnamurthy (2007) affirmed that companies are underutilising the potential of interactivity, as customer relationships can be built through greater interaction, producing entertaining designs, as can be found in the case of drink and candy company Web sites. Likewise, Song and Zinkhan (2008) identified key features that enhance consumer perceptions of interactivity, and suggested that Web designers, who want to determine how users interact with the contents of a Web page, may need to address issues related to the site's interface. Based on telepresence theory they found that speed, a property of the medium, was a determinant of interactivity perception. In contrast, based on interactivity theory, they also suggested that message quality (i.e., how personal a particular message is) was an antecedent to Web site interactivity. Interactivity theory is also useful for describing how to incorporate computer-mediated communication channels, such as e-mail, as customer service touch points. Accordingly, Song and Zinkhan (2008) also suggested that marketers who want to manage and maintain interactive communications with customers through the Internet need to consider the importance of enhancing message quality. Likewise, the relationship between interactivity and user convenience are considered as critical for Web effectiveness (Hausman and Siekpe, 2009; Piccoli, Brohman, Watson and Parasuraman, 2004). Although simply adding features to a Web site does not guarantee interactivity, when undertaking interactivity experiments, researchers should consider both the quantity and the quality of the features, and should be aware that some features are only partial predictors of interactivity (Song and Zinkhan, 2008).

Because of the varied nature of Web visitors, Hanson and Kalyanam (2007) affirmed that when a Web site has to constantly deal with a mixture of vastly different visitors, it would be desirable to develop parallel versions of the same Web site

combined with self-selection, in order to accommodate the needs of different users. When making different versions of a Web site, designers need to consider the various effects of interactivity in order to maximize the facilitating role of interactivity for each user target group (Liu et al., 2009). Research has already recognised one decade ago the relevancy of interactivity in Web management (Williams and Cothrel, 2000) and its effective use for the enhancements of user evaluations of Web performance. However, years later, Shrum et al. (2009) still argued that existing research paid limited attention to the actual mechanisms that are used to implement interactivity.

Researchers have related interactivity to online flow and engagement with technology. It has been suggested that, as interactivity leads to greater information processing, as a consequence, consumers experience the state of flow (Hoffman and Novak, 2000; Sicilia et al., 2005). Also Huang (2003) found that interactivity had a consistent positive influence on the control, curiosity, and interest components of flow, but had little effect on the attention component. Finally, Novak et al. (2000) suggested that interactivity was not associated with the focused attention component of flow.

Literature has also provided evidence of the relationship between interactivity and engagement with technology. In O'Brien's (2008) second stage of research on engagement, undertaken within 3 different technology contexts - Web searching, educational Web casting, and video games - she found that a user's interactivity with technology precipitated engagement. She also affirmed that 'information interaction provided the connectivity for engagement' and detailed that 'once engaged, users' attention and interest must be maintained, feeling connected to the technology', which she regarded to as interactivity (O'Brien, 2008). Finally, Jennings (2000) affirmed that interaction is an emotional hook for engagement with an e-commerce site.

As interactivity is one of the key advantages of the Web medium, researchers have also focused on its role in online advertising.

Literature also refers to the role of interactivity in online advertising. McMillan and Hwang (2002) already stated that advertising on the Web needed an understanding of interactivity so that companies could engage more effectively and interact with consumers. Unlike traditional mass media, interactive online media allows consumers to actively participate in advertising processes, select the information they receive, and build an instantaneous two-way dialogue with companies. As the Web has moved towards version Web 2.0, Internet technologies have become more content-oriented, and user-generated contents are playing an even more relevant role. Interactivity can have a far-reaching impact on advertising, although a theoretical understanding of interactivity and its effects on advertising has only begun to emerge in recent years (Shrum et al., 2009). Interactivity has also been posited to affect consumers' cognitive involvement with the elaboration of advertising messages (Johnson et al., 2006; Shrum et al., 2009). When Web sites are being designed, advertisers need to keep in mind the route through which interactivity affects the evaluations of companies and their products (Liu et al., 2009). Research by Song and Zinkhan (2008) revealed that the content of a message was the strongest predictor of perceptions of interactivity and site effectiveness. Their findings also supported that the effects of message-quality, on both interactivity perceptions and site effectiveness, varied under different user tasks.

Recent research has been undertaken regarding how accumulated user-experience influences different levels of interactivity, and on how different interactivity levels influence learning. In order to understand the effects of interactivity on measures related to Web advertising effectiveness, Liu and Shrum (2009) undertook an experiment comparing high versus low conditions of interactivity, high versus low task involvement, and high versus low Internet experiences, in 8 different situations where interaction took place between a Web site and a group of respondents. They concluded that the experience accumulated by users had an impact on the levels of interactivity levels. Table 13 illustrates the sixteen situations tested in their experiment. In this direction, Song and Zinkhan (2008) recommended that when undertaking an experiment that involves interactivity, researchers should take into account that, in their opinion, interactivity resides in the consumers' eyes, not in the

system itself, therefore they should ensure that participants are involved in using the particular features of interest of a Web site.

Table 13. High versus low interactivity experiments

CONTEXT	LOW INTERACTIVITY	HIGH INTERACTIVITY
1. Product catalogue	A linear product catalogue, where users need to go back to a main product list page to jump to another product	A non-linear product catalogue where users can easily jump from one product to the other
2. Product choice	Static product comparison chart	Personalized product choice helper
3. FAQ	A linear FAQ structure, where users go through a whole list of questions and answers and cannot easily jump from one question to another	A non-linear FAQ structure, where users can easily jump from one question to another
4. Contact	Email and phone number	An online contact form
5. Special announcement	Pop-up ad on entry page	Banner ad on entry page
6. Navigation guide	Static site map	Site search
7. Fun stuff	List of product category facts	Interactive product category IQ test
8. Customer Stories	List of customer testimonials	Customer stories presented on an online bulletin board

Source: Liu and Shrum (2009)

Also Lustria (2007) stated that little is still known about how interactive Web technologies influence information use, learning, and motivational processes. He undertook an experiment differentiating between high and low interacting users. Respondents in a high-interactivity group were able to comprehend information better, theoretically because they had greater control over their learning environment and because they had the opportunity to interact with more engaging or learning activities, that is, *interactive* activities (Lustria, 2007).

It is also known that a high-interactivity Web site is more persuasive than a low-interactivity Web site for all types of consumers (Liu et al., 2009). These researchers proposed a model where their central belief was that interactivity could affect the effectiveness of persuasion through distinct processes, either by serving as a peripheral cue through its mere presence in a Web site, or by directly interacting with central processing. Finally, studies of experiential interactivity have also consistently found positive effects on persuasive outcomes. Research has focused mostly on *whether* interactivity leads to positive persuasive outcomes, however it is

not known yet *how* interactivity actually affects persuasion and what is the underlying process through which it is affected by interactivity (Shrum et al., 2009).

The following bodies of research describes the link between interactivity with other interrelated concepts: consumer effort and attitudes. This are followed by two sections dedicated to research on how consumers interact with information and computer interfaces.

3.3.2.1. Interactivity and other interrelated concepts

Research relates interactivity to effort. According to Tremayne and Dunwoody (2001), interactivity is associated with significant cognitive costs. Using the *talk-aloud* technique, they found that user navigation of an interactive system led to more elaboration effort, which sometimes interfered with the rehearsal and elaboration of actual information presented by the system (Shrum et al., 2009). In contrast, Liu et al. (2009) affirmed no extensive effort was invested when using the interactive features of a Web site, and therefore inexperienced Internet users were no longer at a disadvantage compared to experienced Internet users.

Literature also refers to the connection between Web site interaction and the attitudes of its users. Lustria (2007) suggested that interactivity could significantly affect attitudes and comprehension towards health Web sites. Also Sohn, Ci and Lee (2007) found a positive influence of interactivity on Web site attitude, only when users expected the interactivity levels of a Web site to be high. On the contrary, when users expected the interactivity level to be low, interactivity had a negative effect on attitude. Also McMillan, Hwang and Lee (2004) revealed that involvement with the subject of a site and the sub dimension of perceived interactivity that measured engagement, were the best predictors of user attitude towards a Web site. Finally, Chandon and Muller (2007) found four dimensions which explained 75% of the attitude of visitors towards Web sites: entertainment, information content, ease of use and interactivity.

There are also bodies of research regarding how consumers interact with information and how they interact with interfaces. These shall be described in the two following sections.

Information interaction is defined as the ‘process that people use when interacting with the content of a system. It is a complex process that integrates aspects of the user, the content, and the system that delivers the content to the user (Toms, 2002). O’Brien (2008) affirmed that while information interaction focuses on the experience of users with content, engagement is an expression of that interactivity. Sicilia et al. (2005) demonstrated that interactive Web sites lead to increased information processing, flow state, and a high preference towards both the Web site and its products.

Research on interaction also refers to the communication between users and computer interfaces, where the interface is the medium that enables user experiences. According to Stibel (2005), understanding and applying different models of presenting information, the ways in which the information will be used, and the process by which people think about that information, will enable more intuitive and compelling online experiences. According to the theory of personal relationships, interaction is one of the three essential elements must be present in a relationship between a Web site and a user, as well as interdependence and attribution to disposition of another party (Li et al., 2006).

Research has also connected Web interaction with the online experience of users.

As discussed by Laurel (1986) and Nardi and O’Day (1999), the notion of user experience as a driving force in interface design, emerged as a popular concept in Web development, primarily from the business and marketing sectors, as managers are long used to providing customer experiences in retail environments. Haeckel et al. (2003) defined experience as ‘the feelings customers take away from their interaction with a firm's goods, services and atmospheric stimuli’. As suggested by Novak et al. (2000) and Pace (2004), research efforts could be fruitfully directed at

‘specific elements of commercial Web site design that facilitate a compelling consumer experience’. As the Internet has evolved into a medium for communication, commerce and obtaining information, marketers need to focus on creating experiences for a given task that is intuitive to users (Stibel, 2005). User experience defines how user choices and actions are incorporated into an information system, and how the activities of the system are represented and presented to users (Toms, 2002) for the attainment of e-commerce success (Junaini and Sidi, 2007). Research has argued that pleasurable feelings experienced by consumers in retail environments in general, will affect their attitudes, behaviours, preferences and future intentions (Bitner, 1992; Chen, 2008; Mathwick and Rigdon, 2004; Ridgway et al., 1990).

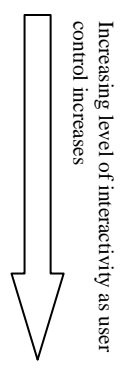
Williams and Cothrel (2000) affirmed that companies can reap great benefits from Web technology, by making good use of interaction attributes in Web site design. To increase interactivity, Web sites should be designed to be active, responsive, interactive, participatory, dynamic, and demonstrable. Web sites that form part of an online community should be highly interactive in terms of the interactivity attributes valued by that community. The experience of the interactivity offered by such sites is a driver for successful e-business. However, Song and Zahedi (2005) stated that little is yet known about how Web sites should be designed to optimise customer experiences. Rather than create virtual spaces that enhance the experience of online shoppers’, companies often choose to either copy successful sites or construct Web sites that mirror their offline stores (Rosen and Purinton, 2004). With the aim of understanding how consumers perceive their experience of navigation in an online shopping environment, Demangeot and Broderick (2006) revealed four dimensions of experiential intensity: context familiarity, product presence, site-user understanding and visual impact.

The final section on interactivity refers to online users’ control over interaction.

3.3.2.2. Control of over interaction

Control and interaction have been closely related in research. Control is an individual’s perception that he exercises control over the interaction with a Web site (Ghani and Deshpande, 1994; Guo and Poole, 2008; Huang, 2003; O’Brien, 2008; Teo and et al., 2003; Siekpe, 2005). Because the Web is a computer-driven environment, it can perform a variety of interactive input-output functions. Creating sites that can receive and respond to input from users is the essence of Web interactivity, because the interactivity offered by such sites not only enhances users’ sense of control in a manner that is not possible with more static technologies, but also enhances and alters the entertainment experience of users (Schneiderman and Plaisant, 2005). In an exploratory research undertaken by O’Brien (2008), participants expressed the desire to perceive they were in control of the interaction and Web users experienced interactivity in their ability to select information. Also Rogers (1995) stated that the interactive features found in Web sites increase ‘the degree to which participants in a communication process can exchange roles and have control over their mutual discourse’. Finally Teo et al., (2003), based on a previous research by Kristof and Satran (1995), operationalised interactivity with a seven-level scale, based on the level of control that users had to different levels of interactivity, indicating a relationship between the level of control users had and the increasing levels of interactivity. Table 14 illustrates the scale of control over interactivity of Teo et al. (2003).

Table 14. Scale of control over interactivity

Available control	Example of interaction	
Control over pace	Click to advance to the next thing	
Control over media	Choose where to go at any time	
Control over variables	Start/stop video; search text; scroll or zoom the view	
Control over transaction	Change the outcome of a chart; customise a database search	
Control over objects	Move things around screen	
Control over simulation	Change the perspective of view or the course of action	

Source: Teo and et al. (2003)

Having described bodies of research regarding the role of interactivity in online environments, the following section is dedicated to Web site usability.

3.3.3. Usability

Usability is a quality attribute that assesses how easy user interfaces are to use. Usability has been a central aspect of human-computer interaction research and design for many decades, and is considered to be one of the three factors that determines user-acceptance of a system (Teo et al., 2003). Based on ISO 9241-11, Nielsen (2000) defined Web site usability as the ease with which users can learn to manage a system and memorise its basic function, the efficiency of design of the site, the degree of error avoidance, as well as the general satisfaction of the user. Usable Web sites create a positive attitude towards online stores, increases stickiness and revisit rates, and eventually stimulates online purchases while providing benefits by reducing Web development and maintenance costs (Green and Pearson, 2006). Usability can also be understood as a tool for measuring the quality of a Web site (Flavián et al., 2008).

Usable Web sites are crucial for the success of online businesses as e-commerce sites have to compete amongst themselves to survive. If customers cannot find a product, they will leave. However, Pace (2004) affirmed that Web site usability designs have numerous usability problems as they ignore the multidimensionality of the whole persona. In this direction, Lee and Kozar (2009) affirmed that there is still a lack of the theoretical models of Web site usability proven empirically or theoretically, resulting in the prevalence of incorrect or inapplicable usability guidelines. Such models would be useful because design decisions provide too many alternatives to test by trial and error.

Due to the heterogeneity of controls and organisation of content within each Web site, the navigation systems of Web sites should be dramatically simpler (Tucker, 2008). Web sites should also be tailored to suit their intention (Junaini and Sidi, 2007). More robust manipulations of the user interface must be employed to provide a better mental representation of information and consumer goods. In fact, by taking advantage of a few key principles from the decision-making and economics literature, online storefronts can be made more user-friendly, thereby increasing sales (Stibel, 2005). Likewise, Tucker (2008) suggested that e-commerce sites have to be

sensitive to the fact that shoppers may be amateurs and are looking for sites that appeal to their level of capability.

Whilst it was previously affirmed that the majority of Web sites are not usable, and not much attention had been given to Web site usability evaluation (Teo et al., 2003), there is a growing body of research regarding the improvement of this issue. Palmer (2002) revealed that Web site design, usability and media richness appeared to be closely associated with the success of sites. Also Rosen and Purinton (2004) suggested that the implementation of site maps to make Web site usability easier by using distinctive graphic icons that would make way-finding much more straightforward. Hassan and Li (2008) developed a framework for evaluating the usability and content usefulness of Web sites, identifying 46 criteria that could be used to benchmark Web sites. These criteria were classified in the following seven groups: screen appearance, content, accessibility, navigation, media use, interactivity and consistency. Other factors such as provision of information on companies, presence of a FAQ section, use of multimedia, user accounts, security and privacy statements have already been shown to impact online sales (Hassan and Li, 2008). In addition, Green and Pearson (2006) affirmed that factors such as price, brand, variety, tax, fee, delivery and shipping costs, were found likely to be relevant usability criteria for users of B2C Web sites.

Junaini and Sidi (2007) linked usability to factors such as site flow, efficiency, ease of use, interactivity and attractiveness, concluding that ease of use was the most important factor that influenced usability, and all these factors could improve the site user experience. Also Savitskie et al. (2007) tested the technology acceptance model in the context of Web shopping sites and concluded that sites should not only be easy to navigate, but also considered useful for consumers, as usefulness ultimately drives behavioural intention to use them. Lee and Kozar (2008) focused on developing a model of usability as a way to understand Web design factors and their effect on the perceptions of online consumers, taking into account the effect of legibility, coherence, variety and mystery on cognitive and affective appraisals. These dimensions in turn predicted online purchase intention. The researchers affirmed that

Web site design experts have specified content quality, fun, productivity, relevance, navigation, response time, and credibility as usability factors.

Flavián et al. (2008) related perceived usability to Web site loyalty. They revealed a positive relationship between usability and trust, and a positive relationship between usability and satisfaction, that in turn influenced Web site loyalty. Also Gehrke and Turban (1999) suggested page loading, navigation efficiency, download time, successful search rate, error rates, task completion time, and frequency of cursor movement as usability factors. Hong et al. (2005) related usability to cognitive effort, developing a measure of cognitive decision effort measure closely related to usability that measured easiness and frustration when finding information for the completion of a shopping task. With the intention of understanding how consumers' perceptions of Web sites influence their behaviour their intention to revisit and purchase, Loiacono, Watson and Goodhue (2007) developed a twelve-dimension Web site quality instrument based on the theory of reasoned action and on the technology acceptance model. Finally, table 15 illustrates a table developed by Lee and Kozar (2008) that compiles Web site usability variables utilised in previous studies, revealing differences amongst the usability measures used in four different fields of research: marketing, human-computer interaction, IT adoption and usability.

Table 15: Previous studies of Web site usability factors

FIELD	WEB SITE USABILITY FACTORS	RESEARCHERS
Marketing	Informativeness, Organisation, Entertainment	Ahn et al., (2007)
	Information Quality , Security, Web site functionality, Customer Relationships, Responsiveness	Ho and Lee (2007)
	Consistent menu bars, Number of levels, Store entrances, Lists with buttons, Lists of Pictures, Feedback, FAQ	Lohse and Spiller (1999)
	Coherence, Web page involvement	Schlosser and Kanfer (2001)
	Fast presentation, Ease of Navigation, Uncluttered screens	Szymanski and Hiss (2000)
Human-Computer Interaction	Accessibility, Product-search, Shopping- Basket-handling, Product Overview, Shop Response Time	Konradt et al. (2003)
	Font Type, Line length	Ling and van Schaik (2006)
	Navigation, Response Time, Credibility, Content	Nielsen (2000)
	Simplicity, Multimedia	Rau et al. (2007)
	Ease of use, Readability, Content Quality, Fun, Productivity, Completeness, Relevance	Spool et al. (1999)
	Interactivity, Effectiveness, Efficiency	Teo et al. (2003)
	Ease of Use, Sense of presence, Usefulness	Yoon et al. (2008)
IT Adoption	System quality, Information quality	Ahn et al. (2007)
	Value-added search mechanisms, Challenging, Shopping enjoyment, Usefulness, Ease of use	Koufaris (2002)
	Accuracy, User involvement, Convenience, Ease of use	Liao and Cheung (2002)
	Information, Learning, Playfulness, System quality, Service quality	Liu and Amett (2000)
	Information relevance, Timeliness, Reliability, Scope, Access, Usability, Navigation, Interactivity	McKinney et al. (2002)
	Download delay, Navigability, Site content, Interactivity, Responsiveness	Palmer (2002)
	Information content, Design	Ranganathan and Ganapathy (2002)
	Ease of use, Navigation	Song and Zahedi (2005)
Usability	Site design, Information, Empathy, Usability	Barnes and Vidgen (2006)
	Navigation design, Visual design, Information design	Cyr (2008)
	Firmness, Convenience, Delight	Kim et al. (2002)
	Tailored information, Visual appeal, Intuitive operations, Ease of understanding, Response time	Loiacono et al. (2007)
	Interactivity (active control, two-way communication, synchronicity)	Lowry et al. (2006)
	Content, Functionality, Structure	Mithas et al. (2006)
	Content, Ease of use, Promotion, Made-for-the-medium, Emotion	Venkatesh and Ramesh (2006)
	Personalization, Structure, Navigation, Layout, Searchability, Fast response	Zviran et al. (2006)

Source: Lee and Kozar (2008)

3.4. THE CAPABILITY OF THE INTERNET FOR PROVIDING INFORMATION TO CONSUMERS AND COMPANIES

3.4.1. Introduction

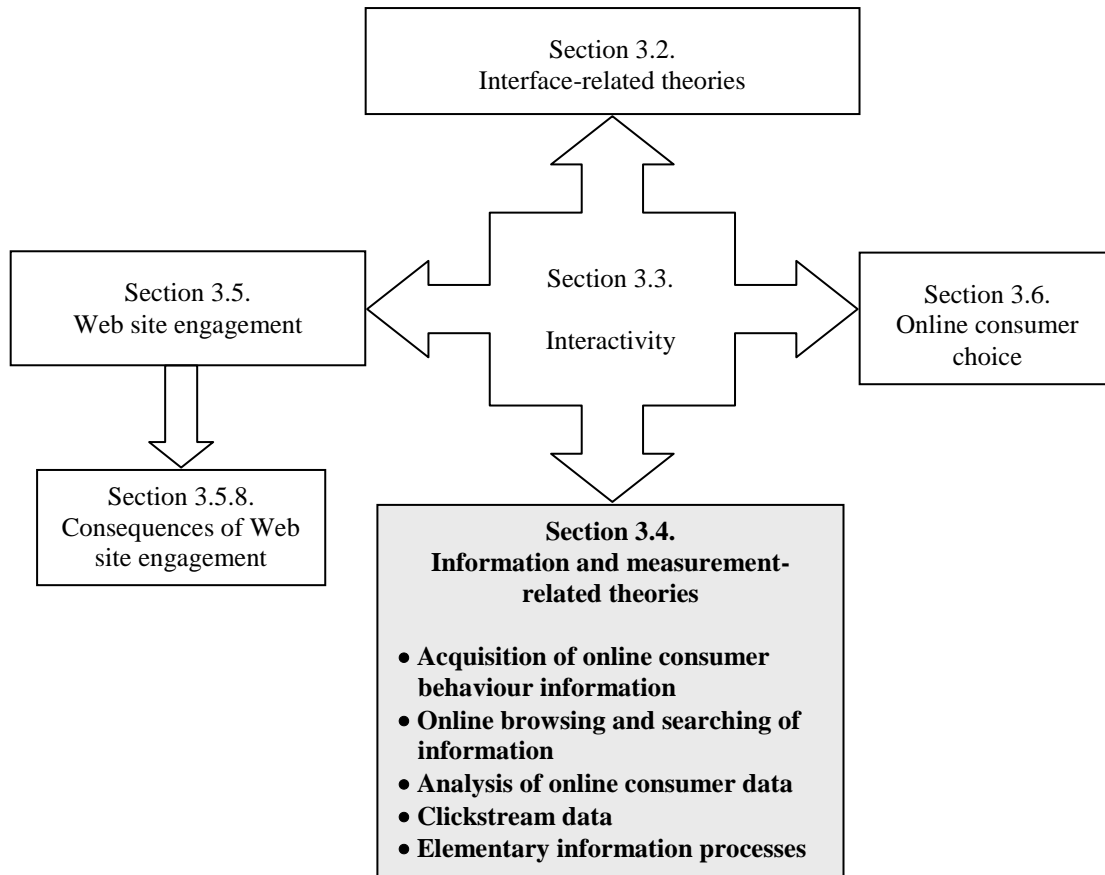
People's interaction with the Web is driven by many human needs, including information behaviours (Spink and Jansen, 2008). As one of the advantages of the Internet is the accessibility to a wealth of data (Thelwall, 2000), this medium has been recognised as a powerful tool for searching and obtaining commerce-related information (Spink and Jansen, 2008). Information retrieval is a complex process that involves many activities including the organisation and intellectual representation of texts, intellectual searching and retrieval on behalf of users, and the systems and techniques to accomplish this (Spink and Saracevic, 1998). In particular there are bodies of research interested in understanding the effect of information acquisition and processing costs on search and choice behaviour (Zauberman, 2003). So that consumers can make decisions on the Internet, first they need to be able to easily retrieve, digest, manipulate and use information relevant to the decision-making process (Stibel, 2005).

Not only can humans obtain information from the Internet, but also information systems can also acquire information regarding how consumers behave on Web sites. Consumer behavioural information can be acquired and stored on information systems and then be measured, analysed and can serve to better understand online consumers. This bi-directional communication therefore permits information exchange between organisations and consumers which reinforces the purpose of the Internet as a marketing channel (Hong et al., 2005).

Accordingly, in this section we will revise bodies of research concerning how consumers can obtain information from Web sites and how information systems can trace and analyse online consumer behaviour. This will be followed by a description of literature regarding the quality of exchanged information and the effects of information overload on consumers. We shall then review theoretical foundations regarding the measurement and analysis capabilities of the Internet emphasising how

clickstreams and *elementary information processes* can be used to trace online consumer behaviour. Figure 29 illustrates the connection of this section with the overall theoretical framework of this chapter.

Figure 29: Connection of section 3.4. with the overall theoretical framework of this chapter



Source: Developed for this research

3.4.2. Acquisition of online consumer behaviour information

The Internet has revolutionised the way in which consumers obtain information (Su et al., 2008). The reduction of search costs for products and product-related information is one of the key benefits of online shopping (Ariely, 2000). Whilst consumers are obtaining information online, it is also possible for information systems to acquire and analyse the information consumers are actually obtaining. Information acquisition includes an analysis of the content of the information sought, how long consumers examine this information, the sequence of acquisition, and the

amount of information acquired (Einhorn and Hogarth, 1981; Lohse and Johnson, 1996). Information acquisition can also be used as a proxy for the amount of information processing, the amount of processing effort and processing selectivity (Lurie, 2004).

According to Lohse and Johnson (1996) information acquisition data are important for research in behavioural decision making for at least the following three reasons:

1. Patterns of information processing suggest certain strategies for evaluating information and have implications for interface design of consumer information systems. An understanding of prototypical patterns for the evaluation information helps the identification of behaviour that could constrain or alter decision processes;
2. Information acquisition patterns directly influence cognition and memory. Subtle changes in presentation format can change decision-making strategies, alter decision performance and change the frequency of preference reversals.
3. The way information is displayed can change decisions, and for the design of interfaces for electronic commerce it is important to understand this influence.

Lohse and Johnson (1996) researched information acquisition processes underlying judgment and choice behaviour using *mouselab* (Johnson et al., 1989), a computerised process tracing tool where the amount of information processing can be assessed by counting *acquisitions*, that is the number of times that information boxes or *alternatives* have been opened. Processing selectivity can be determined by the proportion of time spent on the most important attributes of the alternatives, the variance in time spent on each one, and the variance in time spent on each attribute (Lurie, 2004; Payne, 1988).

Whilst the term ‘information acquisition’ is utilised in marketing literature, information systems research equally utilises the term ‘data extraction’. In systems research literature, Kennedy, Te’eni and Treleaven (1988) investigated the data extraction strategies of people that acquire information from any one of several common displays by analysing the match between display, decision task and data. By analysing information acquisition behaviour with elementary information

processes (EIPs) and the strategy utilised by decision makers, they could understand how decision makers extract quantitative data from several common displays in order to solve common decision tasks. They also utilised EIPs in order to understand how people make *comparisons* of alternatives on computer displays. Their research identified several factors that appear to influence decision behaviour, in particular display format and problem requirements, including the decision task to be solved and the data set available. According to Kennedy et al. (1988), this is the basis for defining optimal displays that lead to the most efficient behaviour. Their experiment demonstrated how changes in display, decision task and data alter the way people select decision strategies, suggesting further research for designing more effective human-computer interfaces that in turn would allow prediction of behaviour. A detailed review of EIP research will be found in sub-section 3.4.14, which is dedicated to the measurement capabilities of the Internet.

Whilst information acquisition refers to how information systems can acquire consumers' online behaviour data, in contrast, consumers can also obtain information from the Internet. Literature refers to searching and browsing as the principal methods used by consumers to acquire information online. While searching and browsing are deemed to distinct activities on the Web, researchers have recognised that they represent two ends of a continuum rather than a strict dichotomy (Hong et al., 2005). These two methods are described in the following two sections.

3.4.3. Consumer online browsing of information

The browse is to look through information in a casual leisurely manner (Collins Essential English Dictionary, 2006). When consumers are engaged in online browsing tasks, they usually do not have a precise goal. In fact, browsing behaviour has also been considered as an experience, as browsing activities are typically affected by the process itself rather than well-articulated goals or outcomes. Online consumers with browsing tasks are therefore more likely to be influenced by shopping environments, especially by the design of Web sites (Hong et al., 2005). O'Brien (2008) affirmed that whilst browsing, shoppers and searchers can get side-tracked by items for which they did not originally search.

The following section is dedicated to how consumers search for information online. It will be followed by three subsections regarding search costs, commerce related online searching and sponsored links in search engine results.

3.4.4. Consumer online searching of information

Commerce-related searching is a major subject of interest and further research is needed to identify trends in commerce related Web searching (Spink and Jansen, 2008) as understanding consumers' search behaviour is critical for online retailers in order to design e-commerce Web sites and their underlying information systems (Zhang et al., 2007). People's interaction with Web search engines is driven by many human needs, including information behaviours and purchasing behaviours (Spink and Jansen, 2008). Web searching is now a daily activity for many people. Online consumers who enjoy cognitively demanding processing tasks are more likely to use the Web for information search (Das et al., 2003). Web traffic has increased exponentially as Web search engines are used as a major tool for acquiring Web-based information.

With no doubt, the Internet has affected how consumers search for information (Peterson and Merino, 2003). Search engines play a major role for accessing Web sites and many times people spend lots of time trying to get to the right source (Spink and Jansen, 2007). Customers are no longer confined to their surrounding physical proximity when searching for goods and services, and can use the Internet to easily browse information nationally and internationally (Phippen et al., 2004). With the Internet, customers have been more empowered (Urban, 2005) and can use it to browse and search and make improved choices. As the online market becomes more competitive, consumers are less loyal to a particular Web retailer than at the earlier stages of the Internet (Zhang et al., 2007). Furthermore, business conducted over the Internet now involves the customer to a much greater degree than ever before (Phippen et al., 2004). The availability and depth of information also attracts consumers to engage in online shopping (Su et al., 2008). As more and more information sources are being instantaneously available online, the performance of information retrieval systems should be improved in order to facilitate access to

information based on consumer identified information needs (Cole, Leide, Large, Beheshti and Brooks, 2005).

Internet users appear to be primarily motivated by communication / information needs (Kulviwat et al., 2004). When searching for services and products on the Internet, people create Web queries in order to translate their information problems into a demand for products and services. Web queries are usually short, without much refinement or modification, and are simple in structure with few words. Few queries incorporate advanced search techniques, and when such techniques are used, many mistakes result. Frequently, people tend not to browse beyond the first or second results pages (Spink and Jansen 2004). Overall, a small number of search terms are used with high frequency and many terms are used just once. Web queries are very rich in subject diversity and some are unique (Spink and Jansen, 2008). These researchers studied search logs to determine the level of commerce related search during the period of 1997 to 2005, and concluded that commerce related queries increased as a proportion of all Web queries since 1997, and represented more than 30% of total Web queries in 2005.

Research by Chen et al. (1999) found that consumer information retrieval was the most commonly reported flow-inducing activity. Also Ariely (2000) developed a study where he controlled the flow of information consumers received, and proved that information flow can help consumers match their preferences when using a Web site, had better memory and knowledge about the site they examined, and became more confident in their judgements. Searching the Internet requires technology support and knowledge of information technology (Zhang et al., 2007) and Internet users do not necessarily feel shortage of time compared to non-users (Kulviwat, Guo and Engchanil, 2004).

With regards to the costs of searching online, one of the attractions of the Internet is that information can be accessed by its large user base at a low cost (Thelwall, 2000) and search costs, as measured by time, have decreased (Johnson et al., 2004). Economic theory generally assumes that low search and evaluation costs enables

consumers to search more and find the best options (Su et al., 2008) and that consumers will keep searching for information as long as the perceived benefit from doing so is larger than the costs involved (Bettman et al., 1998; Jepsen, 2007). In this direction Degeratu, Rangaswamy and Wu (2000) affirmed that many executives are very concerned that online consumers will focus on price and this will result in strong price competition. Stigler's (1961) cost-benefit theory proposed that a rational individual will perform a certain activity only if the marginal benefits from doing so outweigh the marginal costs. In their research, Kulviwat et al. (2004) found that perceived cost and perceived benefit had a positive effect on the motivation to search online, which is the desire to expend effort in gathering and processing information, and is characterised by the pieces of information that are collected and processed, and the intensity of the effort (Kulviwat et al., 2004). Low (higher) search costs and higher (lower) search benefits can increase (decrease) motivation to search (Moorthy, Ratchford and Talukdar, 1997).

At the heart of most search models is the trade-off between the cost of search, usually measured by time and the benefit of that search to the consumer (Johnson et al., 2004). Lohse and Spiller (1998) analysed the relationship between the features of the virtual store and the traffic and sales levels on the Web site. Results suggested that costs associated to information search processes were the main determinants of those variables. Johnson et al. (2004) suggested that search costs are also considered as dynamic and are analogous to the concept of lock-in (Zauberman, 2003). Online retailers, however, fear that such lowering of consumers' search costs will intensify competition and lower margins by expanding the scope of competition from local to national and international (Lynch and Ariely, 2000). These researchers tested conditions under which lowered search costs would increase or decrease price sensitivity. They found that for differentiated products such as wines, lowering the cost of search for quality information reduced price sensitivity. Price sensitivity for wines common to different stores, increased when cross-store comparison was made easy. Making information environments more transparent by lowering all search costs produces welfare gains for consumers.

Apart from search costs, consumers' search depth is influenced by a variety of factors such as individual consumer difference and product characteristics. Consumers, who have an item in mind, have to engage in a great deal of search in order to find a site that offers an appropriate price and satisfactory product or service quality (Zhang et al., 2007). When consumers are engaged in searching tasks, they are typically directed by some inner plans to make an active search and in these cases, within-store searching behaviour is focused and targeted towards a specific and immediate purchase. Consumers are more likely to follow some internal search plan based on their knowledge of the Web site and are not so influenced by the shopping environment (Hong et al., 2005).

There is specific research on the online search of commerce-related information.

Since the inception of commerce related information on the Web, and the easy and relatively less costly access to Web services, the Web has become a transaction medium for e-commerce purchases and commerce-related information (Jansen and Spink, 2007) and are now everyday tools used for these purposes (Rainie, 2005). The level of commerce-related Web search is a major indicator of the growth of e-commerce. Purchasing interaction behaviour with the Web is driven by needs including actual purchasing and information needs (Spink and Jansen, 2008). There has been consensus that the Internet has greatly reduced consumers' search costs for product information, especially for pricing information (Zhang et al., 2007). Research has demonstrated that consumers do use the Internet when searching for product information (Jepsen, 2007; Peterson and Merino, 2003), however it is not sufficient that search costs are low, they also have to be perceived as low by consumers (Jepsen, 2007). When conducting an information search, consumers rely on both internal and external sources. Internal sources refer to aspects that consumers already know about products, and external sources rely on sources of information available in the marketplace (Su et al., 2008).

Web sites are not bound by either space or time, have the technical capability to involve and engage customers (McMillan et al., 2004) and provide them with much

wider array of opportunities for information search related to their interest, and therefore, a higher level of interest in the product may result in an increased use of the Internet for information search, regardless of the general use of the Internet (Jepsen, 2007). This research found a positive relationship between product knowledge and product interest. According to Moorthy et al. (1997), more knowledge heightens the ability to select and process information retrieved. High levels of product knowledge and interest reduce the time needed for search. As the search becomes more efficient, expertise may affect the extent to which consumers process and analyse relevant product-related information (Jepsen, 2007). Based on EBM model, Teo and Yeong (2003) studied how consumer decision processes were made in online shopping environments, finding a positive relationship between perceived benefits of search and overall evaluation. However, it is known that consumers tend to search little for online information (Moe, 2003). In contrast, Ruiz and Sanz (2009) affirmed that shoppers with less experience use search engines more. As consumer online shopping experience and learning increases, and undertake repeat purchases, the efforts they have to invest in their browsing and searching efforts reduces. Also the likelihood of browsing reduces.

Since it is well established in traditional literature that purchase decisions are based on the information obtained in a pre-purchase stage, marketers have always been greatly interested in learning the different facts of consumers' information collecting behaviour (Bhatnagar and Ghose, 2004). Jepsen (2007) developed a model based on Internet search costs, perceived availability of information and consumer use of the Internet for information search. They proved that the amount of Internet use affects its use for pre-purchase information search, more than perceived low search costs and perceived availability of information. Smith and Brynjolfsson (2001) revealed that consumers do not choose online retailers that offer the lowest price. Instead the balance between price and quality factors was found to be more valued when making their purchase decision. Also expert consumers are more selective in the information they acquire and are able to acquire information in a less structured environment (Zhang et al., 2007). Based on the use of clickstream data obtained from online searches, these authors researched how factors such as search costs, individual

consumer differences and product characteristics influence consumers search depth. Chorus and Timmermans (2008) developed a theoretical model of consumer behaviour to test whether observed information searches could be used for deriving consumer preferences. They found that information search concerning an uncertain attribute of a good could be used to identify consumer preferences concerning the good. Moe and Yang (2009) studied the impact of new competitive entry on online consumer search behaviour, and found that inertia is a relevant driver in search behaviour, and it is easily disrupted by a new competitive entry.

Spink and Jansen (2008) affirmed that the level of commerce related searching is a major subject of interest, and suggested that further research was needed to track the trends in commerce related Web searching. In this direction, commerce related search has been investigated by a number of researchers. Huang et al. (2009) developed analysis of online behaviour comparing search behaviour for both search and experience goods and found that experience goods involve greater depth (time per page) and lower breadth (total number of pages) of search than search goods. Kim and Lee (2008) examined the influences of consumers' perceptions of retail usefulness for product information search and their previous satisfaction on their frequencies of product information search and product purchase behaviour. They undertook their investigation in five different retail settings including Internet shopping and local retail shopping, and concluded that consumers who perceived a certain retail channel more useful for a particular product information search, searched for this specific information more frequently via that retail channel. Seock and Bailey (2008) examined the relationships between students' shopping orientations and search for information about purchase of apparel products. Results showed that participants' shopping orientations were related to their searches for information regarding online purchases of apparel items online. They also found that differences in different gender online information searches. A study by Das, Chambadi, McCardle and Lockett (2003) argued that certain personality traits of e-commerce had an effect on online shopping, navigation and information seeking behaviours. They proposed that online consumers who were low on interpersonal trust were less likely to shop on the Web due to their heightening concerns with Web

security. Also Su et al. (2008) affirmed that perceived benefits of information search processes were positively related to satisfaction with outcomes. Finally, Murray and Häubl (2007) revealed that cost associated with the search process for a retailer was psychologically bundled with the benefits of using that retailer.

There is also a growing body of research related to sponsored links presented within the results of search engines.

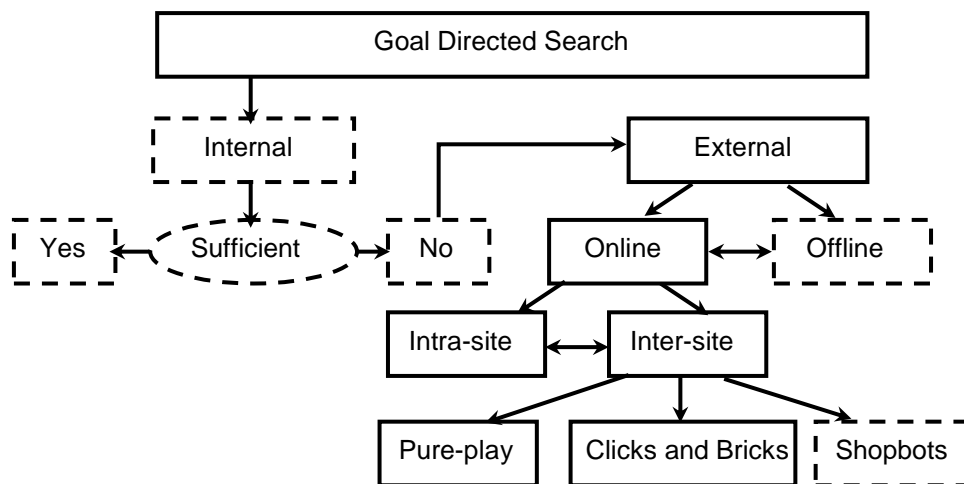
Sponsored links have emerged as major financial drivers for Web search engine companies (Jansen and Spink, 2007; Chen et al. 2003). Keyword search advertising is most notable within the advertising sector (Khasoneh and Sweeney, 2007). In this direction, Spink and Jansen (2008) researched the effect of click-through on combined sponsored and non-sponsored search engine results in a single listing. They found that combined sponsored and non-sponsored links did not appear to increase clicks on sponsored listings. In fact, it may decrease such clicks. Finally, Ruiz and Sanz (2009) argued that search engines lack transparency, as they do not explain how the results presented are connected to the search terms used by consumers. They suggested that further research is needed regarding social responsibility of search companies and the ways in which they provide results to their users.

The next section focuses on goal-directed and experiential behaviour of online consumers.

When accessing information, users can already have in mind their need and engage in a search task which is referred to as 'goal-directed', or either browse the information made available to them, behaviour which is 'experiential' (Hoffman and Novak, 1996; Pieters, Baumgartner and Allen, 1995). Goal-directed behaviour is characterised by extrinsic motivation, utilitarian benefits, and directed search, whereas experiential behaviour is characterised by intrinsic motivation, hedonic

benefits and non-directed search (Hong, 2005). Site visitors can either have the intention to make a purchase or are simply interested in browsing for information. In this direction, Bucklin and Sismeiro (2003) affirmed that first the goals of individual Internet users should be understood. Accordingly, with this information, marketers would be able to define the best prospects for online purchasing (Van den Poel and Buckinx, 2005). Chiang et al., (2005) affirmed that a consumer's online information search is directly affected by his ability to locate and process information. Consumers face two main tasks in online environments, inter-site search and intra-site search. Inter-site search is the location of Web sites of their interest and movement within those sites, and intra-site search is the acquisition of information within sites of interest. Typically, a search process includes both types of searches. Figure 30 illustrates the process of goal-directed information search suggested by Chiang et al., (2005).

Figure 30: Process of goal directed information source



Source: Chiang et al. (2005)

Internal search is the main source for habitual decision-making when recognising a purchase problem. When the information they have in their memories is not enough, they are likely to conduct an external search of information. Information searches can take place online, off-line or in a combined situation. Despite the many advantages of accessing information on the Web, Peterson and Merino (2003) suggested that the Internet is not likely to be an information panacea for consumers. Because of both the complexity of the Internet and the complexity of consumer

information search behaviour, investigations of consumer information search behaviour should focus especially on moderators of behaviours and interactions among the various antecedents of behaviour. However, research has also shown that the need for extensive searches diminishes as consumer learning with medium increases (Bhatnagar and Ghose, 2004). Consumers possessing a high level of product knowledge will feel better equipped when selecting amongst the vast quantities of information available on the Internet. In addition, consumers who are skilled when searching for information and feel that the Internet is important to them, may be more confident when usable information is available (Jepsen, 2007). In this direction, Johnson et al. (2004) researched depth and dynamics of online search behaviour over time and modelled individuals' tendency to search as a logarithmic process, and found that shoppers search very few sites in a given month. Also Bhatnagar and Ghose (2004) investigated consumer online information patterns of search, specifically the time spent per search episode and search frequency patterns, and revealed that consumer learning occurred when consumers searched across search goods, but not when they searched across experience goods. Finally, Chorus and Timmermans (2008) observed that information search concerning an uncertain attribute of a good was sufficient to estimate consumer preferences concerning the good.

There are bodies of literature that express concern over the relevancy of information quality and overload of information. In what follows they shall be described.

3.4.5. Information quality

Potential and existing customers use Web sites to collect information about potential suppliers, and this transparency of information helps them to make decisions (Virtsonis and Harridge-March, 2008), therefore Web designers should take care of the information quality related to the products and services supplied by successful e-commerce Web sites (Flavián et al., 2008). This was further supported by Ferreira (2008). In her research she demonstrated how information quality and effectiveness were strongly correlated to strategic performance. Also Fuller, Serva and Benamati

(2007) examined the transitory influence of reputation information on consumer decision making regarding e-vendors, and linked reputation information to trusting beliefs: competence, benevolence and integrity. They concluded that this was notable in some contexts, and helped to better understand how consumer decision making is affected by different purchasing contexts. Finally, in the context of tourism, Palmer and Boissy (2009) noted how confusing airline pricing undermines the capability of buyers to make rational decisions and in consequence, creates irrational choices.

3.4.6. Information overload

Whilst buyers need time, thoughtfulness, and planning, all features that the Internet is supposed to provide (Spann and Tellis, 2006) it can also provide consumers with ongoingly growing vast contents of information. When consumers are confronted with too much information, this results in information overload. These issues have been discussed in research (Lurie, 2004; Park and Lee, 2008; Rosen and Purinton, 2004; Su et al., 2008). When a large number of attribute-value reviews are offered, consumers also experience information overload. Information overload results in a decrease in the perceived informativeness of a Web site (Park and Lee, 2008). Research by a U.K. firm Web Top found that 71% of British Internet users feel frustrated and stressed by online information overload (Su et al., 2008, Wagstaff, 2001). To deal with this, Web sites can use hierarchical category tables in multidimensional space. Web pages, and the information within these pages, can be reorganised to allow anticipated information more prominence. Marketers have used numerous techniques such as expanding and refining colour usage, consistency, instructions and other simple heuristics that greatly benefit the user. Overall, these changes have led to a more intuitive process for consumers (Stibel, 2005). Human cognitive resources are limited and it is impossible for users to process all of the information available at any given moment (Huang, 2003). Due to this limitation, humans allocate their processing capacity in varying amounts to different locations in visual fields (Hong et al., 2005). The large quantity of information available on the Internet is not adequately organised for consumer searches and consequently it can be difficult for consumers to find the information they seek (Alba et al., 1997;

Jepsen, 2007). One way humans can cope with processing information is through the use of cognitive maps (Rosen and Purinton, 2004) similar to choice sets which have been widely used in marketing literature (Hoch et al., 1999; Lohse and Johnson, 1996; Lurie, 2004).

Whilst the Internet and Web sites can be utilised to exchange information between online companies and consumers, there is a body of research which refers to how the Internet can be used to measure the online navigation behaviour of consumers. The following sections describe bodies of research concerning the measurement and analysis of online consumer behaviour information.

3.4.7. The web: a measurable medium

It is well accepted that information is a valuable source used in marketing research and practice. The Internet provides marketers with much data on customers, and consequently, has brought marketing management into a new age (Yang and Lai, 2006). The information systems where the Web sites are hosted can provide information reflecting consumer behaviour, including their navigation patterns. The Web represents a business channel in itself and the possibilities with regards to the distribution of goods and / or services have changed substantially. For marketers, one of the attractive features of the Internet is the possibility of tracing online user behaviour, and therefore to assess consumer performance within Web sites. This allows both practitioners and researchers to use the rich source of detailed data of Web usage for the study of online consumer behaviour (Bucklin and Sismeiro, 2003). McKinsey and Company (2008) published a report called 'online marketing metrics' where the following phrase was included on the cover page: 'The Web is the most measurable medium in the history of marketing. Now all that's left is figuring out how to measure it'. Also Internet industry magazine Precision Marketing (2007) stated that whilst consumers are using a Web site, 'they are ongoingly handing their data. With this information it is possible to build upon knowledge for the challenges ahead, store it and retrieve it in the future'. Not only industry wishes to understand how online data can be used. Researchers Yang and

Lai (2006) affirmed that a better understanding of customers permits the improved design of online marketing strategies. Consequently tools are needed for measurement of online behaviour (Phippen et al., 2004; Van den Poel and Buckinx, 2005).

Research concerning the use of the information capabilities of the Internet for marketing purposes is advancing (Bucklin and Sismeiro, 2003, 2009; Senecal et al., 2005; van den Poel and Buckinx, 2005). Whilst in the offline world, purchase behaviour is commonly used and there is wide availability of past purchase data which proves to be effective and rich predictors (Schmittlein and Peterson, 1994), the data collected is only concerned with the buying behaviour of clients (van den Poel and Buckinx, 2005). Within the context of Internet marketing, collecting online data such as customer data and process data can be efficiently collected and provide marketers with information on the consumers' decision-making processes (Phippen et al., 2004; Yang and Lai, 2006). Whilst the basic online metrics utilised are essentially organisational-centric measures (Phippen et al., 2004), the Internet marketing allows marketers to efficiently collect not only order data but also browsing and shopping cart data, which can provide them with information on consumers' decision processes, rather than only on final shopping decisions (Yang and Lai, 2006). This implies that the information systems that receive and store online consumer data should be configured so they store the information that is useful for the purpose of each Web site, as each site should measure success according to its own objectives (Liu et al., 2009).

Phippen et al. (2004) suggested that though research concerning Web metrics is growing, it is highly industrial in nature. Some of the basic metrics can be meaningless when evaluating the success of a Web site's success, and this can lead to inaccurate conclusions. Characteristics used to assess success for one Web site do not necessarily define success for another. Likewise, Hong (2007) argued that Web metrics used to measure Web site success should differ by Web site categories. Businesses have begun to find the use of basic metrics such as hits and pages views to be inadequate for assessing the success of Web sites, due to the fact that their

simplistic and ambiguous nature can lead to making misleading conclusions. Any improvements on basic metrics would aim to clearly define and provide specific details, which offer little or no room for misinterpretation. In addition, clear industry-standard definitions could contribute to rectifying the currently ambiguous nature of Web metrics. For instance, a company that operates an informational Web site could perceive the site is successful if it attracts large numbers of people. However, for companies using their Web site as a commercial tool, success may be better defined by a large number of purchases being made from it (Phippen et al., 2004).

Nevertheless, a challenge remains as to how to learn of a consumer's online shopping task. One way of doing this is by analysing the profile of online consumers and their search log files. Based on both input information, such as keyword search terms, and traced information, such as order history and clickstream log files, online retailers can assess how specific a consumer's shopping goal is on a particular shopping trip (Hong et al., 2005).

With regards to Web analytics, whilst clickstreams and path analysis are concerned with the path users take through Web sites, Web analytics are concerned with measurement and understanding of the relationship between consumers and Web sites. Whilst industry has suggested general Web analytics measurements (e.g. www.webanalyticsassociation.org, 2010), science research literature distinguishes between basic Web measures, which are essentially organisation-centric measures, and advanced Web analytics, which aim to measure and understand the relationship between customers and Web sites (Phippen et al., 2004).

Given the investments in time and money that are often required to launch a commercial Web site and the growing demands to see returns on Internet-related investments, a stronger focus on performance and success is becoming critical for Internet-based e-commerce (Ghandour et al., 2008). However, the measurement of commercial Web site performance has proven to be a difficult task not only because

it depends on which stakeholder perspective is assumed (the user, the designer or the organisation), but also because it is a multidimensional concept that can be assessed at different levels (individual and organisational) using different interrelated criteria (Ghandour et al., 2008; Molla and Licker 2001; Palmer 2002).

In electronic commerce there is still no established method for measuring the success of a Web site. E-commerce Web site performance seems to be a concept that cannot be captured in a single measure, and should therefore be treated as a multidimensional phenomenon. However, measures such as total business attracted, site usability, design features, information quality, Web site quality, user characteristics and fundamental objectives appear to be relevant indicators (Zviran, Glezer and Avni, 2006). Ghandour et al. (2008) proposed dimensions of success relevant to e-commerce Web sites based on the identification of four capabilities: informational, transactional, customer service and promotional features. Also Phippen et al. (2004) suggested a group of six measurement tasks that could contribute to the improvement of the success of Web sites. These tasks are described in table 16.

Table 16: Measurement tasks that can contribute to a Web site’s success

TASK	HOW TASK ENHANCES WEB SITES
Measurement and monitoring of Web site traffic	Helps to plan for future growth
Segmentation - the differentiation of site visitors based on behaviour on the site	Improves targeting, which enables the site to reach the right customers with the right message
Assessment of online initiatives (e.g. Web site redesign), and improvements to processes (e.g. online shopping processes)	Helps to assess, improve and plan future online strategy
Measure impact - revenue and popularity of online campaigns	Helps to improve future online strategy; also comparison with off-line promotions
Monitoring of external referrers	Identifies which search engines and affiliate partners produce the most profitable custom
Monitoring of clickstreams and paths	Identifies unvisited or poorly performing sections of a Web site which helps with maintaining an efficient site

Source: Phippen et al. (2004)

The next section refers to the measurement and analysis of online consumer information.

3.4.8. Measurement and analysis of consumer online data

Measurement of online customer-related activities should be measured as any other information that is relevant to business. However, the difficulty lies in how to measure online business activities. Apart from the easy access to data, the information collected should be understood and findings arising from the data should be applied, therefore Web information intelligence is also necessary, where the information obtained from a Web site should be analysed and applied within a relevant context (Phippen et al., 2004). Business managers have recognised the need to assess the payoffs from their e-commerce investments, yet they are less able to assess the effectiveness of their Web site due to limited measurements available to them (Ghandour, Deans, Benwell and Pillai, 2008). In their research regarding online consumer behaviour, Sismeiro and Bucklin (2004) concluded that as not all information can be obtained online, companies should contact visitors through other methods in order to acquire the information they might need. Specifically these researchers wanted to know the reasons why a group respondents who introduced their personal information in a Web site, exited it without making a purchase. In order to obtain such information, they contacted the group of respondents via telephone. Accordingly combined online / offline methodologies are sometimes required.

Having described how it is possible to measure and analyse online consumer information, the analysis of such information can be used to improve online sales conversion, customer online segmentation and also personalise Web content for groups of consumers. This is reviewed in the following three sections.

Obtaining sales conversion in a Web site is one of the major problems for e-commerce marketing managers, especially as it is difficult and expensive to attract customers, but easy to lose them (Phippen et al., 2004). Information acquired whilst tracking online navigation behaviour can be used for improving online sales conversion. Sismeiro and Bucklin (2004) affirmed that ‘predicting and

understanding online-buying behaviour is of utmost importance for e-commerce Web site managers. Even small changes in conversion can result in considerable increases in sales revenue'. In order to address the problem of current industry low conversion rates, it is necessary to understand more in detail the features that control visitor's decision whether or not to purchase (van den Poel and Buckinx, 2005). It is imperative that the factors contributing to dropouts are measured and understood, as one of the aims of Web sites is to reduce the number of dropouts and increase the number of customers in the retention stage of the relationship (Phippen et al., 2004). Based on an extensive set of predictors from different categories, van den Poel and Buckinx (2005) studied whether a potential customer would engage in online-purchasing behaviours during their next visit to a Web site. Also Mandel and Johnson (1999) proved that what visitors are exposed to, has an impact on their purchase behaviour and, consequently, on the site conversion rate. There has also been an interest in mining Web data to predict purchase conversion (Moe and Fader 2004, Park and Fader 2004).

Research on online consumer behaviour has also been approached from a dynamic perspective. Moe and Fader (2001) were the first ones to investigate online customer conversion rates over time, and showed that their dynamic approach forecasted Internet behaviour significantly better than models that did not take into account behavioural changes over time. In further research, they focused on analysing the conversion of store visits in purchases based on historical visiting data (Moe and Fader, 2002). Accumulated visits proved to be the best indicators of purchase potential, therefore it was revealed that the time elapsed between purchases could be used as indicators for future buying patterns and predictions could be made for each customer concerning their probability of making purchases during a visit (Moe and Fader, 2002). Also Padmanabhan, Zheng and Kimbrough (2001) researched the probabilities that the remainder of a visit resulted in a purchase and if that users would make purchases in future sessions.

With regards to online customer segmentation, through Web design, marketing actions can be adjusted to the profile of visitors in order to influence customers

visiting and shopping behaviour (van den Poel and Buckinx, 2005) and make the same offer reach several customer profiles through duplication of offer (Simonson, 1999). If a Web site provides sufficient flexibility, it would be able to cater to the multiple market segments and satisfy a diversity of users (Rosen and Purinton, 2004). In this direction, van Riel, Semeijn and Pauwels (2004) suggested that further research was needed on how user interfaces influence customer evaluations on Web sites. As many sites have multiple segments to which they cater, if preferences are distinct amongst different consumer segments, different options could be made available to different groups. What must be determined is how much flexibility should be built into a Web site's content in order to satisfy the diversity of users (Rosen and Purinton, 2004). Also Jonker, Piersma and van den Poel et al. (2004) affirmed that messages should adapted be communicated to the right customers containing product recommendations. Still Liu and Shrum (2009) reminded that Web sites and their elements should be designed according to their user target groups.

If the characteristics and users of technologies are known, it should be easier to refine and improve existing technologies and develop new ones that are of real value to consumers. Providing information to potential customers regarding the newness and benefits of using these new technologies could result in increased likelihood of adoption and use (Page and Uncles, 2004). For this purpose, these researchers developed scales that distinguished between common and specialised declarative knowledge, and common and specialised procedural knowledge, as a means for classifying and segmenting users based on their knowledge of the Web. Denis and Legerski (2006) reminded that in order to achieve adequate customer segmentation, it is necessary to count on good data, as statistics cannot 'take bad data and turn it into gold by calling it a causal model'. Finally, Moe and Fader (2001) argued that the more refined the segmentation or profiling of the customer base is, the more efficiently a profitable target segment can be identified.

Finally, with regards to undertaking online centric-customer personalisation, whilst the Internet is supposed to be the most measurable medium in history (McKinsey and Company, 2008), a recent study by Forrester Research (2009) revealed that

although some companies do carefully segment their direct marketing data bases, few companies take advantage of the customer-centric capabilities of the Internet. Only a third of the online marketers interviewed by Forrester said they had a systematic method of delivering the right message to the right person at the right time. This report revealed that 11% of marketers admitted that customer engagement was the primary factor in their customer communications.

Having described the uniqueness of the Web medium for measuring and analysing online consumer data which can be used to better adapt Web content to its visitors, in what follows we shall review research regarding how it is possible to trace online consumer navigation on Web site utilising clickstream data and elementary information processes. The can be utilised to understand and assess consumer navigation behaviour on Web sites.

3.4.9. Clickstream data

Information searches made through the Internet can be relatively easily traced, and this creates a potential wealth of clickstream data. Clickstream can be defined as the path a consumer takes through one or more Web sites (Senecal et al., 2005; Bucklin, Lattin, Ansari, Gupta, Bell, Coupey, Little, Mela, Montgomery and Steckel, 2002). Likewise, clickstream data are the electronic record of Internet usage collected by Web servers (Bucklin and Sismeiro, 2009). With the advent of computer-mediated choice environments on the World Wide Web, vast quantities of clickstream data are becoming an important source of intelligence for cyber marketing (Lohse and Johnson, 1996). Such clickstream data presents empirical researchers with a significant opportunity to advance the understanding and prediction of consumer choice behaviour (Chorus and Timmermans, 2008).

Clickstream data shows sequence of pages or the path viewed by users as they navigate on a Web site, and allows the opportunity to monitor and understand customer activity, for instance, whether a purchase has been actually made or not. Clickstream data may also contain information about a user's goals, knowledge and

interests (Montgomery et al., 2004). However, it has been recognised that detailed clickstream variables are more important than the more general variables used in the past (van den Poel and Buckinx, 2005). Bucklin and Sismeiro (2003) suggested that clickstream data could be used to model the usage of a specific Web site, and to follow how the usage may change with the experience of users. The detailed nature of the information tracked about Internet usage and e-commerce transactions presents an enormous opportunity as it serves as a market research tool which is useful for understanding and predicting of online choice behaviour useful and developing competitive advantage (Bucklin et al., 2002). With the use of clickstream data, online stores can fully realise the potential of interactivity as is possible to personalise Web sites for their intended group of users (Montgomery et al., 2004). Using clickstream data, for instance, it has been revealed that the frequency of past purchases is positively related to a customer's future buying behaviour (Lemon, White and Winer, 2002).

Research on consumer behaviour based on the acquisition of Web data has been analysed from two perspectives: across Web sites, and within one particular Web site, both from single and multiple visit perspectives. Research concerning within-Web site behaviour has focused on clickstream or Web site-related variables that help to explain the goals pursued by consumers who visit a site, why consumers continue browsing on a Web site and which visitors are likely to make a purchase (Senecal et al., 2005). Clickstream data can include within-Web site information such as the pages visited, the time spent on each page, and between-site information such as the Web sites visited (Bucklin et al., 2002). Also Moe and Fader (2002) argued that a potentially important area of research was the activity that takes place within a site visit. Although there is a growing body of research regarding clickstream data, the Marketing Science Institute (2008) prioritised needs for research regarding the development of online marketing metrics, in order to better understand online consumer behaviour.

Using data from a major online bookseller, Montgomery et al. (2004) showed how path information can be categorised and modelled. Their findings could be used to

personalise Web designs and products offerings based upon a user's path. They also affirmed that path analysis can be quite helpful in predicting purchase conversion, even early in a Web session. Based on clickstream data, van den Poel and Buckinx (2005) developed a model capable of predicting whether a registered Web site user would make a purchase or not, using variables from four different categories: 1. general clickstream behaviour at the level of visit; 2. more detailed clickstream information; 3. customer demographics; and 4. historical purchase behaviour. This has proven useful when predicting if a customer would engage in online-purchasing behaviour during his next visit to a Web site, and the ability to do so could consequently improve the customer targeting of a Web site. As a key element of their research, they indicated that detailed clickstream variables were crucial when classifying customers according to their online purchase behaviour. In this direction, Liu et al (2009) affirmed that Web sites and their interactive elements must be designed according to their user target groups.

Bucklin and Sismeiro (2003) developed a model of Web browsing behaviour of visitors to a Web site selling cars based on clickstream data, with the objective of capturing browsing behaviour for a single Web site, both within and across visits. They did so by looking at the disaggregate level of individual user behaviour and examined two aspects of within-site browsing behaviour: 1. the visitor's decisions to stay browsing a site, by submitting an additional page request, or to exit the site, and 2. the length of time spent viewing each page. Their results indicated that Web site users dynamically adjust their browsing behaviour both within and across visits. They also found evidence for within-site lock-in effects by analysing two browsing variables: page requests and page-view duration. The authors revealed that, as users dedicate effort to learn how to use a Web site, the learning effects spilled over multiple visits and reduced their subsequent number of page views as they returned to the site. Visitors become more involved as they request more pages, and the greater they become involved, users demonstrate increased page requests and longer page-view durations. This could be considered analogous to 'within-site lock-in' (Zauberman, 2003) or Web site stickiness (Li et al., 2006). Likewise Bucklin and Sismeiro (2003) found strong evidence of

heterogeneity in Web usage behaviour and changes in behaviour over time, and noted the risks of ignoring these phenomena in evaluations of Web site performance. They also proved that aggregate-level statistics could be potentially misleading Web metrics.

Yeung and Lu (2004) developed a set of quantitative Web site attributes and metrics for a better understanding of the evolution of functional characteristics of commercial Web sites. The aim of their study was to facilitate a comparison of commercial Web sites developed over time in different parts of the world and, for this reason they proposed a set of metrics that could facilitate comparison. Also Van den Poel and Buckinx (2005) studied general clickstream behaviour at the level of visit and suggested that detailed clickstream variables were the most important ones when classifying customers according to their online purchase behaviour.

The most relevant variables found were: the number of days since visitors' last visit, the speed of the clickstream behaviour during the last visit, the number of accessories viewed during last visit, the number of personal pages viewed, the number of products viewed, the gender of the customer, the fact of supplying personal information to a company, the number of days that elapsed since visitors' last purchase and the number of past purchases. Based on these findings, marketing managers can define which of the customers will visit their site with the intention to make a purchase. Table 17 presents a selection of commonly used clickstream variables.

Table 17: Selection of clickstream variables

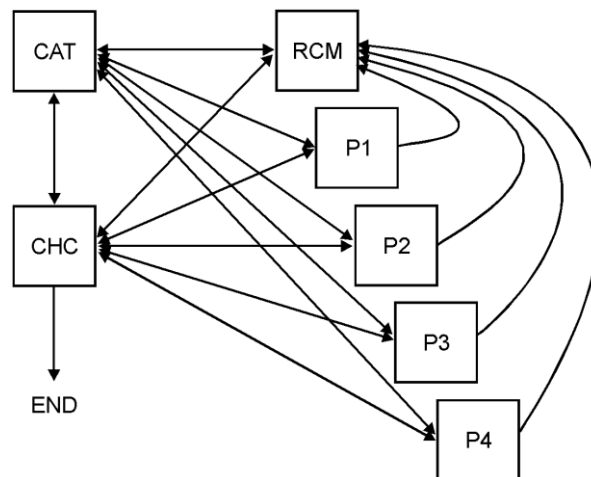
CLICKSTREAM MEASURES	DESCRIPTION
Click through	Number of times a link is clicked by a visitor
Click through ratio	The number of click-through's for a specific link divided by the number of times that link was viewed
Cpage	Cumulative number of page views for a visitor to arrive at the current page on a given visit or session.
Csession	Cumulative number of site visits made by the visitor as of the current page view.
Number of visitors	A visit is an interaction, by an individual, with a Web site, consisting of one or more Web page requests
Page views	The number of times a Web page was viewed
Page views per visitor <i>or per session</i>	The number of page viewed in a reporting period divided by the number of visits in the same reporting period

Repeat visits	Cumulative number of site visits made by a visitor
Revisited page ratio	Total number of Web pages visited divided by the number of unique Web pages visited
Session	A person explores a Web site and sees many constituent objects such as body, text, images and video files
Unique Page Views	The first time a user requests a page in a session
Visit duration or <i>session time</i>	The length in time of a session. Calculation is typically the timestamp of the last activity in the session minus the timestamp of the first activity in the session
Unique visitor	The number of inferred individual people, within a designated reporting timeframe, with activity consisting of one or more visits to a site. Each individual is counted only once in the unique visitor measure for the reported period

(Source: Based on Bucklin and Sismeiro, 2003; Pitkow, 1997; Senecal et al., 2005; Web analytics association, 2008)

Using clickstream analysis, Senecal et al. (2005) researched how different online decision-making processes used by consumers influence the complexity of their online shopping behaviour. For their experiment, they developed a fictitious experimental shopping Web site. Respondents were asked to navigate through a Web site and the clickstreams were recorded. Once analysed, the data revealed that respondents who did not consult recommendations to visit a Web site, had a less complex behaviour that respondents who did follow recommendations. Figure 31 illustrates the organisation of Web pages within their Web site, as well as the possible navigation sequences, and table 18 describes the content of each Web page.

Figure 31: Experimental Web site organisation



Source: Senecal et al. (2005)

Moe (2006) used clickstream data to capture choice behaviour of products viewed and purchased on Web sites. Their model utilised observed choice behaviour to infer both attribute preference range and criterion attributes, and argued that the identification of these attributes could assist managers when targeting and positioning promotional strategies.

Table 18. Description of Web pages used in Web site navigation experiment

PAGE MNEMONIC	DESCRIPTION
CAT	Product category page
CHC	Product choice page
RCM	Recommendation page
P1	Product detail page 1
P2	Product detail page 2
P3	Product detail page 3
P4	Product detail page 4

Source: Senecal et al. (2005)

Finally, Bucklin and Sismeiro (2009) affirmed that over the past ten years, there have been significant advances in the uses of clickstreams as directly relevant to online marketing. They grouped these advances in into three broad categories: 1. website usage and navigation; 2. advertising on the Internet; 3. online shopping and e-commerce. Likewise they distinguished between 'site'-centric' clickstreams data sets which serve to understand what happens within a specific Web site, and 'user-centric' useful for the understanding of the navigation behaviour of consumers.

This section has described regarding how clickstream data can be utilised in online environments in order to analyse within-Web site consumer behaviour. However, elementary information process are utilised to capture within-Web page behaviour. As the tracing of with Web-page behaviour also represent a source of intelligence for online marketing (Lohse and Johnson, 1996), it is worthwhile reviewing EIPs in detail.

3.4.10. Elementary information processes

Whilst clickstream data usually serve to measure within-Web site navigation, elementary information processes (EIPs) are more likely to be used to trace within-page behaviour, and can be used in page-related contexts, such as paper pages and

also Web pages. EIPs are simple cognitive operations such as reading a value, comparing two values or adding them into working memory, and are utilised within science research to measure cost of effort, for instance when scanning or reading a data chart, comparing or adding numbers (Bettman et al., 1985; Kennedy et al., 1998) and in consumer choice making situations (Lohse and Johnson, 1996). As it is known that consumer behaviour and choice are context dependent (Lohse and Johnson, 1996; Tversky and Simonson, 1993), EIPs are particularly useful for measuring consumer behaviour effort within restricted contexts such as computer interfaces or Web pages. In this direction, Lohse and Johnson (1996) suggested a cognitive effort framework based on 8 different EIPs, used to describe and measure cognitive effort in a *mouselab* based experiment as proposed by Johnson and Payne (1985) for the evaluation of different choice set based decision strategies.

Mouselab (Johnson and Payne, 1985; Johnson et al., 1989) is a computerised process tool (CPT) that generates data which are comparable to Internet clickstream data, as they provide sequence data about items included in a product display, including frequencies, browsing times and serve as a means to studying consumer choice behaviour (Lohse and Johnson, 1996). Whilst clickstream data are usually used to acquire stored information regarding the navigation patterns of Web visitors amongst different Web pages that form part of Web sites (Senecal et al., 2005; Bucklin et al., 2002), CPT allows tracing within one single Web page. Lohse and Johnson (1996) utilised EIPs to calculate process tracing effort on a computer screen, as each process tracing method required different levels of information acquisition effort. This paradigm predicted cognitive effort as a function of the number of EIPs that were required to undertake decision strategies. The EIPS they used in their experiment as well as their description are illustrated in table 19.

Lohse and Johnson (1996) noted that in some contexts, such as in online shopping, the analysis of information acquisition using clickstream data and EIPs would actually be more realistic than even recording eye movement.

Table 19: Selected elementary information processes used in decision strategies

EIP	DESCRIPTION
Scan	Move focus of attention to an appropriate area of the display
Search	Point the needed information within the area that Scan has selected
Read	Read an alternative's value on a given attribute into working memory
Move	Go to the next element of external environment
Compare	Compare two alternatives on an attribute
Choose	Announce preferred alternative and stop process
Difference	Calculate the size of the difference of two alternatives for an attribute
Add	Add the values of an attribute in working memory
Product	Weight one value on an attribute in working memory
Eliminate	Remove an alternative of attribute from consideration

Source: Adapted from Bettman, Johnson and Payne (1990)

Ultimately the selection of a process tracing method depends upon the fidelity of the system and the real world application. In this direction, Kennedy et al. (1998) suggested that a first step towards understanding behaviour in complex tasks, would be to understand that complex behaviour is often made up of many simpler sub-tasks, and therefore recommended selecting well the EIPs to be used for tracing consumer behaviour. He recommended that the list should be as short as possible but sufficient to describe all possible steps, and that the EIPs should be observable. Therefore selecting the granularity of the EIPs depends on the purpose of the research and EIPs must be used at a level that is detailed enough (Kennedy et al., 1998). EIPs can be used to measure the cost of effort when undertaking a task on a page. The easiest way to measure cost is simply to count the number of EIPs that will be required, ignoring any differences between the effort and time they require, even if different people need to invest different levels of effort for a same task (Kennedy et al., 1998; Newell and Simon, 1972). However Bettman et al. (1990) did argue that more differently weighted EIPs could produce more subtle results.

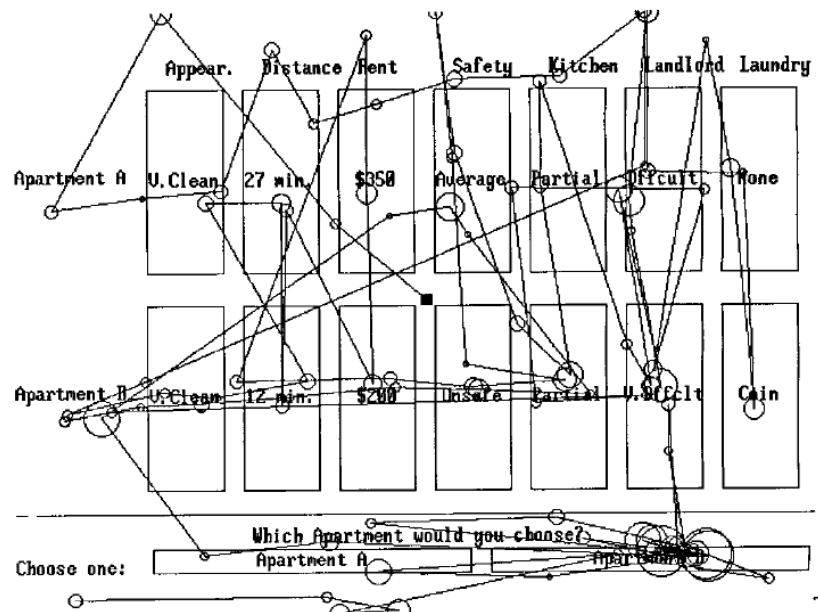
Two research articles are useful for the explanation of how EIPs can be used in computer-mediated choice environments: the first is the research undertaken by Kennedy et al. (1998) regarding how people extract information from displays, and the second is the contribution of Lohse and Johnson (1996) regarding computer process tracing methods.

Kennedy et al. (1998) utilised EIPs in order to compute the effort undertaken by people in order to analyse the match between display, decision tasks and data in graphical decision tasks. For this purpose, they selected a set of EIPs built on a combination of those used in decision-making and graphics research. The authors hypothesised that when designs better matched people's strategies of data extraction, it would take less time to formulate and execute a decision task, and decisions would also become more accurate. By selecting an adequate group of EIPs for tracing behaviour at granular level they revealed how EIPs could be utilised in order to assess how numerical tables were better than graphs when extracting data values, but were worse when detecting trends. They computed effort counting and comparing the number of EIPs used by respondents in order to make decisions. In their research, they utilised four EIPs, in particular: *scan to*, *search*, *compare*, *read* and *compute*.

The second research was undertaken by Lohse and Johnson (1996). The researchers utilised EIPs to estimate the differences in total time when undertaking the same choice task with different process tracing methods: tracking eye-movement with a laser-based CPT and tracking eye-movement with a mouselab CPT. By using a selection of eight EIPs, in particular *read*, *compare*, *difference*, *add*, *product*, *eliminate*, *move* and *choose*, they revealed that laser-based CPT systems use less time, more fixations and more reacquisitions, but result in less search of total information and have a more variable pattern when compared to mouselab. They also suggested that these methods would prove useful when applied on the World Wide Web.

Figure 32 illustrates how EIP information can be acquired by tracking respondent eye with a CPT data acquisition system. The lines represent eye movement as captured by the CPT whilst undertaking a choice task on a 7x2 choice set matrix.

Figure 32. Information acquisition data in choice task



Source: Lohse and Johnson (1996)

Elementary information processes can be utilised on research experiments based on the following two theories: competition for attention theory and scanpath theory.

3.4.11. Competition for attention theory (Janiszewski, 1988).

This theory is based on the belief that multiple objects on a screen are seen as potential candidates competing for the attention of users. Janiszewski (1988) affirmed that competition for attention would not only affect the duration of the eye fixation that an object receives, but also the efficiency of information processing and even the actual sales of products contained within a product range. Also Hong et al. (2005) utilised competition for attention theory in order to study the effects of different information formats on consumer's online shopping behaviour.

3.4.12. Scanpath theory (Norton and Stark, 1971).

This theory was developed for the modelling of eye movement patterns while viewing and recognising objects. Eye movements are composed of *saccades* and *fixations*. Saccades are quick jumps of the eye from one location to another, during which vision is essentially suppressed. Fixations are the pauses between saccades, during which the eye is relatively immobile. Scanpaths are sequences of fixations.

Scanpath theory suggests that subjects will follow certain scanpaths when viewing and recognising a same stimulus. Two types of scanpaths have been identified and empirically validated. The first are local scanpaths, where fixations follow each other in an immediate physical succession. In local scanpaths, eye movements are regulated by momentary fixations based on peripheral information in a bottom-up mode. Peripheral information in the visual field will determine fixations and local scanpaths. The second type is called global scanpaths, which reflect the distribution of fixations over a longer time frame irrespectively of the immediate physical sequence. In global scanpaths, fixations are usually distributed over a visual field and are located more loosely with each other. In contrast to local scanpaths, global scanpaths are directed by top-down processes such as search plans or cognitive strategies. Scanpath theory was utilised by Hong et al. (2005) in order to trace eye movements whilst investigating its applicability under different browsing and search conditions, under different levels of attention, and with the presence or exclusion of surrounding objects.

Having described how clickstream and EIP data can be utilised to assess how complex is the navigation behaviour of consumers on Web sites, the following section is dedicated to describing research on navigation complexity.

3.4.13. Tracing online consumer navigation behaviour: a navigation complexity approach

Whilst EIPs and clickstreams utilised by some researchers in order to trace the online navigational behaviour of consumers (Lohse and Johnson, 1996; Senecal et al., 2005), other authors assessed online behaviour measuring navigation *complexity*. Navigation complexity is defined as ‘the degree of difficulty that users feel when trying to understand, process and interact with the form and content of a Web site in the performance of online tasks’ (Nadkarni and Gupta, 2007). Likewise Huang (2003) referred to complexity as the ‘information load users perceive whilst navigating on a Web site’ (Huang, 2003).

A Web site's structural complexity can be captured with both objective and subjective complexity measures. When a site is logical, coherently designed and organised, consumer behaviour on the site will be usually 'less complex' (Guo and Poole, 2008). In contrast, Huang (2003) suggested that when online users are overwhelmed by the perceived complexity of a Web site, this can distract them from relevant information and consequently find it difficult to concentrate, as when users are faced with abundant information, they feel unable to absorb it, get easily distracted and think about other things during navigation. Similarly, Senecal et al. (2005) affirmed that consumers with a more complex shopping behaviour have more information to process. Rauteberg (1992) suggested that *cognitive complexity* is the sum of three types of complexity that occur in computer-man computer interaction: user behaviour complexity, system complexity and task complexity. Likewise, Speier (2006) affirmed that complexity can be seen from two perspectives: task complexity, which is a function of the task per se, and experienced task complexity, where complexity results from the interaction between the decision maker and the task.

Researchers have utilised complexity measures to assess navigation behaviour utilising clickstream data (Herder and Juvina, 2004; Senecal et al., 2005). Herder and Juvina (2004) used three types of variables to measure user navigation, in particular: 1. the number of pages views and revisits. Revisits were calculated with the relative amount of revisits, page return rate, relative amount of home page visits and back button usage; 2. view-times; and 3. navigation complexity, calculated with the followed links average connected distance, compactness per page and path density. They categorised overall navigation behaviour into two groups: flimsy navigation and laborious navigation. Senecal et al. (2005) measured navigation complexity with the following objective measures: Web site compactness, stratum, Web pages viewed, revisited page ratio and total task time. In contrast, Huang (2003) measured subjective complexity by asking respondents to rate how well the following descriptors were appropriate for describing a frequently visited Web site: multidimensional, rich, multiple, large scale and broad.

However Guo and Poole (2008) affirmed that objective measures do not take into account the ‘spontaneous and idiosyncratic behaviour’ of users and accordingly, utilised a questionnaire to measure *perceived complexity* with the aim of capturing cognitive aspects of individuals, and studied how this type of complexity was influenced by aspects of Web site design. They acknowledged that their results could considerably differ from complexity captured from objective measures such as pages views or other navigational variables. Also Speier (2006) examined the role of task complexity in decision-making by examining how different information presentation formats influenced simple tasks and complex tasks. Simple tasks are those which involve a single operation such as information acquisition or simple information evaluation tasks, and complex tasks are those such as decision making process or decision effectiveness when solving complex tasks. She revealed that the relationship between information presentation format and decision performance was moderated by the complexity of the task.

Kalczynski, Senecal and Nantel (2006) developed a model that assessed that navigation complexity of users on Web sites in order to classify whether an online shopping session and information-search tasks was successful or unsuccessful. To capture complexity, they used a graph-based approach measuring clickstreams on a goal-oriented navigational session. The complexity measures used to predict success or failure were: clickstream compactness, clickstream stratum, average link traversals, average degree, connection ratio, relative diameter, relative mean distance from root, relative number of links in cycles, detourness and relative time in cycles. The researchers affirmed that these measures can help when predicting on-line completion tasks across different Web sites. Senecal et al. (2005) investigated how different online decision making processes used by consumers to make product choices influenced the complexity of their online shopping behaviour. In consumer research, it has been traditionally assumed that consumers follow product recommendations in order to limit or minimise information search efforts due to limitations in the capacity or motivation to perform an extensive problem solving task (Olshavsky, 1985). Based on this notion and utilising clickstream analysis, researchers Senecal et al. (2005) proved that, contrary to what occurs in offline environments, when an online consumer receives an external recommendation which

could minimise the effort exerted by a consumer when wanting to make a purchase, navigation behaviour becomes more complex. Their research studied how online decision processes influenced complexity, distinguishing between three different online decision-making processes: consult a recommendation and follow it (CF), consult a recommendation and not follow it (CNF), and decide not to consult the recommendation (NC). The researchers observed how users who consulted a recommendation and either did follow or did not follow the recommendation had a more complex navigation behaviour compared to users who did not consult a recommendation. The results of their research are illustrated in figure 33.

Figure 33: Influence of online decision processes on consumer navigation complexity

ONLINE DECISION PROCESS	NAVIGATION COMPLEXITY
CF (Consult recommendation and Follow it) CNF (Consult recommendation but not Follow it)	CF and CNF present similar degrees of a higher complex shopping behaviour
NC (Do no consult the Recommendation)	Less complex shopping behaviour

Source: Developed for this research, based on Senecal et al. (2005)

Complexity was also considered in the research of Rosen and Purinton (2004) for the development of a Web site preference scales based on the preference matrix of Kaplan and Kaplan (1998). The authors utilised the term complexity referring to richness and variety of content such as images that satisfy users' to explore an online environment. Such complexity or variety leads to immediate Web site exploration. Table 34 illustrates the preference matrix as utilised by Rosen and Purinton in their online research.

Figure 34. Kaplan and Kaplan preference matrix.

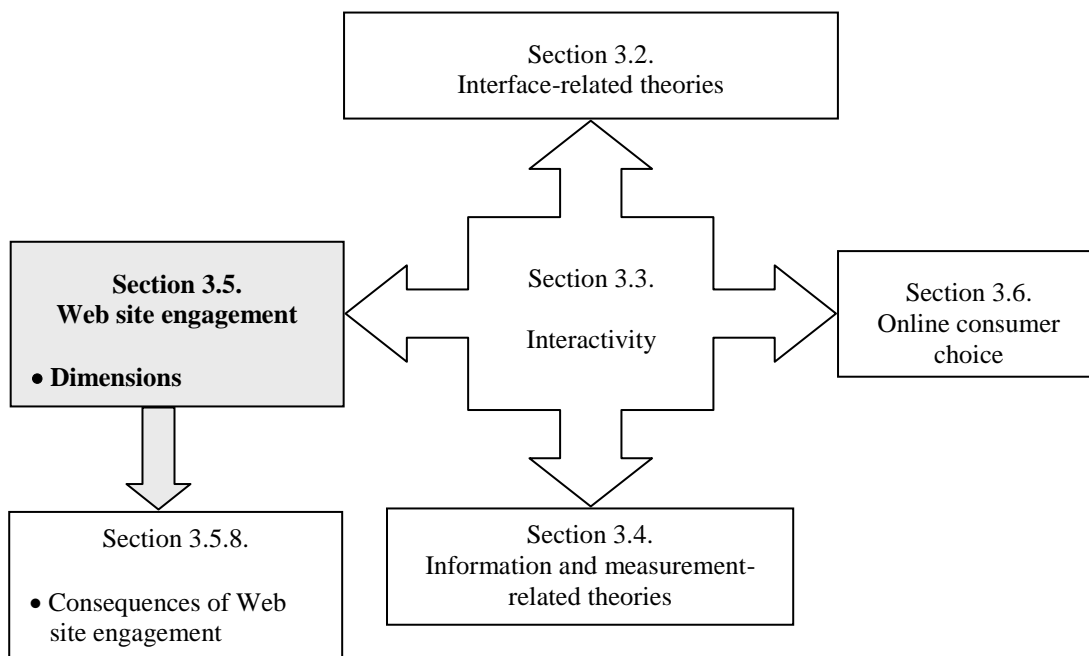
DIMENSIONS	UNDERSTANDING	EXPLORATION
Two-Dimensional	Coherence Organisation - Ease in which the environment can be read or understood	Complexity Richness - variety of objects (rather than the number of objects)
Two-Dimensional	Legibility Way finding - Ease of understanding orientation	Mystery Sustained interest - Potential for more information

Source: Rosen and Purinton (2004)

3.5. THEORETICAL FRAMEWORK OF WEB SITE ENGAGEMENT: DIMENSIONS AND CONSEQUENCES

This section is dedicated to undertaking a state-of-the-art review on previous research on engagement, specifically focused on the context of Web sites. The literature review of this section will ultimately lead to the proposal of a Web site engagement construct. After describing the potential dimensions of this construct, we shall also dedicate a section to the theoretical review of potential consequences of Web site engagement with relevant managerial interest. Figure 35 illustrates the connection of this section with the overall theoretical framework of this chapter.

Figure 35: Connection of section 3.5. with the overall theoretical framework of this chapter



Source: Developed for this research

3.5.1. Introduction to engagement

Within the context of Internet marketing, there are growing bodies of literature which relate to the retention of consumers in online contents. Research can be found on concepts such as stickiness (Li et al., 2006), switching behaviour (Li et al., 2007), Web site loyalty (Tarafdar and Zhang, 2008), commitment (Li et al., 2006) cognitive

lock-in (Zauberman, 2003), cognitive absorption (Agarwal and Karahanna, 2000) and enduring involvement (Huang 2006). Retention constructs are particularly valuable within online contexts as the commitment to online businesses is difficult to develop and is not as strong as commitment in other contexts (Li et al., 2007).

Recent Internet industry attention is being given to the term *engagement*. Whilst this term can be found within academic literature proceeding from different research fields, there is a scarcity of research on engagement in the context of Web sites and online shopping. Researchers have argued that given the increased emphasis on online user experience, it is no longer sufficient to ensure that an information system is merely usable (Blythe et al., 2003). Within the context of technology, O'Brien (2008) affirmed that successful technologies *engage* users. Similarly, Bakker and Sádaba (2008) affirmed 'the Internet must be played, searched, surfed and navigated. Engagement is almost an obligation. No two Internet experiences as the same as the user decides what to see, where are when'. When justifying the need for an *engagement with technology* construct, O'Brien (2008) affirmed that 'failing to engage users equates with no sale on an electronic commerce site and no transmission of information from a Web site. People go elsewhere to perform their tasks and communicate with colleagues and friends'.

Engagement has been previously researched in offline contexts. Offline engagement research includes employee engagement with organisations (Corace and Johnson, 2007; Seijts and Crim, 2006), engagement with the environment (Leshed, Velden, Rieger, Kot and Sengers, 2008), with an online community (Seddon et al., 2008), civic engagement through technology (Bryant Daily and Brennan, 2008), learning engagement (Garris, Ahlers and Driskell, 2002; Gupta and Bostrom, 2006; Jacques, Preece and Carey, 1995; Webster and Ho, 1997), e-learning engagement (McGinnis, Bustard, Black and Charles, 2008), engagement through narration (Bielenberg and Carpenter-Smith, 1997; McLellan, 1993), with children computer stories (Calvert et al., 2005), with wine (Knight and Pitt, 2001) and finally brand engagement (Buckingham, 2008). However, specifically, within the context of Web site related literature, except for a recent contribution of Mollen and Wilson (2010) on *online*

engagement in general, there is an absence of research. However, in their research article a Web site engagement construct was not suggested either.

Industry focuses on the use of clickstreams for the measurement of engagement. According to Nielsen's report 'Integrated interactive marketing' (2005), 'engagement is the most essential measure of success of any medium. A good way to evaluate online engagement is to compare growth in unique visitors to growth in Web pages consumed' (Nielsen, 2005). Similarly, consultancy firm McKinsey (2008) issued a report titled 'How poor metrics undermine digital marketing' affirming that 'The Web is the most measurable medium in the history of marketing. Now all that's left is figuring out how to measure it'. In their report they suggest that the digital world has developed faster than the tools which are required to measure it, and accordingly, 'this made it difficult for marketers to fully exploit the Web's promise as the most targetable and measurable medium in the history of marketing'. In this direction, software *Google analytics* offers Web site managers the possibility of measuring engagement with their sites. According to the Google's analytics Web site, managers can measure their site engagement goals against threshold levels that they define (Google, 2010). These thresholds are primarily determined solely with clickstreams variables and do not take into account consumer experiences.

Practitioner Peterson (2008) considered engagement as 'one of the hottest buzzwords in digital advertising and marketing' suggesting that 'engagement is an estimate of degree and depth of visitor interaction on the site against a clearly defined set of goals'. For its measurement he suggested a formula that takes includes clickstream variables, in particular the number of clicks, visit duration and rate of return to a Web site as well as four other measures: well site loyalty, willingness to directly contribute to feedback, and likelihood that the users will engage in specific activities on the site designed to increase awareness, and create a lasting impression.

3.5.2. Definitions of engagement

In plain English language, to *engage* is to '*involve (a person or his or her attention) intensely*' (Collins Essential English Dictionary, 2006). In academic research something that 'engages' us is something that draws us in, that attracts and holds our attention' (Chapman et al., 1997). Within the context of multimedia research, Jacques et al. (1995) suggested an engaging experience is an active process, in which a system 'catches', 'captivates', 'holds' and 'retains' the 'interest' and 'attention' of the user. For Brandtzaeg et al. (2003) engagement makes users feel in control during an interaction.

Researcher Marci (2006) defined engagement as 'the combination of audience synchrony plus intensity', where synchrony is 'the degree to which an audience's physiological state uniformly changes when exposed to a media stimulus' and intensity is 'the cumulative strength of physiological response to a media stimulus (Marci, 2006). In the context of advertising, Heath (2007) viewed engagement as a 'subconscious emotional construct' expressed as 'the amount of feeling going on when an advertisement is processed'. For Mollen and Wilson (2010) 'online engagement is a cognitive and affective commitment to an active relationship with a brand as personified by the Web site or other computer-mediated entities designed to communicate brand value'. According to these researchers, online engagement 'is characterised by dimensions of dynamic and sustained cognitive processing and the satisfying of instrumental value (utility and relevance) and experiential value (emotional congruence with the narrative schema encountered in computer-mediated entities). Lin, Gregor and Ewing (2008) considered that engagement is an activity that occurs when a person's attention is focused on the activity. For O'Brien (2008), *engagement with technology* is 'a holistic construct that fits within the context of experience and encapsulates user's perspectives of the human-computer interaction, as well as its system and user constituents'. Finally, being engaged could also be considered as being 'biologically connected', as Nahl and Bilal (2007) considered being engaged as 'the opposite of being disconnected'.

3.5.3. State of academic research on engagement in technology-related contexts

Since Laurel's (1993) first use of the term engagement as applied within the context of technology, the term is more and more found within academic research although there is still no academically accepted definition of the term engagement for the context of Web sites. However, for more than a decade, scientists have been undertaking research utilising the term. Jacques et al. (1995) considered engagement in their research in the field of learning with multimedia, describing how an understanding of engagement can aid in the process of designing multimedia technology. The authors gave examples of interactions that were found to be engaging and provided methods for evaluating their impact on students. They stated that learners were engaged with education multimedia when these systems held their attention. They also affirmed that well-designed multimedia systems will draw learners in, motivate interaction and help them to accomplish learning goals without distraction. Within the field of multimedia presentations, and based flow theory, Webster and Ho (1997) suggested that engagement could be increased by developing presentations that provide greater *challenge, feedback, control* and *variety*. They also described that *attention focus; curiosity* and *intrinsic interest* have an influence on engagement. In the context of narrative multimedia, Mallon and Webb (2000) proposed structure, causality, visibility and interaction for the assessment of engagement.

Designing for engaging interaction encourages and facilitates learning and enhances a user's experience (Jacques et al., 1995; Webster and Ho, 1997). Education researchers have emphasised that engagement should be a pleasurable experience that involves intellectual challenge or stimulation (Douglas and Hargadon, 2000; Read et al., 2002). Use of technology has improved learning outcomes. Training is one of the most pervasive methods for enhancing the productivity of individuals (Gupta and Bostrom, 2006). Likewise, Garris et al. (2002) used the term *motivation* to refer to the desire to engage in a task. More specifically, these researchers used motivation to describe to an individual's choice to engage in an activity, and the intensity of effort or persistence in that activity. Individuals who are highly motivated are more likely to engage, devote effort, and persist longer in a particular

activity. Also Mallon and Webb (2000) studied engagement in the computer games industry, as the entertainment industry particularly focuses on capturing and holding the attention of their audience. Building open notions of enjoyment and flow, Agarwal and Karahanna (2000) proposed a multidimensional construct called *cognitive absorption*, which they defined as a 'state of deep involvement with software'. The five dimensions they utilised to measure this construct were: temporal dissociation, focused immersion, heightened enjoyment, control, and curiosity. Also McMillan and Hwang (2002) referred to the relationship between engagement and the time spent on a Web site, suggesting that increased time controlling a site could also be a result of intense engagement, and that time-related factors such as two-way communication were relevant to engagement on the Web. Studying the relationship between children's fun and usability, Read, MacFarlane and Casey (2002) considered engagement as one of the three dimensions of fun, together with endurance and expectation, and measured engagement using video footage that was scored with a set of positive instantiations such as smiles, laughing and concentration or negative instantiations such as signs of boredom. Also Said (2004) made a further effort in the attempt to propose a model of engagement within the context of multimedia and suggested a model based on constructs: simulation interaction, construct interaction, immediacy, feedback and goals. However the model was not empirically tested.

Studying participant engagement and retention with a physical activity Web site at a workplace, Leslie et al. (2005) used repeat visits to the home page and subsequent page views on a the physical activity Web site in order to measure engagement. Calvert, Strong and Gallagher (2005) undertook a study in which young children were exposed to a computer story that varied the amount of control that children or adults had over its visual and verbal content. Children who controlled the computer story demonstrated more attention and involvement than other children who watched an adult control the experience. They concluded that control is an engagement feature. Sharafi, Hedman and Montgomery (2006) proposed a theoretical framework for understanding how people adapt to information technology, based on flow and causality orientation theories which served as a basis of an engagement-mode model

which describes five engagement modes: enjoying/acceptance, ambition/curiosity, avoidance/hesitation, frustration/anxiety and efficiency/productivity.

Since 2007 within the research field of human-technology interaction, there are growing bodies of research referring to the term engagement within human-technology investigations although none of them have suggested possible dimensions of Web site engagement. Such is the case of Morrison, Brereton and Mitchell (2007) who researched engaging interactive installation environments. Likewise Seddon, Skinner and Postlethwaite (2008) suggested a theoretical model for the examination of motivation for sustained engagement in online communities. Bardzell, Bardzell, Pace and Karnell (2008) proposed a multi-model strategy for the understanding and modelling of relationships among different engagement measures in interactive media experiences. Also McGinnis et al. (2008) suggested that e-learning could be improved by using design patterns obtained from computer games. Chanel et al. (2008) studied engagement, boredom and anxiety as indicators for adaptation to difficulty in interactive computer games, where engagement had a positive effect on adaptation and boredom and anxiety a negative effect. Leshed et al. (2008) referred to 'engaging and disengaging with an environment' when using an in-car navigation GPS when discussing the potential of engaging with the environment through the redesign of GPS devices. Within the context of enterprise content management systems, Scott (2008) referred to the importance of engagement with the management of information, such as email Web pages and other digital assets, affirming that cognitive engagement affects computer self-efficacy, perceived ease of use, behavioural intention to use and perceived usefulness.

In the field of television advertising, engagement seems to be an increasingly sought-after measure of how much attention advertising gets (TV Week, 2008). Within the contexts of media and advertising, Calder and Malthouse (2008) referred to reader engagement with the media, and they defined engagement as 'the collective experiences that a reader has with the editorial content'. Their research addressed the question of whether the overall average level of engagement with a magazine affects reaction to the advertisements contained within the magazine. The dimensions they

utilised to measure media engagement were: utility of the medium, transportation and the degree that the reader felt both smarter and sophisticated. In a second research undertaken within the context of advertising, Calder and Malthouse (2008) described 'engagement as a sense of involvement, being connected with something', affirming that 'consumer engagement with a Web site is a collection of experiences with the site.' They differentiated between personal engagement and interactive engagement that were measured with the dimensions: community, talking/sharing, temporal, participation and socialising, self-esteem and civic mindness, stimulation and inspiration, time out and utilitarian. In a third research, Calder and Malthouse (2009) extended their work differentiating between personal engagement and social-interactive engagement. They affirmed that personal engagement could be measured with dimensions: community, intrinsic enjoyment, self-esteem and civic mindness, social facilitation, stimulation and inspiration, temporal and utilitarian; and social-interactive engagement could be measured with community, intrinsic enjoyment, participating and socialising, and utilitarian. Finally Lin, Gregor and Ewing (2008) developed a scale to measure consumer experiences of enjoyment when viewing a Web site, utilising dimensions positive affect, fulfilment and engagement. These researchers considered engagement being equal to focused attention, affirming that higher levels of attention are associated to higher levels of enjoyment. The four items they utilised to measure engagement were related to how engrossed, absorbed, concentrated and focused the attention of their respondents was. As these researchers have considered engagement being equal to focused attention, their work lacks an advance in the further understanding of this construct. Table 20 presents a state of the art literature review on engagement specifically within technology related contexts and the dimensions utilised for its measurement.

TABLE 20: Previous research on engagement

AUTHORS	REFERENCE TO ENGAGEMENT OR DESCRIPTION	DIMENSIONS	CONTEXT	METHODOLOGY
Calder et al. (2009)	Consumer engagement with a website is a collection of experiences with the site	Personal engagement: community intrinsic enjoyment self-esteem and civic mindness, social facilitation, stimulation and inspiration, temporal and utilitarian. Social-Interactive engagement: community, intrinsic enjoyment, participating and socialising and utilitarian	Online engagement and advertising	Measurement scales
Calder and Malthouse (2008)	A sense of involvement, being connected with something?	Community, talking/sharing, temporal, participation and socialising, self-esteem and civic mindness, stimulation and inspiration, time out and utilitarian	Advertising	Exploratory analysis
Lin et al. (2008)	Considers engagement to what other researchers call 'focused attention'	Absorption, concentration, engrossment, focused attention	Web experiences	Respondent questionnaire after a demonstrator presented a Web site
O'Brien (2008) Thesis	Second and third proposal of an engagement with technology scale undertaken within PhD thesis	Aesthetics, attention, challenge, control, engagement, feedback, intention to return, motivation, negative affect, novelty, positive affect, which were then grouped into six factors labelled: aesthetics, focused attention, involvement, endurability, novelty, usability	Technology	Exploratory and confirmatory factor analysis
O'Brien and Toms (2008)	First proposal of an engagement with technology scale	Aesthetics, affect, attention, awareness, challenge, control, feedback, interactivity, interest, motivation, novelty, perception of time	Technology	Interviews
Bardzell et al., (2008)	Conference paper suggesting agenda for research on engagement	Objective measures: click counting, eye tracking, task time. Subjective measures: contextual inquiry, ethno methodological techniques, interviews, surveys	Social media and digital devices	Measurement of objective measures and subjective measures.
Chanel et al., (2008)	Engagement was defined as 'positive excited'	Blood pressure, galvanic skin response, heart rate, respiration, temperature	Computer games	Measurement of physiological signals and self-reported data
Scott (2008)	Importance of engagement with technology was revealed	Intention to use, perceived ease of use, perceived usefulness, self-efficacy	Enterprise content management system	Online questionnaire
Rappaport (2007)	Emotional connection between consumers and brands, relevance of brands	n/a	Advertising	Paper on new advertising models

Previous research on engagement (continuation)

Wang (2006)	Full paper on engagement	Connection between brand and relevance of surrounding contextual	Advertising	Participant played an online game and completed a set of questionnaires
Sharafi et al. (2006)	Model specifies five engagement modes	Ambition/curiosity, avoidance/hesitation, efficiency/productivity, enjoying/acceptance, frustration/anxiety	Information technology	Questionnaire
Calvert et al.. (2005)	Control is an engagement feature	Control	Children computer content	Videotape of children, written transcripts and teacher ratings
Bannon (2005)	Engagement is ‘the need to excite, motivate and enhance the user experience’	n/a	Human computer interaction	Theoretical paper
Leslie et al. (2005)	n/a	Page views, visit times, visits to Web site	Physical activity Web site	Count of dimensions over 8 week period
Said 2004	n/a	Construct interaction, feedback, goals, immediacy, simulation interaction,	Children’s interaction with computer games	Measured children’s engagement with ten point scale
Guthrie et al. (2004)	Motivation and engagement contribute to reading comprehension	Active learning, complex cognitive strategies, concentration, curiosity, goal-directed, focused interactions, sustained cognitive effort	Education psychology	Different classroom dynamics
Quesenbery (2003)	Degree to which the tone and style of the interface makes the product pleasant or satisfying to use	Choice of language, media used, style of interaction	Information design	n/a
Hull and Reid (2003)	‘Engaging experiences with children and artists’	n/a	n/a	n/a
Herrington, Oliver and Reeves (2003)	Patterns of engagement	Holistic involvement and cognitive processing	E-learning	Theoretical paper
McMillan and Hwang (2002)	Engaging or complex activity	Communication, control, time	Web advertising	Identification of items through exploratory analysis
Read et al. (2002)	Engagement as a dimension of fun	Positive instantiations: smiles, laughs, concentration signs, excitable bouncing, positive vocalization. Negative instantiations: frowns, signs of boredom, shrugs and negative vocal instantiations	Children fun toolkit: funometer, smileyometer and fun-sorter	Video footage scored with a set of positive and instantiations
Mallon and Webb (2000)	Sensory engagement as a part of narrative multimedia design	Causality, causality of dialogue, control, illusion of intelligence, invisibility of the medium, skill-based interaction, spatial containment	Narrative multimedia	Transcript of phenomenological data after use of four computer games

Previous research on engagement (continuation)

Douglas and Hargadon (2000)	'Flow is a state in which readers are both immersed and engaged'	n/a	Interactive narratives and video games	Theoretical paper
Jennings (2000)	'Engaging and immersive Web sites'	n/a	Ecommerce Web sites	Theoretical paper
Agarwal and Karahanna (2000)	Reference to 'cognitive engagement' when building 'cognitive absorption' construct.	Attention focus, curiosity, intrinsic interest	World Wide Web	Surveys to students
Chen, Wigand and Nilan (1999)	'Flow refers to those optimal, extremely enjoyable experiences when an individual engages in an activity with total involvement, concentration and enjoyment, and experiences an intrinsic interest as well as a sense of time distortion during his/her engagement'	Challenge, control	Web activities	Open ended questionnaires to gather users' perceived flow experiences on the Web
Chapman, Selvarajah and Webster (1999)	'inciting users'; 'drawing users into the activity'; 'seducing and spurring users on'; 'catching, capturing, or captivating the interest and attention of users'	Mentions nine items combined from: Jacques (1995) and Webster and Ho (1997) but does not specify which	Multimedia training systems	Questionnaires after using training audio, video and software
Kearsley and Shneiderman (1998)	Students must be meaningfully engaged in learning activities through interaction with others and worthwhile tasks	Active cognitive processing, decision-making, evaluation, problem solving, reasoning,	E-learning	Creation of a framework for technology-based teaching and learning
Jones (1998)	Engagement is the nexus of intrinsic knowledge and or interest and external stimuli that promote that initial interest in, and continued use of a computer-based learning environment	Involvement, learning	E-learning	Theoretical paper
Shih (1998)	'Interactivity results in the sense of engagement with the computer'	n/a	Cyberspace	n/a
Chapman, 1997 Unpublished Master's thesis	n/a	Aesthetics, attention, curiosity, intrinsic interest, motivation	Multimedia learning software	University student's reactions to presentation software

Previous research on engagement (continuation)

Webster and Ho, 1997	Uses Jacques et al. (1995) and Laurel (1991) 'the state of mind that we must attain in order to enjoy a representation of an action ... engagement entails a kind of playfulness - the ability to fool around, to spin out 'what if' scenarios. Such 'playful behaviour is easy to see in the way that people use spread sheets and word processors'	Attention focus, challenge, control, feedback, curiosity, intrinsic interest, variety	Educational presentation software	Open ended questionnaires after presentations
Makkonen, 1997	'Depth of engagement can be gauged by examining motivation'	Active, passive	Computers in schools	Rada's three phases of the use of collaborative hypertext
Kappelman, 1995	'Distinction between the behavioural and psychological engagement of information system users with information systems and their development	Activities, pools,	Technology development and implementation	Kappelman differentiates between the behavioural and attitudinal components the engagement of users with information systems and on the other hand between the process and product objects of such engagements.
Jacques, Preece and Carey, 1995	Learners are engaged with education multimedia when it holds their attention	Content, media presentation, media control, task, type of media	Educational multimedia	Questionnaire after being presented with educational multimedia content
Jacques, 1995	Active process, in which the system 'catches', 'captivates', 'holds' and 'retains' the 'interest' and 'attention' of the user		Hypermedia systems	In depth interviews after using CD ROM software
Laurel, 1993	Engagement is the state of mind that we must attain in order to enjoy a representation of an action	n/a	n/a	n/a

Source: Developed for this research

3.5.4. Engagement within the context of online shopping

There is a scarcity of references to engagement within the context of online shopping. Nahl and Bilal (2007) affirmed that online engagement is not only purposeful but pleasurable. Also Webster and Ahuja (2004) stated that emotional components of engagement will make people more likely to return to a specific product or company Web site. Within the context of online purchasing, Öörni (2005) affirmed that convenience shopping had a greater prediction towards purchasing a travel package than attempts to optimise purchase. This affirmation seems to question whether travel Web sites are not sufficiently engaging for the purpose they are designed. In this direction, Webster and Ho (1997) had affirmed although engagement facilitates the success of a hypermedia product ‘few directions for designing systems to enhance engagement exist’. To date this affirmation stills seem to prevail.

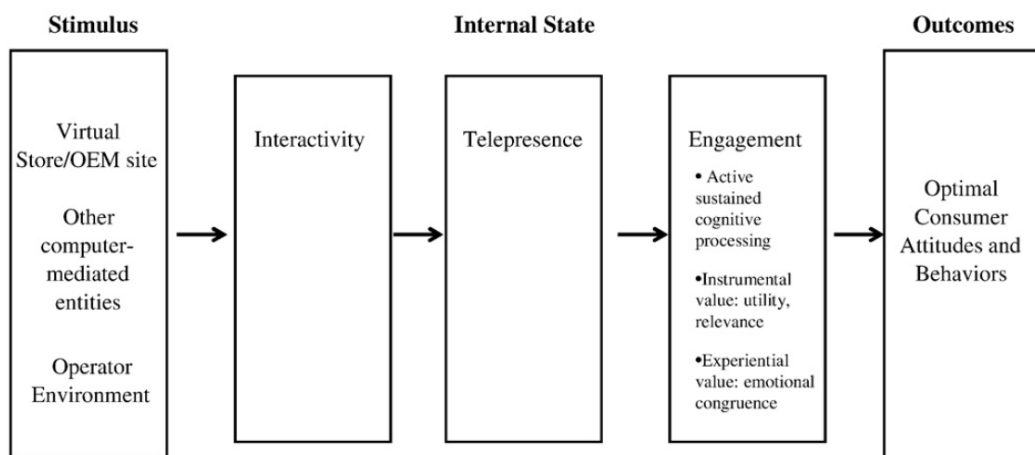
There are two bodies of research that relate to the concepts of online engagement and engagement with technology. The first is the research of Mollen and Wilson (2010) on general online engagement and the second is a series of research by O’Brien (2008) and O’Brien and Toms (2008). These will be immediately described.

3.5.5. Research by Mollen and Wilson

Based on the call of Demangeot and Broderick (2006) to investigate online ‘experiential intensity’, Mollen and Wilson (2010) proposed a conceptual framework taking into account the viewpoints of both practitioners and academics. They interpreted online engagement as a cognitive and affective commitment to an active relationship with a brand as personified by a Web site. According to Mollen and Wilson (2010), engagement is a mental state that is accompanied by active, sustained, and complex cognitive processing (Douglas and Hargadon, 2000, 2001; Guthrie, Wigfield, Barbosa, Perencevich, Taboada, Davis et al., 2004; Herrington, Oliver and Reeves, 2003; Jones, 1998; Kearsley and Schneiderman, 1998; Marci, 2006; Mathwick and Rigdon, 2004; Shih, 1998). They considered that engagement is related to the satisficing utility and

relevance (Fiore, Jihyun and Hyun-Hwa, 2005; Rappaport, 2007; Wang, 2006). Finally, they affirmed that engagement involves emotional bonding or impact (Heath, 2007; Marci, 2006; Rappaport, 2007; Wang, 2006), emotional congruence (Douglas and Hargadon, 2000, 2001) and pleasure and satisfaction (Fiore et al., 2005; Mathwick and Rigdon, 2004). Based on the Stimulus-Organism-Response model (S-O-R) (Eroglu 2003, Sauterr, 2004) they proposed a conceptual framework for online engagement. The framework is illustrated in figure 36.

Figure 36: Conceptual framework of online engagement



Source: Mollen and Wilson (2010)

The framework suggests that a consumer's experiential response to a stimulus passes through three stages: perceived interactivity, telepresence and finally engagement. They also suggested that interactivity and telepresence do not form part of online engagement.

In their article, Mollen and Wilson (2010) also described three differences between involvement and engagement. First, consumer involvement requires a consumption object. In their research, the consumption object was the 'brand personified by the Web site'. Second, they suggested that engagement goes beyond involvement as that it should also encompass an active relationship with a brand. Third, engagement requires more than performing cognition as it requires satisfying both experiential and instrumental values. The researchers

admitted that their framework would raise questions. However their contribution made clear that an online engagement scale should be developed, and for such development it would be necessary to count on the collaboration of both academics and practitioners, as these would also benefit from its utility.

The next section refers to research pertaining *engagement with technology*.

3.5.6. Engagement with technology

The most prominent research on technology-related engagement was conducted by O'Brien (2008). Based on previous research (O'Brien and Toms, 2005, 2008), this researcher deconstructed the term engagement as it applies to people experiences with technology. She conducted an exploratory research with semi structured interviews with users of four different technology applications, Web searching, online shopping, Webcasting and gaming applications, in order to explore their perception of being engaged with the technology. Based on the outcome of this analysis, she operationally and conceptually proposed of a definition of the multidimensional concept of *engagement with technology*. In order to propose this construct, O'Brien (2008) undertook a series of three research efforts. We shall refer to these three research efforts as stage 1, 2 and 3, of the development of an engagement with technology construct. These 3 stages will be described in the following sections.

In the first stage of research O'Brien and Toms (2008) suggested that the engagement process was characterised by attributes that pertain to users, and information system and user-system interaction. Through semi-structured interviews of a sample of seventeen respondents, they suggested that engagement with technology comprises four different stages of engagement, and proposed the dimensions of a Web site engagement construct illustrated in table 21. The four different stages were: point of engagement, period of engagement,

disengagement and re-engagement. They also referred to a state of non-engagement. These five stages are described in what follows:

Point of engagement. O'Brien and Toms (2008) affirmed that the engagement process was initiated with the resonance of the aesthetic or informational composition of the system interface with users'. These elements captured participants' attention and interest and moved them forward into engagement. In some cases, interviewees were motivated to engage for social reasons, while at other times they were looking to satisfy a specific goal (i.e., buy a product) or simply open themselves up to having an engaging experience.

Period of engagement. The period of sustained engagement was marked by participants' attention and interest being maintained in an interaction.

Disengagement. This occurred when participants made an internal decision to stop the activity, or when factors in the participants' external environment caused them to cease being engaged.

Reengagement. Interviewees indicated that disengaging from a task or interface was not necessarily the end of their state of engagement, as they could reengage.

Non-engagement. Evidence was obtained that participants were not always engaged or encountered barriers to becoming engaged.

As a conclusion to their first stage of research, O'Brien and Toms (2008) suggested that engagement with technology could be measured with eleven variables, in particular, aesthetic and sensory appeal, affect, awareness, challenge, feedback, interactivity, interest, motivation, novelty, perceived control and perceived time.

In the second stage of research, O'Brien (2008) reduced the period engagement dimensions from eleven to ten, resulting: aesthetics, affect, focused attention, awareness, challenge, control, feedback, interest, motivation and perceived time.

That is, interactivity was excluded from the first proposal of the engagement with technology construct, and focused attention was included. It might have been found that the items that originally composed interactivity overlapped with other items and this construct was therefore eliminated. Also aesthetics and sensory appeal was reduced to just aesthetics. The ten dimensions of the construct in total contained thirty one items or *indicators*. Table 21 illustrates the proposed dimensions of engagement with technology of stage 2, alongside the dimensions of stage 1 and stage 3.

Table 21. Three-stage proposal of dimensions of *engagement with technology*

Stage 1 O'Brien and Toms (2008) 11 dimensions	Stage 2 O'Brien (2008) 10 dimensions	Stage 3 O'Brien (2008) 12 dimensions
Aesthetic and sensory appeal	Aesthetics	Aesthetics
Affect	Affect	Positive affect Negative affect
	Focused attention	Attention
Awareness	Awareness	
Challenge	Challenge	Challenge
		Engagement
Feedback	Feedback	Feedback
Interactivity		
Interest	Interest	
		Intention to return
Motivation	Motivation	Motivation
Novelty	Novelty	Novelty
Perceived control	Control	Control
Perceived time	Perceived time	Perceived time

Source: O'Brien and Toms (2008)

In the third stage of the development of an engagement with technology construct, thirty one indicators from stage 2 were subject to a new exploratory analysis and rearranged into twelve subscales: aesthetics, attention, positive affect, negative affect, challenge, control, engagement, feedback, intention to return, motivation, novelty and perceived time. Finally, these twelve subscales were grouped into six factors, aesthetics, attention, involvement, endurance, novelty, usability. This is O'Brien's (2008) final proposal of a scale of *engagement with technology* and is illustrated in table 22.

Table 22. Engagement with technology (O'Brien, 2008)

FACTORS AND SUB SCALES THAT COMPOSE ENGAGEMENT WITH TECHNOLOGY		
FACTORS	DEFINITION	SUB SCALES
Aesthetics	Visual appearance of the interface as it conforms to design principles (i.e. symmetry, balance, emphasis, harmony, proportion, rhythm, and unity)	Aesthetics
Focused Attention	The concentration of mental activity; concentrating on one stimulus only and ignoring all others	Attention, perceived time, engagement
Endurability	Assessment of users' feelings of success with a task, and their willingness to use an interface in the future or recommend it to others	Intention to return, motivation, positive affect
Involvement	Need-based cognitive (or belief) state of psychological identification with some object that is based on an individual's salient needs and perception that the object will satisfy those needs	Engagement, motivation, positive affect
Novelty	Aspects of Web site attributes that users find unexpected, surprising, new, and unfamiliar	Novelty
Perceived Usability	Ease with which the user can learn to manage the system and memorise the basic function, the efficiency of design of the site, the degree of error avoidance and the general satisfaction of the user	Negative affect, challenge, control, feedback

Source: adapted from O'Brien (2008)

O'Brien (2008) contrasted her scale with four different technologies including the Web. However, according to Guo and Poole (2008), objectives and goals in online shopping are different than in other online tasks, such as pure information search, entertainment and communication, as goals in hedonic measures can be vaguely defined and difficult to measure. They also affirmed that users' expectations of feedback and challenge in online shopping may also be different than in other online tasks. Accordingly, we suspect that the variables that would compose an engagement construct as applicable to shopping Web sites should be specific for this context and should therefore differ to other potential engagement scales for different online activities such as watching videos or searching for information with search engines.

Based on the most recent proposal of the engagement with technology scale of O'Brien (2008) in what follows we shall analyse the subscales that compose this scale, as illustrated in table 22. The following section of revision of her construct will be based on the twelve subscales and not on the six factors of which they

form part, as this will eventually permit us to compare these subscales with those of other researchers.

As one the objectives of this research is to propose a *Web site engagement scale* specific for online shopping, we shall organise the following section keeping in mind this priority. As the proposed dimensions of this construct will be based on the latest construct of engagement with technology which has been reached after three different stages with similar although different constructs, in the interest of subsequent clarity the following section has already been organised following the order of the potential dimensions of a Web site engagement scale. Accordingly, instead of the dimension perceived time, we shall utilise the term *transformation of time* as used by Csikzentmihalyi (1988). *Intention to return* will be reviewed included in the section of potential consequences of Web site engagement.

With regards to the *motivation* construct utilised by O'Brien (2008), after an analysis of its indicators, and due to the marketing nature of this thesis, we shall refer to this construct as 'Web perceived value' and will also be reviewed in the potential consequences section. With the regards to the subscale *engagement*, after a revision of its indicators, we shall refer to this term as *involvement* and will justify this decision when proposing the dimensions of Web site engagement in the next chapter. The same occurs with dimension *novelty* that instead will be considered as *curiosity*. The dimensions positive and negative affect and will be revised in one joint section called *affect*. Finally, as our proposed scale will be specific for Web sites, we shall also review previous research how up-to-date are the contents of Web sites, as *up-to-dateness of information* will be suggested as a potential dimension of Web site engagement.

Accordingly, in the interest of clarity and based on the engagement with technology scale of O'Brien (2008), table 23 illustrates potential concepts of Web site engagement which shall be subsequently described.

Table 23. Potential dimensions of Web site engagement

1. Aesthetics
2. Affect
3. Focused attention
4. Challenge
5. Control
6. Curiosity
7. Feedback
8. Involvement
9. Transformation of time
10. Up-to-dateness of information

Source: Developed for this research

3.5.7. POTENTIAL DIMENSIONS OF WEB SITE ENGAGEMENT

This section will describe potential dimensions of a Web site engagement construct. In particular we will describe research on aesthetics, affect, focused attention, challenge, control, curiosity, feedback, involvement, transformation of time and up-to dateness of information.

3.5.7.1. Aesthetics

Aesthetics are concerned with a Web site's visual appeal and relates to the use of visual aspects such as colours, fonts, graphics and images. Aesthetics have also been referred to as 'aesthetic design', 'atmospheric qualities', 'appearance', 'experience, 'sensation, 'visual appeal' and 'Web appearance' (Demangeot and Broderick, 2006). Beardsely (1982) considered aesthetics as the visual appearance of an interface as it conforms to design principles, including balance, emphasis, harmony, proportion, rhythm, symmetry and unity.

Our present aesthetic choices may have been influenced by how our ancestors chose their living environments (Jennings, 2000). Consumer reaction to the aesthetic aspects of Web site is increasingly being recognised as an important determinant of consumer behaviour (Shun et al., 2008). Jennings (2000) argued that aesthetic experiences are relevant to creating engaging and immersive e-commerce Web site environments and suggested that an environment that is designed from an aesthetic perspective will have the features that inherently engage the sites with potential customers. Web aesthetics have been linked to

usability and users' skills and needs, as well as to the sensory aspects or format of an application (Overbeeke, 2003). Sevener (2003) affirmed that aesthetics produce a major effect on the first impression of certain product and that an attractive display may have an effect on Web site popularity. Presentational consistency, that is, the extent to which Web sites are perceived to be consistent in design, appearance and overall aesthetics, is also a driver of consumer intentions and actions (Demangeot and Broderick, 2006). Lavie and Tractinsky (2004) affirmed that user's perceptions of Web site aesthetics consist of two factors which they labelled as *classical aesthetics* and *expressive aesthetics*. The first dimension referred to design orderliness, including the following features: aesthetic design, clear design, clean design, pleasant design, and symmetric design. Therefore this factor seems to represent qualities embraced by classical notions of what constitutes an aesthetic design. The second dimension, expressive aesthetics, included creative design, fascinating design, original design and sophisticated design features. Also Filep (2008) suggested that an aesthetic experience is a peak visual experience characterised by dimensions *active discovery*, which is a cognitive involvement in the challenges presented by a stimulus and a feeling of excitement from that involvement, *detached affect*, referring to an experience that is not taken literally as occurs for instance in the case of art, *felt freedom*, that means that a person feels a sense of harmony that pre-empts everyday concerns and is experienced as freedom, *object focus* meaning that a person willingly invests attention in a visual stimulus, and *wholeness* meaning that person has a feeling of self-acceptance and self-expansion.

Whilst aesthetic theory has been applied by software developers in the design of interfaces (Lavie and Tractinsky, 2004; Skelly, Fries, Linnett, Nass and Reeves, 1994) it has also been utilised in online shopping research. Junaini and Sidi (2007) suggested that the aesthetics of e-commerce Web sites determines shopping experience. Man, Waiman and Vincent (2005) found that shopping experience is determined by user-friendly level and aesthetic values of the e-commerce Web site. Marketers have used numerous techniques such as

expanding and refining colour usage, consistency, instructions and other simple heuristics that greatly benefit the user (Stibel, 2005). In this direction Flavián et al. (2008) argued that the aesthetic appearance of a Web site could be considered as method for assessing Web site credibility, where a badly designed Web site may represent a good reason not to shop on it. As a consequence, the development of a Web site with a good use of images, graphics, icons animations or colour may represent a potential source to offer a more vivid Web site and to get a positive response from consumers. Through consistent development of a colour scheme users can make sense of and become interested in a Web scape (Rosen and Purinton, 2004). Also Goode and Harris (2007) argued that an appropriate use of suitable backgrounds and consistent typography were significant factors in the overall image and effectiveness of pages and sites. They also affirmed that colour is a determinant factor, often suggesting that the use of colours can be prescribed with consistent colours used for each varying function. The effects of Web site aesthetics in electronic shopping could be highly context-dependent because relevant aesthetic elements differ from site to site, depending on the purpose of each one (Cai, Xu and Yu, 2008).

O'Brien (2008) suggested that aesthetics is one of the six factors that form engagement with technology. Whilst the majority of other five factors are formed with at least three subscales, she measured the aesthetics with just one factor with the same name *aesthetics*, suggesting that technology developers should make use of visual features as a means to attracting the attention of users.

3.5.7.2. Affect

Affect was defined by Jennings (2000) as 'the emotional investment users makes in order to be immersed in an environment and sustain their involvement in the environment'. Similarly, in computer-mediated environments, Stone, Stone and Jarrett (2005) referred to affect as 'the user's emotional response to the system'. Affect is 'deeply intertwined' with cognition and behaviour. The construct of affect is relatively new to the field of marketing therefore there is still a lack of

consensus on its definition (Krohn, 2008). Some researchers have used the term affect to refer to what psychology research refers to *feelings* or *emotions* (Feldman-Barrett and Russell, 1999; Peterson, Hoyer and Wilson, 1986; Russell and Feldman-Barrett, 1999). In contrast Fredrickson (2001) rooted the meaning of affect on the assessment of personal meaning and described affect as a broader term that also includes moods and feelings (Aaker and Myers, 1987; Batra and Ray, 1986; Holbrook and Batra, 1987). Whilst affect allows consumers to appraise environments, cognition allows them to interpret information and consequently, act or react. Webster and Ho (1997) revealed a relationship between positive affect and interest, when studying how audiences engage with multimedia presentations. Affect has an influence on users' current and future use of computers (O'Brien, 2008; Rozell and Gardner, 2000).

Nahl and Bilal (2007) defined an 'affective state' as 'a range of conditions, including simple bipolar reactions such as *like* and *dislike*, *boredom* and *excitement*, or *approach* and *avoid*; basic emotions such as *joy*, *sadness*, *frustration*, *anger*, *fear* and *anxiety*; complex emotions such as *shame*, *guilt*, *jealousy*; and *long term moods*. In this direction, McCarthy and Wright (2004) classified affect into two categories: positive affect and negative affect, where positive affect is related to hedonic qualities such as enjoyment, fun, feelings of success, accomplishment, and physiological arousal, and negative affect is related to boredom, guilt, information overload, uncertainty and frustration with technology. In this direction and according to Krohn (2008) it could be possible to view affect as the net state of positive affect, negative affect or a combination of both. Affective cues can be incorporated into interface designs through the use of intrigue (Jennings, 2000). In traditional offline retail research, Babin and Attaway (2000) revealed a positive relationship between positive affect and hedonic and utilitarian shopping values, and also confirmed a negative relationship between negative affect and hedonic and utilitarian shopping values. Experiencing positive affect and having fun is a motive for information search independently of a specific purchase need or decision (Bloch, Sherrell and Ridgway, 1986), therefore for consumers who may enjoy browsing to obtain

information as end in itself, ongoing search represents a leisure pursuit as an end goal (Arnold and Reynolds, 2003). Recently Cox, Cox and Mantel (2010) suggested that consumers even make increased use of product-risk information when they are experiencing a positive affective state.

In the context of user behaviour with information, Nahl and Bilal (2007) differentiated between two fundamental biological functions of the human affective system, and therefore suggested that information could be categorised in the following two types:

Type I: Affective information reception (evaluative and consummatory)

Type II: Affective information use (conative and motivational)

Whilst type I is adapted to the reception and evaluation of information, type II refers to the use of information for planning tasks.

Hudlicka (2003) studied the role of affect in human computer interaction. She concluded that an 'effective HCI' is an 'affective HCI'. She stated that there is an 'emerging research area concerned with the ability of systems to address user affect. According to Nahl and Bilal (2007), this has two meanings. First, users can operate computer systems by having the system recognise the affect of its users. Second, to enable a computer system so that it can establish a reciprocity of affect between humans and computers. Even MIT media lab researchers have developed 'affective processors', bringing an affective revolution to computer architecture for the development of affective computing (Nahl and Bilal, 2007). Affect has a role in the contexts of online shopping and search applications. Webster and Ahuja (2004) suggested that engagement in these areas will be not only purposeful but pleasurable, and that this emotional component would make people more likely to return to a specific product or company Web site.

Finally, O'Brien (2008) considered positive affect as a subscale of factors endurance and involvement which were two of the six factors of engagement

with technology. She also considered negative affect as a part of a third factor, usability, pertaining to negative feelings which lead to disengaging with technology.

3.5.7.3. Focused attention

Attention was defined by Kahneman (1973) as ‘a series of activities in which users selectively allocate cognitive resources’. Attention has also been defined by Matlin (1994) as ‘the concentration of mental activity’ and by (MacInnis and Jaworski, 1989) as ‘the allotment of an individual’s mental activity to the task of concern’. It is influenced by users’ cognitive judgements of the relevance of stimuli to a person’s task, needs, and affective state (Wells and Matthews, 1994). Attention can be classified into *divided attention* and *selective attention*. Whilst divided attention means that an individual must attend to multiple stimuli and respond to each one appropriately, selective attention means that an individual concentrates on one object or task and ignores the others, rather than attempting to address all the multiple stimuli at the same time (Matlin, 1994). In Web site research, focused attention has been defined as ‘the degree to which the user’s attention is focused on the interaction’ (Huang, 2003). Focused attention has been widely researched throughout literature especially after the 1990’s (Chapman, 1997; Chapman, Selvarajah and Webster, 1999; Csikszentmihalyi, 1990; Ghani et al., 1991; Jacques et al., 1995; Jennings, 2000; Koufaris, 2002; Huang, 2003; Lu et al., 2009; Matlin, 1994; Novak et al., 2000; O’Brien, 2008; Trevino and Webster, 1992; Webster and Ho, 1997; Wells and Matthews, 1994).

In online environments, attention facilitates the learning needed to progress to instrumental usage (Koufaris, 2002; Hoffman and Novak, 1996; Novak et al., 2000; Webster et al., 1993). It is utilised within research due to the limitations of human cognitive resources, as it is impossible for people to process all of the information available at any particular moment in time (Engel et al., 1990; Huang, 2003; Miller, 1956). In online environments such as the Web, multiple

objects on the screen will constantly compete for limited attention of humans, and such competition can greatly influence consumers' information search time as well as their information recall performance (Hong et al., 2005). Allocation of attention depends both on the salience of objects in the visual field, and the distance from the area of focal attention (Hong et al., 2005). Due to the variety of computer screen sizes available to consumers, Hong et al. (2005) and Hoque and Lohse (1999) highlighted that content designed for technological screens should be adequate for their purpose, so that it is possible for its users to focus their attention on the content. Accordingly, special care should be taken when adapting offline advertisements to electronic versions, due to the possible limitations of screen size.

Focused attention is equally called *concentration* by other researchers (Guo and Poole, 2008; Lu et al., 2009; Jiang and Benbasat, 2004). Concentration is one of the component dimensions of flow. For Web sites users to be in 'flow state', they must first concentrate on their activities (Koufaris, 2002; Novak et al., 2000). If users perform many tasks simultaneously and cannot focus on a limited field, they will not be able to reach flow state. Concentration was also considered by Lu et al. (2009) when developing a model regarding how users focus their attention when chatting or playing games when using Internet marketing (IM). Focused attention has been related to *focused immersion*, defined by Agarwal and Karahanna (2000) as 'the experience of total engagement where other attentional demands are, in essence, ignored' when proposing *cognitive absorption*, a state of deep involvement with software. They considered focused immersion as one of its five dimensions.

Finally, O'Brien (2008) considered attention as a subscale component of engagement with technology included within a factor called focused attention. She referred to focused attention as the 'degree of awareness about what was taking place outside of user interaction, concentration and perception of time'. Following Huang (2003), in this research we shall refer to focused attention as the 'degree to which the user's attention is focused on the interaction'.

3.5.7.4. Challenge

The challenge of an activity is to apply one's knowledge of the functional capabilities of a tool such as a Web site, thus the challenge derives from the difficulty of the task relative to one's skill when using a site (Ghani, 1995). When studying of flow theory, challenge has been considered both a component of flow by some authors (Csikszentmihalyi, 1996, Ghani et al., 1991, Hoffman and Novak 1996; Novak et al., 2000; Pace, 2004; Trevino and Webster 1992; Webster and Ho, 1997) and has excluded by others (Chen, 2006; Huang, 2003; Koufaris, 2003 and Lu et al., 2009).

Csikszentmihalyi (1996) referred to challenge as being associated to skills, proposing that the balance of these two constructs was one of the six dimensions of flow. When the challenge experienced by a person exceeds his capabilities, he experiences worry and frustration; in contrast when his skill is greater than the challenge, he experiences boredom. However, in the Web context, various authors include challenge as dimension on its own. In particular Pace (2004) included this dimension as he considered that in flow experiences of Web users, challenges help to focus the attention of users. He affirmed that the Web has the capability to provide immediate challenge to a user's level of skill and interest. He acknowledged that Web users have different levels of skill and also different interests, therefore the level of challenge in search and browsing activities also differ. Levels of activity vary, and, what might be challenging enough to hold the attention of one user might not be sufficiently challenging for another one. Likewise he affirmed that some Web users can rapidly adjust their mode of navigation to suit their level of ability. Relating challenge to skill, he explained that when challenge matches skill, the experience has the potential to lead to flow. However, when challenge exceeds skill, the experience becomes frustrating, as the user might fail to find an item of interest or because the time duration of search takes too long. In order to attain flow state, users should perceive challenges to be higher than their skills, but not so high that they cannot undertake a task.

Challenge has been excluded by some researchers as a dimension of flow. Koufaris (2002), excluded challenge from this construct but instead included perceived usefulness and perceived ease. In this direction, Chen (2006) that is it should be *positive* challenging experience those that lead to flow, as negative experiences such as difficult navigation, slow download time or unavailability of a product, will not. He emphasised that positive challenges from shopping experiences on the Web can affect consumer responses to that experience. Also Huang (2003) found that complex information can detract users from utilising Web sites, as an overload of information can interfere with users' concentration and navigability. Chen (2006) indicated that for flow to occur, personal skills should be suited to challenges, however he decided to exclude the dimension because of the difficulty in conceptually measuring a Web user's challenges and skills online without observing how users operate Web sites and within 'tapping into their inner experiences. Guo and Poole (2008) also referred to the difficulty of integrating 'clear goals' and 'challenge' when designing a Web site.

Challenge has been related to effort by Hong et al. (2005) and by O'Brien (2008). For Hong et al. (2005) challenge represents a cognitive decision effort and should be therefore measured with the effort exerted by Web users. These researchers related effort and Web site usability to cognitive effort and attitude towards a Web site, when measuring the perceptions of consumers during their shopping experiences. They stated that Web users would prefer to undertake a shopping task investing as little cognitive effort as possible, and therefore included cognitive effort as an indicator of a user-friendly interface design. They affirmed that this situation does not occur when users are 'just surfing on the Internet'. Challenge is also related to curiosity, as curiosity can initiate interactions (Skelly, 1994). Also Huang (2003) related challenge to system variables, including complexity or information richness, interactivity and navigability.

Finally, O'Brien (2008) considered challenge as one of the four subscales forming factor usability, and considered challenge as 'the cognitive and physical effort users perceive they are expending when interacting with the technology'.

3.5.7.5. Control

Control is substantially referenced in flow theory research (Brown and Cairns, 2004; Guo and Poole, 2008; Hoffman and Novak, 1996; Huang, 2003; Koufaris, 2002; Novak et al., 2000; Trevino and Webster, 1992; Siekpe, 2005; Schneiderman and Plaisant, 2005; Venkatesh, 2000; Webster et al., 1993). Also O'Brien (2008) considered control as a component of engagement with technology. This construct has also been utilised in the theory of planned behaviour (Ajzen 1991). Koufaris (2002) referred to this construct as 'the level of one's control over the environment and one's actions'. Control refers to 'capturing the individual's perception that s/he exercises control over the interaction with the technology' (Ghani and Deshpande, 1994; Siekpe, 2005) and is related to an individual's perception of the availability of the knowledge, resources, and opportunities that are required to perform a specific behaviour (Huang, 2006; Venkatesh, 2000).

In the context of Web sites, Huang (2003) affirmed that control is a facilitator of Web performance and used this construct to assess the control of users over their interaction with Web sites. Net et al. (1999) stated that the placement and structure of options within a Web site can be so done as to make users feel more in control. Control implies the freedom to act on the Web: users who feel that they have control over the human and computer interaction, and who feel in control of actions and final choices, feel more confident than users who do not feel in control. In a study of Internet discussion groups, Web users reported that they felt a sense of control when engaged in Web activities such as navigation and searching (Chen et al., 1999). These Web activities not only enhance the sense of control, but also increase the enjoyment of Web users (Huang, 2003). In research by Schneiderman and Plaisant (2005), participants also expressed the

desire to perceive they were in control of the interaction. Guo and Poole (2008) utilised control as one of the dimensions of online flow when researching how Web site complexity affects flow through the mediating effects of the three preconditions of flow. Also O'Brien (2008) referred to control as the 'users' sense of control' over their interaction with the technology. She considered control as a subscale of factor usability, one of six the factors that comprised engagement with technology.

3.5.7.6. Curiosity

Curiosity, means tapping into the extent an experience arouses an individual's sensory and cognitive curiosity (Agarwal and Karahanna, 2000; Malone, 1981). It has been considered by various authors as a component of flow (Aboulafia and Bannon, 2004; Agarwal and Karahanna, 2000; Huang, 2003; Li and Browne, 2004, 2006; Nel, van Niekerk Berthon and Davies, 1999; Siekpe, 2005; Trevino and Webster, 1992; Webster and Hackley, 1997; Webster and Ho, 1997; Webster et al., 1993). One of the advantages for consumers that use the Internet for obtaining shopping information is that this medium has the capability of helping them to discover new products and generate demand for unfamiliar products (Cooke, Sujan, Sujan and Weitz, 2002).

Literature has considered curiosity and novelty being similar constructs (Huang, 2003). Novelty has been defined as 'the tendency to seek out elements that are new, interesting, or unusual in one's environment' (Huang, 2003; O'Brien, 2008) and by Aboulafia and Bannon (2004) as a 'sudden and unexpected changes that occur on the interface that evoke a reaction from the user'. Huang (2003) found that novelty can act as a curiosity generating mechanism that arouses the imaginations of users and captures their interest in a Web site. Novelty can take the form of new information, a new experience, or a combination of both. It can be created by both freshness of content and freshness of innovation, including aspects of Web sites that users find new, surprising, unexpected and unfamiliar (Huang, 2003). Novelty also is associated with a lack

of experience with a Web site or its offerings, and is often conceptualised as the opposite of familiarity (Berlyne, Crow, Salapatek and Lewis, 1963).

In a study of catalogue shopping, Stell and Paden (1999) found that novel stimuli arouse the curiosity of readers and motivate them to further examine information in a catalogue. Novelty is thought to be an innate human preference, and varied, novel, and surprising stimuli can elicit sensory curiosity (Bianchi, 1998). Users gain excitement and pleasure from seeking out new things. Therefore, incorporating novel elements into a Web site can attract curious users and lead to the enjoyable experience of flow. Pace (2004) suggested that online content has the potential to sustain users' attention, specifically when novelty is introduced through content and links that are pertinent to users' goals. He emphasised the 'congruence' between interest, novelty, and searchers' goals in directed attention. Researching the interaction of users with software, Webster et al. (1993) suggested that heightened curiosity invokes excitement about available possibilities. This excitement serves to reduce the perceived cognitive burden that occurs during interaction (Agarwal and Karahanna, 2000). Novelty is thought to be an innate human preference, and varied, novel, and surprising stimuli can elicit sensory curiosity. Users gain excitement and pleasure from seeking out new things. Therefore, incorporating novel elements into a Web site can attract curious users and initiate the enjoyable experience of flow (Bianchi, 1998). Huang (2003) suggested that curiosity is a catalyst of both utilitarian and hedonic information acquisition and Web performance. Web users may navigate on Web sites in which they have little interest, but their curiosity might be triggered by characteristics of the site such as its content. When a user wishes to seek information, the acquisition of information is a means to a goal, however, when a user navigates on a Web for experiential purposes, the acquisition of information is an end to itself. Curiosity can also be an intrinsically motivated desire for information not motivated by a utilitarian goal (Huang, 2003).

In her definition of engagement with technology, O'Brien (2008) considered novelty as both a subscale and as one of the six factors that formed engagement with technology, where novelty referred to a device that is imaginative, innovative, new and surprising. However, the three items that measured the construct seem to refer more to curiosity. We suspect that these items were chosen due to the fact that the scale was developed to measure the novelty of a technological device. Also researchers Agarwal and Karahanna (2000), Huang (2003) and Nel et al. (1999) considered curiosity as a component of flow within the context of Web sites.

3.5.7.7. Feedback

Feedback is the information communicated to users about actions that have occurred and results that have been achieved (O'Brien, 2008). Feedback may be of visual, auditory, or tactile nature (Stone et al., 2005). Csikszentmihalyi (1993, 1996) considered this construct as an antecedent to flow, however Novak et al. (2000), in their application of flow theory to online environments, considered feedback as one of its components. Whilst some authors considered feedback when studying flow theory in online environments (e.g. Chen, 2006; Cowley et al., 2008; Filep, 2008), others did not (e.g. Hausman and Siekpe, 2009; Li and Browne, 2006; Lu et al., 2009). Novak and Hoffman (2009) recently acknowledged this incongruence found in online flow literature. Information systems that deliver effective feedback and match users' expectations help the users to accomplish their tasks, reduce their cognitive effort, and correspond to their actions and task visualisations (Te'eni., 2007). Huang (2003) suggested that feedback was comprised of reciprocity and synchronicity. Reciprocity is the extent to which users and information systems communicate in both directions, and synchronicity is the perception of users towards the immediacy of response from the computers (Huang, 2003). In Web environments, Guo and Poole (2008) found that feedback had the strongest impact on flow and suggested that feedback mechanisms should be implemented on a Web site in order to assist users when navigating on them. Feedback supports users' learning, control and

motivation. Timing is also a relevant factor. Feedback that comes too late does not help a user with a task, and feedback that comes too early places too much demand on users' memory and can also be consequently ignored (Te'eni, 2007).

Feedback differs to usability in that the latter is a quality attribute that assesses how easy user interfaces are to use (Teo et al., 2003). In this direction, O'Brien (2008) considered feedback as a subscale of usability, one of the six factors that compose engagement with technology. She measured this construct with items that pertained to the organisation of information of Web sites including how coherent, confusing and easy it was for users to utilise technology. Also Mandel (1997) suggested that, in order to facilitate feedback, users should be permitted to customise objects and interfaces represented on computer screens. This seems to have a relationship with interface and Web site design aspects (Hausman and Siekpe, 2009; Rosen and Purinton, 2004), even with interactivity (Shrum et al., 2009), usability (Teo et al., 2003) and fit theories (Hong et al., 2005; Te'eni, 2006; Vessey, 1991). These aspects may in turn influence how users can make comparisons on Web sites when seeking product and service information (Han, 2007; Lurie and Mason, 2007).

3.5.7.8. Involvement

The concept of involvement has received widespread attention in consumer research (Chen, 2008; Foxall, 1995; Wang, Gudergan and Lings, 2008). Involvement is a need-based cognitive state of psychological identification with an object or activity. It depends upon the salient needs of an individual and his perception about the need-satisfying potentialities of an object or situation. This construct is closely related to *motivation*, even sometimes considered as synonymous phenomena (Kappelman, 1995). Involvement determines attitude, strength and the probability of consistent behaviour (Foxall and Bhate, 1993) and can influence both the direction and intensity of an individual's attention.

According to Sánchez and Bigné (2001), involvement can be classified in three major groups: 1. Involvement as a process; 2. Involvement as a quality; 3. Involvement as a state. When dealing with involvement as process, it is considered that it depends on the type of processed information and/or the type of decisions undertaken by consumers (Antil, 1984; Krugman, 1965). When involvement is considered as a quality, it is considered as the result of previous experience or inborn skills that allow some people to have a greater chance of being involved than others (Engel and Blackwell, 1982; Higie and Feick, 1989; Peter and Olson, 1987). Finally, when considering involvement as a state, it occurs in a moment in time and within a time frame.

In her scale of engagement with technology, O'Brien (2008) proposed a factor which she termed 'involvement' that described user's feelings of being drawn in, interest and having fun. This factor was comprised by three subscales: engagement, motivation and positive affect. In particular the engagement subscale referred to how involved consumers felt in an online shopping task, ease of getting wrapped, drawn in and losing themselves, therefore very much in line with what other researchers could consider as involvement as well. Similarly, Mollen and Wilson (2010) affirmed that 'involvement is an important dimension of engagement'.

In internet marketing literature, research refers to different types of involvement: with products, purchase decision involvement, with technology and information and technology, and involvement within the context of Internet marketing. These shall be described in the following sections. We shall then differentiate between high and low levels of involvement and intrinsic and extrinsic involvement. Finally, we shall dedicate a section to enduring involvement.

Involvement with a product is defined as the 'perceived relevance of a product class based on the consumer's inherent needs, interests, and values' (Zaichkowsky, 1985). Being involved with a product means that a decision maker regards a purchasing or consuming activity with importance or relevance

(Clarke and Belk, 1978). In this direction, Daugherty et al. (2005) suggested a relationship between product examination and involvement, affirming that product examination product actually initiates involvement. One of the most prominent measurements of product involvement was developed by Zaichkowsky (1985) who developed the Personal Involvement Inventory (PII) in order to measure involvement with products. She affirmed that the reason for purchasing an item, as well as the inherent involvement with the item, creates differences in the amount of effort a consumer is willing to exert when purchasing a product.

Involvement also serves as the basis of the elaboration likelihood model of persuasion (ELM) proposed by Petty and Cacioppo (1986) which was grounded on the fact that a person's processing of information differs by his level of involvement. When consumers have high motivation to process communication, they are willing to exert considerable cognitive processing effort, which was referred to as *high-elaboration likelihood*. On the contrary, when the motivation is low, consumers are neither willing nor able to exert a lot of effort. The ELM has served as a basis for widespread research. For instance, Sun and Wei (2007) studied the effects of product involvement on the evaluation of products focusing on whether they contained trivial attributes, concluding that the evaluation of products with trivial attributes was more positive than with a product without trivial attributes. Also Park and Lee (2008) utilised consumer involvement with products as a moderator for the determination of the consequences of product trade-off, revealing that when a product is important for a consumer, he would pay more attention towards a product information in order to seek differences prior to purchase.

Involvement has also been studied with tasks, such as decision making and purchases. Mittal (1989) defined purchase-decision involvement as 'the extent of interest and concern that a customer rings to bear on a purchase decision task'. In purchase decision research, the main concern is that a decision is

relevant to a consumer hence he will be motivated to make a careful purchase decision. Involvement with purchases leads one to search for more information and spend more time to search for the right selection (Clarke and Belk, 1978).

Generally, buying decisions are typified by high-involvement and complex decision making (Pitta and Fowler, 2005). Attitudes also influence involvement as was suggested by Keaveney and Parthasarathy (2001). Despite purchase involvement within offline environments has been widely researched, Ranaweera et al. (2008) suggested that purchase involvement within the online world should be further investigated.

Regarding the involvement with information and technology, involvement can also influence the way information is processed (MacInnis and Jaworski, 1989). Balabanis and Reynolds (2001) suggested that a consumer's level of involvement, impacts the motivation to process information. The term involvement has also been used to refer to the psychological engagement of users with the resultant information system product of that development process (Kappelman, 1995). Empirical has also evidenced that involvement is an independent construct has been provided by use of discriminant validity in two studies utilising different operationalisations (Barki and Hartwick, 1994; Jarvenpaa and Ives, 1991). Agarwal and Karahanna (2000) proposed the term *cognitive absorption* and defined it as 'a state of deep involvement with software that is exhibited through five dimensions: temporal dissociation, focused immersion, heightened enjoyment, control and curiosity. Finally, Savitskie (2007) studied how the relationship between inherent affinity with a computer and TAM. Within the context of Internet shopping, he differentiated between situational involvement and enduring involvement where situational involvement refers to an increased level of product concern as a result of a specific purchase activity and enduring involvement is the ongoing concern for a product when this concern is not influenced by a particular situation. He concluded that involvement plays a critical role in the relationship between

one's attachments to computers which ultimately makes Internet shopping sites useful.

With regards to involvement within the context of Internet marketing, the role of the Internet, in particular of electronic commerce Web sites, has been recognised as a marketing tool for attracting and maintaining customers. Elliot and Speck (2005) suggested that online retailers should emphasise factors that 'best suit the involvement / experience profile of their primary users'. In fact, Pine and Gilmore (1998) affirmed that the creation of an involving online experience may indeed be the ground on which the competitive battles of online retail is to be engaged. McMillan et al. (2004) suggested that within the context of the Internet, additional research is needed on perceptual variables, mentioning involvement as one of them. In this direction, research has been undertaken by numerous researchers as will be described as follows. Park and Lee (2008) studied consumer purchasing intention based on reviews made by consumers online. They stated that in the case of highly-involved consumers, as the number of consumer reviews of product attribute-value increased, purchasing intention followed an inverted U shape. Chen (2008) affirmed that online shoppers highly involved with a product that use their own motivation and ability to seek product information, become immersed in the information search activity and could ultimately experience feelings of pleasure and escapism, that is, they tend to hold higher perceptions of *play*. Also Lueg et al. (2006) studied the involvement with malls and the Internet as a shopping channel and revealed that the involvement based on the channel has a major influence on the time and money spent and future intention to shop in that channel.

Demangeot and Broderick (2006) affirmed that when shopping online, consumers think like shoppers, not computer users, want to feel in a familiar shopping context, want to examine products closely and seek the sense of personal relationships and involvement induced by site-user understanding. McMillan et al. (2004) suggested that the Web has technical capability to

involve and engage customers and therefore advertisers should adjust to a new medium that is not bound by either space or time. Similarly involvement with the topic of a Web site is an important predictor of the consumer's use of the site (Huizingh and Hoekstra, 2003). They compared involvement with a consumer's Internet experience and his ability to perform certain Internet tasks and affirmed that involvement had a minor influence on consumer's perception of Web sites. Singh and Dalal (2005) found that understanding and involvement together account for a significant amount of the variance in the attitude towards a Web page and towards the intention to browse the underlying Web site. Finally, Balabanis and Reynolds (2001) found that increased duration on a Web site is a manifestation of increased attention, which, in turn, is an indication of increased motivation (i.e. higher level of involvement). They also found that the characteristics of Web sites were found to moderate the impact of involvement, Internet knowledge and Internet experience on both attitudes towards the site and the visit duration.

Literature also provides two further classifications of involvement. One is concerned with level of involvement of consumers, generally classified as low and high (Zaichkowsky, 1986). The second distinguishes between intrinsic or self-involvement and extrinsic involvement (Daugherty et al., 2005).

High Involvement means personal relevance and users are motivated to respond. Individuals who are highly involved with a product are more likely to engage in thoughtful and effortful processing of persuasive arguments. A task may be highly involving either because it entails immediate goals or because the intended usage situation involves important goals (Park and Lee, 2008). High involvement with a product is thought to increase a person's motivation for engaging in consideration of the product-relevant arguments presented (Chen, 2008). That is, involvement affects prior-purchase information search (Srinivasan, 1990) and subsequent decision-making processes (Petty, Cacioppo and Schumann, 1983). When online shoppers are highly involved with a

product, they have been found to seek information not only to increase knowledge but also to experience pleasure. According to Hong et al. (2005), consumers are likely to experience relatively high levels of enduring involvement across many sessions of navigating the Web when the navigation as an act in itself is enjoyable, when the specific topic areas or content domains of the navigation are inherently interesting, or when the navigation relates to self-concept or important values.

Sun and Wei (2007) found that in a high product involvement situation, the evaluation of product with trivial attributes is more positive than that of product without them. When considering the effect of involvement during purchase decisions, Pitta and Fowler (2005) suggested that buying decisions were typified by high-involvement and complex decision making. Previous studies of the effects of product involvement on dependent measures of advertising effectiveness, have generally found that high involvement products tend to score higher than low involvement products (Sun and Wei, 2007). When consumers shop online with high product involvement, they not only focus on the central cues or product-relevant arguments, but they also have a higher motivation and ability to process product information and carefully evaluate buying decisions. Thus, they have invested effort and time in product-related information search activities (Bloch et al., 1986) and their higher ability or knowledge, makes them more confident in their purchase decisions, so their attitude or behaviour appears to be stable, and they are more likely to be loyal to the brand of the product or store (Chen, 2008). Park and Lee (2008) researched online consumer reviews involving experiences based on two consumer roles, informant and recommendant, and found how these two roles affected consumer intention. Accordingly they affirmed that high-involvement consumers may consider an informant role as being more important than a recommender because such consumers are willing to elaborately process focal messages in order to get additional product information from online consumer reviews, rather than use them as a signal of product popularity (Park and Lee, 2008).

When involvement is low, consumers are neither willing nor able to exert a lot of effort (Sun and Wei, 2007). Park and Lee (2008) studied how online informants and recommendants influenced consumer intention, and found that individuals who were less involved with a product were not affected by argument contents, but rather by non-content elements. However, for low-involvement consumers, the greater the number of online reviews they can find, the greater is the purchase intention regardless of the type of reviews (Park and Lee, 2008). On the other hand, low involvement consumers may consider the role of an online recommender as being more important than the role of an informant because such consumers are not likely to elaborately engage in message-processing therefore they rely on them as simple signs of product popularity. For online shoppers with a low product involvement, escapism is the last thing they seek and the information search is often perceived as a chore to be tolerated rather than enjoyed (Bloch et al., 1986; Punj and Staelin, 1983). Under the theoretical basis of the elaboration likelihood model (Petty and Cacioppo, 1981), online shoppers with a low product involvement generally pay attention to peripheral or product-irrelevant cues. Furthermore, they are always unable to invest in a consumption relationship, therefore only focus on peripheral cues when making a buying decision and when their attitude or behaviour is unstable (Chen, 2008).

Having described how literature clasiffies involvement as high and low, other studies differentiate between intrinsic and extrinsic involvement.

Daugherty et al. (2005) affirmed that self-involvement occurs when a product holds some kind of personal relevance for a customer. In this case they perceive and evaluate products actively. In contrast, third-person involvement occurs with a potential product for another person. Also Huang (2003) differentiated between enduring involvement and situational involvement, where enduring involvement is intrinsically motivated and self-relevant, and situational

involvement is extrinsically motivated (Houston and Rothschild, 1978; Laurent and Kapferer, 1985; Richins and Bloch, 1986).

Finally, there is a body of research that refers to enduring involvement.

When a consumer finds interest in a product, and the consumer's perception of this product or activity is in accordance with his central values or sense of self or activity, this can lead to enduring involvement (Huang, 2006). Enduring involvement represents an ongoing concern with a product or activity that transcends situational influences (Laurent and Kapferer, 1985; Richins and Bloch, 1986). Enduring involvement captures the potential of a product or activity that causes personal relevance. Such involvement is intrinsically motivated by the degree to which the product or activity is related to the consumer's self-image or the pleasure received from thinking about or using the product, or engaging in an activity (Richins and Bloch, 1986). The emphasis is therefore on the product or activity itself and the inherent satisfaction its consumption provides rather than on the situation in which the product or activity is encountered. The principal characteristics of enduring involvement include having a deep interest in the product or activity, finding it extremely enjoyable to act upon this interest, and identifying oneself totally with the product or activity (Kapferer and Laurent, 1985).

3.5.7.9. Transformation of time

Transformation of time³ is a perception that time appears to pass very slowly or very rapidly compared to ordinary experience (Guo and Poole, 2008). It has been considered as one of the components of flow by Csikszentmihalyi (1998, 1990) who first made reference to this term as 'distorted sense of time' and 'time no longer seems to pass the way it ordinarily does'. This construct is also called *time distortion*, *time dissociation* (Guo and Poole, 2008) and *distorted*

³From a physics point of view, time cannot be transformed. However, in marketing literature this construct refers to the perception of time passing very slowly or very rapidly compared to ordinary experience.

sense of time (Pace, 2004). Transformation of time has received widespread attention in flow related literature (Bridges and Florsheim, 2008; Chan and Ahern, 1999; Chan and Repman, 1999; Chen and Nilan, 1999; Chen, 2006; Davis and Wiedenbeck, 2001; Ghani and Deshpande, 1994; Guo and Poole, 2008; Moon and Kim, 2001; Novak et al., 2000; O'Brien, 2008; Pace, 2004; Skadberg and Kimmel, 2004; Wu and Chang, 2005), other authors have not considered it as component of flow (Koufaris, 2002; Lu et al., 2009; Nel et al., 1999; Senecal et al., 2009; Smith and Sivakumar, 2004, Siekpe, 2005). This ongoing discrepancy was recently acknowledged by Hoffman and Novak (2009).

However, Novak et al. (2000) did consider time distortion as one of the components of flow, and referred to this concept as 'the perception of time passing rapidly when engaged in an activity'. They associated this dimension with *telepresence*, a perception that a virtual environment with which a user is interacting, is more real or dominant than a physical environment, suggesting a high-order factor called 'telepresence / time distortion'. Also Sanchez-Franco (2006) utilised time distortion in his study concerning flow within Web navigation, and Chen (2006) included time distortion in this research regarding flow and the positive affect of Web users, including it in a high-order factor together with telepresence, concentration and loss-of self-consciousness whilst experiencing flow. Within the context of tourism research, Skadberg and Kimmel (2004) proposed a model in order to predict flow in a tourism Web site and subsequently used a questionnaire to gather respondents' flow experience, confirming that transformation of time was a component of flow. Transformation of time was also considered by Filep (2008) as a positive experience enjoyed by tourists during visits.

O'Brien (2008) considered 'perceived time' as one of the three subscales, integrated in a three- subscale factor labelled as 'attention'. This factor was one of the six that composed engagement with technology. Finally, McMillan and Hwang (2002) had previously suggested that experiencing intense engagement

on a Web site could in turn lead to spending increased time on it, although they did not suggest a definition or measurement of Web site engagement.

The final concept of this section is up-to-dateness of information.

3.5.7.10. Up-to-dateness of information

As discussed previously, for consumers, one of the features of the Internet is its capability of transmission of information which can then serve to present fresh information on Web sites, previously uploaded by other users or generated by information systems (Hausman and Siekpe, 2009; Huang, 2003; Spink and Jansen, 2008). One of advantages of the interactive mediums such as Web sites is their capability of instantly communicating with people. Such communication can also occur in an individually personalised manner (Sádaba, 2000). Web content should be often refreshed (Johnson et al., 2004) as information attracts consumers (Su et al., 2008) due to the benefits of reduction of search efforts (Ariely, 2000). Likewise the information obtained by consumers should be perceived as beneficial (Jepsen, 2007).

Within the context of information content, online information research has been undertaken from a number of perspectives including quality (Flavián et al., 2008; Lin and Lu, 2000), reputation of information (Fuller, Serva and Benamati, 2007) and overload (Lurie, 2004). Flavián et al. (2008) affirmed that Web designers need to take care of the information quality related to the products and services supplied by e-commerce Web sites, as potential and existing customers use Web sites to collect information about potential suppliers, and transparency of information is crucial for decision making (Virtsonis and Harridge-March, 2008). In her research, Ferreira (2008) suggested that information quality and information effectiveness were strongly correlated. Also within the context of airlines, Palmer and Boissy (2009) affirmed that confusing airline pricing information undermined the capability of buyers to make rational decisions and create irrational choices. This seems to suggest that information should be delivered to consumers in a timely and useful fashion. In this direction, Ariely

(2000) had previously suggested that reduction in search costs for products and product-related information was one of the key benefits of online shopping.

Consumers will search for information as long as their perceived benefit from doing this is larger than the cost involved (Jepsen, 2007; Bettman et al., 1998). Likewise Kulviwat et al. (2004) revealed that perceived cost and perceived benefit had a positive effect on the motivation to continue to search for information on Web sites, as it is the availability and depth of information that attracts consumers to engage in online shopping (Su et al., 2008). Consumers who have an item in mind have to engage in a great deal of search in order to find a site that offers an appropriate price and satisfactory product or service quality (Zhang et al., 2007). Supphelen and Nysveen (2001) also affirmed that Web site revisits can be encouraged by offering valuable information on the site and by changing some of the content frequently so that there is always something new to offer. In this direction, Chaffey et al. (2001) suggested that high-quality content, ease of use and frequent updating were determinants of customers' intentions to revisit Web sites. However, whilst use Web sites has become an integral part of many individuals' lives (Li et al., 2006), Peterson and Merino (2003) suggested that the Internet is not likely to be an information panacea, in fact, Lurie (2004) paid attention to the overload effects that consumers could suffer when navigating on Web sites.

Spink and Jansen (2008) suggested that commerce-related searching is a major subject of interest and further research is required. In this direction, online consumer behaviour models can be found that incorporate constructs such as perceived informativeness (Hausman and Siekpe, 2009) and perceived usefulness (Bigné et al., 2008), who proved that under a high consumer perceived usefulness situation, easy to use interfaces increased online shopping information dependence. Similarly, Hausman and Siekpe (2009) found that the perceived informativeness of Web sites depends on both human and computer factors.

Whilst the Internet has the capability of disseminating information at low cost, tasks such as locating sellers and evaluating products remain relatively costly even in electronic markets (Öörni, 2005). This situation could be aggravated when the information found by consumers is not up-to-date. Öörni (2005) specifically highlighted that fact that the obsolescence of information is a problem that also prevails in electronic markets. Stigler (1961) attributed the need to search for information due to the desire to have up-to-date information that could have become obsolete, warning that when this occurs, users are faced with the situation of having to undertake larger searches than expected. Klopping and McKinney (2004) extended TAM by adding a task-technology fit model and creating a new model of online shopping. In their research they measured technology-task fit utilising questions which pertained to the up-to-dateness of information, usefulness and sufficiency of information necessary expected by the visitors to a Web site for the purpose of their visit.

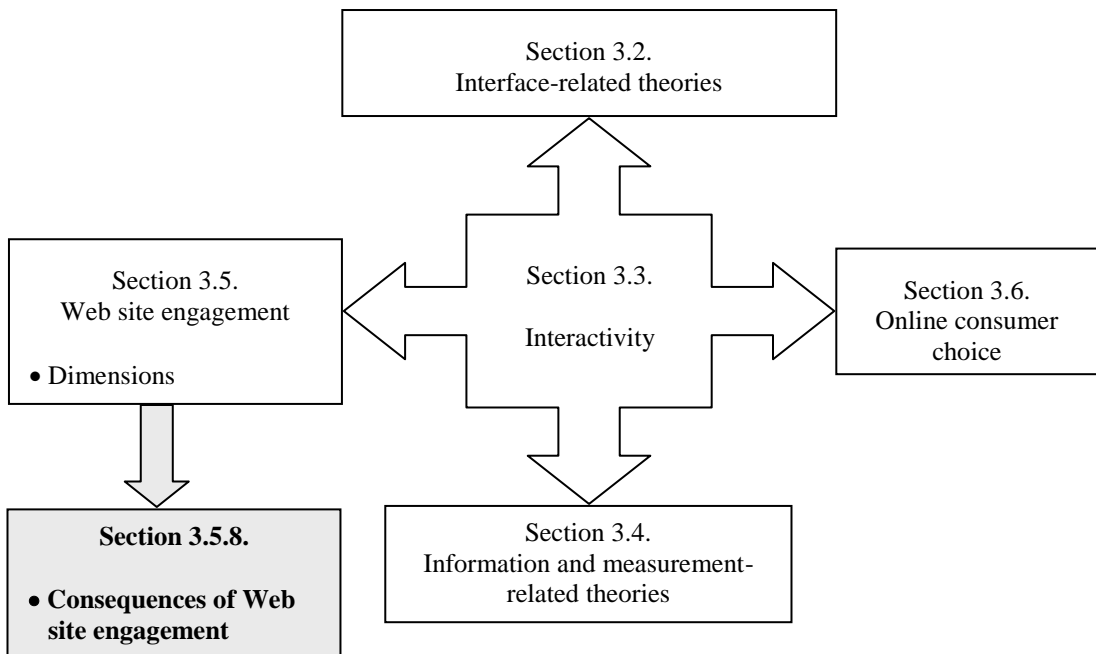
Up-to-dateness of information differs to perceived usefulness that was defined by Davis et al. (1989) 'as the degree to which a consumer believes that the use of a system will increase his or her job performance'. Their definition refers to effectiveness at work, productivity in terms the saving of time, and the relative importance of the system for the task being undertaken by a consumer (Bigné et al., 2008). In this thesis we consider up-dateness of information as the degree to which the online product contained in a Web site is up to date enough for the purpose of a visitor to the site (Klopping and McKinney, 2004).

Having described the ten potential dimensions of Web site engagement, in particular aesthetics, affect, focused attention, challenge, control, curiosity, feedback, involvement, transformation of time and up-to-dateness of information, the next section is dedicated to a description of potential consequences of Web site engagement with relevant managerial interest.

3.5.8. POTENTIAL CONSEQUENCES OF WEB SITE ENGAGEMENT WITH RELEVANT MANAGERIAL INTEREST

In this section we will describe bodies of research focused potential consequences of Web site engagement with highly relevant for business managers interest, in particular purchase intention, Web perceived value, online retention constructs, return intention, virtual branding potential, brand recall and URL recall. Figure 37 illustrates the connection of this section with the overall theoretical framework of this chapter. The section will commence by describing how behavioural intentions and attitudes can be utilised in online behavioural research, in order to predict behaviour such as purchase, switching and return intention.

Figure 37: Connection of section 3.5.8. with the overall theoretical framework of this chapter



Source: Developed for this research

3.5.8.1. Behavioural intentions and attitude

As reviewed in the section dedicated to consumer-technology behaviour models (e.g. Ajzen, 1991; Bigné et al., 2009, Davis, 1989; Dennis, 2010; Fishbein and

Ajzen, 1975; Taylor and Strutton, 2009; Venkatesh, 2003; Zhou et al., 2007), behavioural intentions and attitudes lay at the heart of these. As three potential consequences of Web site engagement are based on the intention of consumers to undertake actions, in particular, purchase intention, return intention and switching intention, we will describe how intentions can serve to predict consumer behaviour. Likewise, we also describe how attitudes can be also utilised for similar purposes.

Regarding the behavioural intentions of consumers, Eagly and Chaiken (1993) defined behavioural intentions as ‘a person’s conscious plan to exert effort to carry out a particular behaviour with these intentions being formed from both a personal evaluative and a normative construct’. It has been widely observed that financial success and future performance of organisations are contingent on the extent to which customers are retained and favourable behavioural intentions (Anderson and Mittal, 2000; Dabholkar et al., 2000; Davis et al., 1989).

Li et al. (2006) affirmed that people’s use of information technologies ‘can be predicted reasonably well from their intentions’. Behavioural intentions have been extensively studied in marketing literature and have been measured in a wide variety of ways (e.g. Cronin, Brady and Hult, 2000; Oliver, 1997; Zeithaml et al., 1996). Using *intention* rather than actual behaviour as the dependent variable has been utilised in much empirical information systems research (Agarwal and Karahanna, 2000; Gefen et al., 2003). Whilst there has been a need for further research in offline environments (Grewal et al., 2004; Reichheld, 2001) a number of commentators have argued that more empirical research is required to explain the nature and dynamics of online behavioural intentions. Also van den Poel and Buckinx (2005) affirmed that models are needed for understanding Internet behaviour and being able to make predictions. In this direction Goode and Harris (2007) studied the relationship between switching costs and inducements as moderators of the behavioural intentions of online shoppers.

Regarding consumers' attitude, this is a reliable indicator of behaviour intention, which subsequently affects actual behaviour. A consumer's attitude towards a behaviour refers to a person's judgement that performing the behaviour is favourable (Ajzen and Fishbein, 1980). Attitude towards online shopping is reported as a key to the survival and profitability of Internet retailers in the intensely online competitive market (Zhou et al., 2004). Online retailers would want consumers to have a positive attitude towards using their Web site, because a positive attitude will eventually lead to actual purchasing behaviour (Hong et al., 2005). Finally, based on both flow theory and the theory of reasoned action, Korzan (2003) found that flow was as important independent variable influencing both Web exploratory behaviour and attitude towards purchasing online.

Having described how behavioural intentions and attitudes have been previously utilised in online consumer behavioural research, in what follows we will describe bodies of research regarding aspects highly regarded by online marketers, in particular purchase intention, Web perceived value, online retention constructs, return intention, virtual branding potential, brand recall and URL recall.

3.5.8.2. Purchase intention

Purchase intention is one of the most common characteristics measured within advertising and marketing effectiveness research. It is used to anticipate a behavioural response (Ranaweera et al., 2008). Consumer purchase intention towards a product probably means a willingness to buy it (Dodds, Monroe and Grewal, 1991), therefore predicting and understanding online-buying behaviour is therefore of utmost importance for e-commerce Web site managers (Sismeiro and Bucklin, 2003; van den Poel and Buckinx, 2005). Purchase intention directly affects both revenue and profitability of the firm (Ranaweera et al., 2008). The greater the perceived value of a product, the greater will be its purchase intention (Dodds et al., 1991). Purchase intention has been conceptualised in terms of consumers' intentions to make an initial online

purchase from one firm, despite their online purchase history with other firms (Schlosser, White and Lloyd, 2006). Some authors utilise 'online transaction' instead of purchase, in both cases referring to an agreement between a buyer and a seller to exchange an asset for payment (Bellman et al., 1999). Online shopping intention and behaviour has been widely covered by Internet literature and studied from a variety of perspectives, and related research findings have greatly improved online retailing practice (Zhou et al., 2007). However, as a relatively new research field, there are still a lot of research questions that remain unsolved (Brunelle and Lapierre, 2008; Zhou et al., 2007). In what follows we review a body of research regarding purchase-related research.

Jarvenpaa and Todd (1997) conducted one of the earlier studies to examine salient factors affecting consumers' attitude towards online shopping. They identified four factors that affect consumers' attitude toward online shopping channel: consumer risk, customer service product perceptions, shopping experience. Their findings suggest that although online shopping has the potential for time saving and reduced effort, poor customer service and limited online offerings continue to plague online retailing. These findings were corroborated by Limayem et al. (2000) who found that consumers' attitude and belief regarding cost and time saving, convenience, level of customer service, and security concerns have significant effects on their intention to choose the online channel for their purchases (Devaraj et al., 2006).

Tucker (2008) considered Web navigation as a key driver of online purchases. Also Sismeiro and Bucklin (2003) demonstrated how browsing behaviour and experiences could be predictive from online buying. Their study revealed that whilst products with trivial attributes were evaluated more than products without them, consumers had a higher purchase intention, a more positive attitude towards products without trivial attribute, and a higher perceived value towards product with trivial attribute (Sun and Wei, 2007). When a store counts with both offline and online presence, impressions of both the online and offline store can influence consumer purchase intention (Verhagen and van Dolen, 2007).

From the perspective of experience of users with the Internet medium, several studies consider how it influences purchase intention. So et al. (2005) found support of evidence regarding how experienced Internet users and experienced internet shoppers were more likely to be potential future Web shoppers. In this direction, Boyer and Hult (2006) found that experience counts when buying fresh food product and groceries over the Internet. For the prediction of future customer purchases in an online ordering application, these researchers developed a behavioural scoring model to predict future customer purchases. Van der Heijden et al. (2003) identified purchase decision and post-purchase behaviour as component variables of trust, along with need recognition, information search and information evaluation. When applying the technology acceptance model in the context of e-services, Gefen et al. (2003) revealed a positive relationship between perceived ease of use and perceived usefulness, and perceived usefulness and purchase intentions. Cho et al. (2006) examined how purchase intention was influenced by consumer characteristics in Web sites. Also Celuch, Goodwin and Taylor (2007) examined the effect of past behaviour on purchase intention and Chau, Hu, Lee and Au (2007) examined the effects of consumer buying dropouts in different stages of purchase process. Purchase intention on a Web site has also been associated to e-loyalty (Cyr et al., 2007).

Karson and Fisher (2005) claimed that further research is needed in order to understand how online environments affect the relationship between intentions and purchase behaviours. In this direction, Lee and Kozar (2009) studied the influence of Web site legibility, coherence, variety, and mystery, and examined their effect on cognitive and affective appraisals and in turn their impact on purchase intention, finding significant support. Finally, literature has also studied repurchase or repeat-purchase intention (Ha and Janda, 2008).

3.5.8.3. Web perceived value

Whilst traditionally value has been considered as a trade-off between quality and price (Wathne, Biong and Heide, 2001), Steenkamp and Geyskens (2006)

defined perceived value of a Web site as 'an interactive, relativistic, preference experience that results from visiting the Web site'. Perceived value is interactive in that a value judgment is not subjective or objective, and is therefore dependent on personal aspects of Web site users and on the characteristics of a Web site; it is relativistic in that judgments differ amongst different Web site visitors; and has a preference or 'favourable disposition' actions, such as evaluations made on a Web site that generate intentions to undertake activities based on the evaluations, considering also finally the experience that arises from having utilised the Web site. The researchers utilised perceived value in order to assess the value consumers develop when visiting consumer manufacturers' Web sites in an international research across 23 countries. They found that the greater both the utilitarian and hedonic experiences obtained when visiting the manufacturers Web site, the greater the perceived value of the site. Perceived value was measured with a five item scale that referred to the usefulness, fulfilment of expectations and experience, and the intention to bookmark a Web site and return to it in the future. Perceived value has also been positively related to purchase intention in both offline research (Dodds et al., 1991) and online research (Liu, 2007). Furthermore, Lin (2007) found that a high perceived value discouraged Web site switching behaviour.

Web perceived value is comparable to what O'Brien (2008) considered as *motivation* in her scale of engagement with technology. She differentiated between intrinsic and extrinsic motivation, where intrinsic motivation was described as 'the feeling of satisfaction and pleasure one derives from an activity, where the reward is the activity itself independent of external reinforcements' and extrinsic motivation is the 'behaviour induced by external punishments and rewards'. She decided to include intrinsic motivation as a component of engagement with technology. The four items she utilised to measure motivation referred to how interesting and worthwhile users found a technology, and how rewarding and successful was their experience.

3.5.8.4. Online retention theories

The proliferation of online shopping has stimulated widespread research aimed at attracting and retaining consumers from consumer-oriented and technology-oriented viewpoints (Jarvenpaa and Todd, 1997; Zhou et al., 2007). Online customer retention has been studied from various angles including cognitive lock-in (Zauberman, 2003), learning (Johnson et al., 2004), stickiness (Li et al., 2006) and switching behaviour (Lin, 2007). Learning about the influential factors for retaining consumers might be one of the best long-term strategies for online retailers (Zhou et al., 2007). Consumers' commitment to online businesses is difficult to develop and is not as strong as commitment in other contexts (Li et al., 2006). Also acquiring customers is more expensive on the Internet than in conventional channels (Li et al., 2006, Reichheld and Shefter, 2000), and it is possible to easily switch amongst Web sites.

In what follows we will review bodies of research regarding online retention. Table 24 summarises the main theories and related bodies of research that will be described in the following sections.

Table 24. Retention theories and related bodies of research

MAIN THEORIES	REPRESENTATION OF RESEARCHERS	RELATED BODIES OF RESEARCH
Cognitive lock-in	Zauberman, 2003	Switching
Learning and development of skills	Bucklin and Sismeiro, 2003; Murray and Häubl, 2007; Venkatesh, 2006	Training. Power law of Practice. Experience
Stickiness	Li et al., 2006; Lin, 2007; Zott et al., 2003;	Continuance
Switching	Chen and Hitt, 2002; Li et al., 2006; Mu and Galleta, 2007	Inducements. Quality of alternatives

Source: Developed for this research

Cognitive lock-in is defined as consumers' decreased propensity to search and switch after an initial investment, which is determined both by a preference to minimize immediate costs and by the inability to anticipate the impact of future switching costs (Johnson et al., 2003). The term 'lock-in' was introduced by Zauberman (2003) in order to describe the behaviour of subjects unwilling to switch to other Web sites. Lock-in is driven by a preference to minimize

immediate costs and an under weighing of the impact of future switching costs. In a laboratory experiment, he demonstrated that consumers quickly develop a propensity to become loyal to a single Web site when needing to accomplish a specific task. Managers of Web sites with customers locked in by the ease of using the site may be able to take advantage of cognitive switching costs and charge price premiums. In the absence of other switching costs or loyalty schemes, cognitive lock-in implies an installed base of loyal customers whose lifetime value will provide a steady stream of earnings in the future (Shapiro and Varian 1999).

It is known that consumers under weigh future effort when evaluating different effort and payoff transactions over time. When considering trade-offs between options at two future moments, people tend to give stronger relative weight to situations that occurred closer in time (Soman, 1998). Consumers can become locked in a Web site, vendor, product or brand when the costs of switching to a competing alternative outweigh the benefits. Consumers tend to focus on short-term considerations and to select the more easily accessible option at the time of the transaction, even at the cost of forgoing future benefits (Zauberman, 2003). Consumers do not appreciate how powerfully they will be affected in the future by current investments in a specific alternative as just a small initial investment is sufficient to produce lock-in (Murray and Häubl, 2007).

Regarding the learning and development of online skills, When Internet users have learned how to use a site and can use the knowledge they acquired in one visit for subsequent visits, they may be reluctant to invest their time in learning how to use new sites (Bucklin and Sismeiro, 2003). These researchers demonstrated how within-site browsing behaviour changes as users return to a site. They found that visitors' propensity to browsing behaviour changed dynamically as a function of the depth of a given site visit and the number of repeat visits to the site. Repeat visits lead to reduced page-view propensities but not to reduced page-view durations. Their results revealed how learning effects

are consistent with within-site lock-in, stickiness and suggested that learning effects spill over multiple visits. They found that users accommodate to browsing patterns, timesaving strategies, corroborating the research of Johnson et al. (2003), who found that visitors spend less time per session the more they visit a Web site.

Murray and Häubl (2007) found that choices consumers make are influenced by skill-based habits of use, creating a switching cost that keep consumers locked into an alternative, proving that skill based habits of use provide an explanatory mechanism for the phenomenon of lock-in. Based on the notion that trial and error underlies the formation of skill-based habits of use, they explained the relationship between experience obtained during consumption and the formation of consumer preferences. They undertook two experiments. In the first experiment they proved how automation influenced learning over repeated trials, proving also the acquisition of a skill specific to an incumbent product is a key driver of consumer preference. Furthermore, performance was improved as the gradual automation of skills and tasks would take place in less time over trials. The second experiment took into account the amount of experience with a Web site interface. They found that when an interface is easy to use, it results in a strong preference for it, and repeated experience does not lead to further increase in preference. When the initial ease of use was low, a preference for the product developed only through repeat experience with it. They also showed that visit duration declines the more often a site is visited. Just as practice improves proficiency with other tasks, visitors to a Web site appear to learn to be more efficient when using that Web site the more frequently they use it. Learning would only lead to an even stronger lock-in effect because it increases the total usage cost gap between the currently used option and other alternatives. When cognitive lock-in occurs, it can give a supplier incumbent an advantage over its competitors (Murray and Häubl, 2007).

With regards to the costs undertaken when learning, it is known that by visiting a Web site, consumers learn its navigational scheme, which reduces the cost of

using that site in the future (Johnson et al., 2004). Research has shown that with increase in consumer learning, the need for extensive search diminishes (Bhatnagar and Ghose, 2004). Consumer learning occurs when consumers search across search goods but not when they search across experience goods (Bhatnagar and Ghose, 2004). Research has shown that sites with the fastest learning curves have the highest rates of purchase (Bhatnagar and Ghose, 2004). A conscious intention to learn leads to great analytic processing of dimensions and a selective focus on diagnostic criterial attributes (Johnson et al., 2003). In contrast, when learning is incidental, classification learning is drive by non-analytical factors such as overall similarity and familiar resemblance (Hoch et al., 1999). Also Johnson et al. (2003) showed that most Web sites can be characterised by decreasing visit times and that generally the sites with the fastest learning curves show the highest rates of purchasing. They examined learning in electronic environments by studying the time spent visiting individual Web sites.

With regards to the size of investments made by online consumers, Li et al. (2006) discussed that the transactional view of B2C relationships emphasises the one-time provision of economic benefit, profit, efficiency and effectiveness of the interaction to attract and satisfy customers. They argued that investment sizes may act as a psychological inducement to maintain a relationship. An individual who has invested a great deal of time, effort and money in a Web site may become psychologically stuck to it. A user who terminates use of a Web site will need to search for and learn how to use a new one. The cost of this process may include monetary investment in obtaining information about new Web sites and opportunity costs that could have been used for other activities. Significant cognitive effort may also be invested in searching, sorting and filtering information and in adapting to the input and output interfaces of the new site (Li et al., 2006). Finally, Chen and Hitt (2002) found that a Web site's ease of use was positively associated with switching behaviour because ease of use does not incur in a sunk cost of learning.

Focusing on training, insufficient or ineffective training has been identified as one of the key factors underlying the difficulty of creating favourable user reactions to new technologies (Venkatesh, 1999). In a study undertaken over three months with 246 employees in 3 different organisations, his study concluded that potential acceptance of a system was higher amongst users who underwent a game-based training program when compared with users who were trained with a traditional method. The game-based trained users perceived the system to be easier, which in turn led to enhanced behavioural intention to use. Related to training is the concept of *non-retrievable investment* which is the extent and importance of resources attached to the relationship with the current Web site. It acts as a powerful psychological incentive to persist in a relationship and is similar to the concepts of sunk cost, switching costs and investment size (Li et al., 2007).

With regards to the power law of practice, this term was coined by Newell and Rosenbloom (1981). There are two principal explanations for the power law of practice. First, according to the method selection explanation (Crossman 1959), when a task is repeated, less efficient methods of accomplishing the task are abandoned in favour of more efficient methods as they are discovered. In effect, the person performing the task is learning by trial and error the most efficient combination of methods, which could be revealed more systematically by a time and motion analysis (Niebel 1972); The second explanation of practice law focuses on the cognitive processing of the input and output of the task rather than on the methods used in its performance.

Johnson et al. (2004) studied the duration of Web site sessions across multiple visits, and proposed that the cognitive costs of using a site decrease with experience and that this can be modelled with the power law of practice. They found a relationship between the ease of learning a Web site and the probability of purchasing. For these researchers, the major implications of the power law of practice are that a navigation design that can be learned rapidly is one of a Web

site's strongest assets, and that easy learning of a Web site leads to an increased probability of purchase. They also affirmed that the layout of a site can be an important strategic tool for online stores and advised to Web sites managers with rapid learning rates, to maintain current navigation designs as altering the navigation design of a site reduces both the cognitive lock-in effect of practiced efficiency and its competitive strength. If customers must learn a Web site design all over again, they might decide to learn another one. Customers may come back to find new content, and the more varied the content, the more they will be encouraged to return. Although content should be refreshed often, changes in site design should be reviewed carefully (Johnson et al., 2004).

Literature also refers to the level of experience held by users. In this regard, Khasoneh and Sweeney (2007) affirmed that novice and experienced Internet users differ in their behaviour and response to various marketing stimuli. Experienced Internet users are becoming more focused in their Web usage (Hoffman and Novak, 1996), are less likely to react to unexpected stimuli (Bruner and Kumar, 2000) such as Web advertising, and have a higher intention to purchase on the Web (Huizingh and Hoekstra, 2003). In turn, less experienced users are easier to attract by online advertising and they exhibit greater brand awareness than experienced users (Dahlen, 2001). Also search costs are not constant over time and they change as consumers gain experience shopping with a particular online store (Johnson et al., 2004). Also Shankar et al (2003) measured Internet experience, using a two item scale.

Related to the level of experience gained by consumers, literature also refers to *consumer expertise*, defined as 'the consumer's ability to perform product related tasks successfully' (Alba and Hutchinson, 1987). Expert consumers are more selective in the information they acquire and are able to acquire information in a less structured environment. In addition to its influence on information search, expertise may affect the extent to which consumers process and analyse important product-related information online, and therefore

marketers might consider designing separate Web pages for expert and novice consumers (Su et al., 2008).

3.5.8.5. Stickiness

Due to the inability to maintain users on Web sites, research on stickiness is emerging as a crucial factor in the success of online stores (Bhatnagar and Ghose, 2004; Green and Pearson, 2006; Li et al., 2006, 2007; Lin, 2007; Mummalaneni, 2005; Walter, 2007). Stickiness is of particular relevance for Web site marketers as acquiring customers is more expensive on the Internet than in conventional channels (Li et al., 2007). Since increasing transaction volumes is one of the important goals for Web site management, developing a Web user's stickiness thus becomes strategically important (Lin, 2007). However, the concept still remains unclear. Zott et al. (2000) defined stickiness, as 'the ability of Web sites to draw and retain customers so that they will buy goods / services or view more advertisements'. Based on this definition, Lin (2007) proposed another definition of stickiness: 'the user's willingness to return to and prolong his / her duration of stay on a Web site'. Also Li et al. (2006) defined stickiness as 'repetitive visits to and use of a preferred Web site because of a deeply held commitment to reuse the Web site consistently in the future'. Bhatnagar and Ghose (2004) affirmed that stickiness can be measured in terms of how often consumers visit a site and how much time they spend on each visit. Stickiness should occur despite situational influences and marketing efforts that have the potential to cause switching behaviour (Li et al., 2006). Whilst, companies want to design shopping Web sites that ease consumers' information search, at the same time they want to retain the consumers as long as possible on their Web sites, hence exposing them to more product information (Hong et al., 2005).

Whilst Li et al. (2006) affirmed that online B2C companies are investing resources in order to increase the stickiness of their Web sites, it is not yet clear what makes people stick. In this direction, research by Lin (2007) revealed that positive attitude and trust were antecedents to intention to stick. She also found

that Web site stickiness was the most significant predictor of a person's intention to transact. Likewise Walter (2007) studied stickiness intention as a measure of an individual's intention to stick to a Web site on a regular basis without stopping in the near future. He utilised intentions to capture the motivational factors that influence stickiness behaviour. Finally, Murray and Häubl (2008) found that search across stores and brands appears to be 'stickier than originally anticipate, revealing that it has become apparent that consumers are at least as loyal online as they are offline.

Continuance is similar to the notion of stickiness as it can be thought of as using a Web site in a user's normal activity or embedding a Web site within a user's routine (Bhatnagar and Ghose, 2004). IT Continuance, the continued use of information technology, is recently gaining attention amongst researchers (Premkumar and Bhattacharjee, 2008). IT continuance is more critical towards ensuring long-term viability of IT innovations. Accordingly, Liao (2007) developed an integrated model designed to predict and explain an individual's continued use of online services based on the concepts of the expectation disconfirmation model and the theory of planned behaviour, finding that a customer's behavioural intention towards e-service continuance is mainly determined by customer satisfaction and additionally affected by perceived usefulness and subjective norm. Also Bhattacharjee (2001) study suggested that users' continuance intention is determined by their satisfaction with information systems use and their perceived usefulness of the continued use of these.

3.5.8.6. Switching

For a variety of reasons, the Internet makes it relatively easy to switch from one Web site to another Web site that provides similar products or services. Some users however, stick to a specific Web site and do not switch to others that provide similar services or content (Li et al., 2006). Higher breadth of use leads to higher sunk costs for a user and, consequently, to lower tendencies to switching to an alternative (Ye, Desouza, Sangareddy, Jha, 2008). User switching is a critical issue for technology providers as long as there are

substitutable products or services available to the users. The situation of how to hold onto their existing user base and prevent users from abandoning their products and switching over to competitive offerings poses a problem for the providers and designers of IT products and services (Ye et al., 2008).

Li et al. (2007) referred to the importance of understanding the difference between people who have the propensity to stick to particular Web sites ('stayers' with post-adoption retention) and those who have the propensity to switch to alternative Web sites ('switchers' with post-adoption attrition) and have no propensity to use it in the future (Chen and Hitt, 2002; Li et al., 2007; Park and Kim, 2006; Pavlou and Gefen, 2004). Their research contributed to the understanding of the differences between technology adoption / acceptance and continuous use of technology.

It becomes critical for a firm to manage its retention ability. Switching costs refers to the effort and expense involved in switching from one product to another (Demirhan et al., 2007; Klemperer 1987a, b). Individuals are constantly facing the option of switching between alternative products and services (Ye et al., 2008). Switching costs prevent customers from changing to another provider, otherwise firms would be unable to recover their initial investments in acquisition (Chen and Hitt, 2002). Repeated consumption or use of a product results in a cognitive switching cost that increases the probability that a consumer will continue to choose the product over competing alternatives (Johnson et al., 2003). Economic theory suggests that the low physical costs of information search on the Internet should encourage extensive search (e.g., Bakos, 1997). The underlying sources of switching cost include contractual commitments, learning a new system, search costs, inflexible and specialised information formats, purchase of durable products, loyalty programs and network externalities (Demirhan, Jacob and Raghunatan, 2007; Shapiro and Varian 1998).

Mu and Galleta (2007) affirmed that switching costs between Web sites are low compared to those in the offline domain such switching to a different magazine or even switching to a different television channel, as a higher switching cost is required compared to the costs made in the online domain. A TV viewer would require actions such as making searches and would often unsuccessfully find suitable content. In the online world, large volumes of relevant information are available to shoppers, who are limited in their capacity to process that information, and are indeed hesitant to switch between different electronic interfaces to collect the information in the first place (Murray and Häubl, 2008). Web sites can be consumed at any time (Mu and Galleta, 2007) and current technology can provide tools that excel at searching and sorting information and providing the results to consumers through a consistent interface. Once shoppers have learned to use one store's electronic interface, they are very reluctant to switch to other stores (Murray and Häubl, 2008). Goode and Harris (2007) revealed that perceived switching costs moderate the relationships between Web site presentational consistency and online behavioural intentions. Also there are bodies of research which have dealt with the relationship between switching and online profitability (Chen and Hitt, 2002; Johnson, Bellman and Lohse, 2003), demographic profiles of online visitors (Sultan, 2008), online switching inducements (Goode and Harris, 2007) and the quality of online alternatives (Li et al., 2006).

With regards to consumer demographics, Chen and Hitt (2002) found that customer demographic characteristics have little effect on switching, and that systems usage measures and systems quality were associated with reduced switching. Also Keaveney and Parthasarathy (2001) explored role of attitudinal, behavioural, and demographic characteristics of service switchers concluding that significant differences could be found based on demographic variables. Similarly, Sultan (2002) explored how consumer Internet preference was related to explanatory demographic and psychographic variables. Research also refers to the impact of switching on profitability. Cognitive switching costs are difficult to value in monetary terms, at least for consumers evaluating the

decision to search multiple sites versus staying with one familiar site (Johnson et al., 2003). The presence of switching costs can have a substantial effect on profitability. If switching costs are inherently low and firms are unable to lock in customers, long-term profitability may be difficult to attain, especially in many B2C e-commerce environments with low entry barriers other than customer acquisition costs and limited differentiation (Chen and Hitt, 2002).

While perceived switching costs have been widely explored in offline contexts, comparatively little attention has been dedicated to switching costs in online exchange (Goode and Harris, 2007; Harris and Goode, 2004). These authors affirmed that research on online switching behaviour is in its infancy. Similarly Ye et al. (2008) affirmed that they could not find specific studies that investigate brand switching between IT related products, such as personal computers or software programs.

Switching inducements can be defined as any factor which could cause a customer to switch from one supplier to another (Goode and Harris, 2007). Switching inducements were defined by Jones et al. (2000) as 'the attractiveness of alternatives'. This suggests that if the perceived benefit of switching is low, the customer will stay, while if the perceived benefit is high, the customer will probably switch. Inducements can include lower prices, better service quality and more choice or quicker delivery, and have been studied in a variety of contexts such as retailing, services and investment (Goode and Harris, 2007). Whilst switching inducements appear particularly worthy of attention in the context of online exchange some authors consider this an under-researched area. Keaveney and Parthasarathy (2001) and Harris and Goode (2004) lamented the lack of empirical research into the effects of consumers' switching costs and suppliers' switching inducements, calling for further research. It has also been argued that online shoppers are more susceptible to switching inducements than offline shoppers (Harris and Goode, 2004).

With regards to the quality of alternatives, best alternative relationship partner is one of the key variables in maintaining a buyer-seller relationship (Li et al., 2006). These researchers revealed that the quality of alternatives was negatively associated with commitment. Also social scientists have recognised that the presence of an attractive alternative will threaten the formation and stability of a relationship. If an individual's needs and requirements can be gratified better by another relationship than the current one, the individual may investigate the alternative relationship, and this will affect the level of commitment to the current relationship (Johnson and Rusbult, 1989).

After the sections dedicated to online retention theories, the following section refers to online return intention.

3.5.8.7. Return intention

Visitor return to a Web site a common measure of success utilised by Web advertisers and is a satisfactory approximation of customer retention (Karson and Fischer, 2005; Koufaris, 2002; Mu and Galleta, 2007). Web site design is likely to be particularly important in online contexts for brands or sellers that are unknown to consumers. Perhaps potential consumers may not make a purchase during one visit to a site but may consider doing so when returning to the site at a later time (Mohammed et al., 2001). Cyr et al. (2007) defined *e-loyalty* as intention to revisit a Web site or to purchase from it in the future. Similarly, literature also refers to *reuse intention* (Hausman and Siekpe, 2009).

Palmer (2002) used *likelihood of return* as a key measure of Web site success. As demonstrated by Raney et al. (2003), visitors brand evaluations remain a significant predictor of the desire to return to the Web site. The more attractive the product or brand being evaluated, the more likely a visitor is to return. Satisfaction does not ensure repeat behaviour (Li et al., 2006). However both creative/entertaining elements and informative elements on a Web site seem to affect attitude towards the site, which in turn affects intentions to revisit

(Supphelen and Nysveen, 2001). These researchers revealed that brand loyalty affects both attitudes towards a site and intentions to revisit it.

According to Gupta and Kim (2007) repeat customers are five times more profitable than new customers. More than 50 percent of repeat customers seldom complete a third purchase, one reason being the inability of on-line vendors to manage customers changing expectations. Revisits can be encouraged by offering valuable information on the Web site and by changing some of the content frequently so that there is always something new (Supphelen and Nysveen, 2001). Also high-quality content, ease of use and frequent updating are determinants of customer's intentions to revisit Web sites (Chaffey et al., 2001). Rosen and Purinton (2004) found how effective site design leads to repeat visit through coherence of design, complexity of richness of content and legibility or understandability of the site. They also considered a fourth variable *mystery*. Also Flavián and Guinaliu (2006) demonstrated that individuals' loyalty to a Web site is linked to their levels of trust. Finally, O'Brien (2008) considered intention to return as a subscale that formed part of endurability, one of the six factors that composed engagement with technology.

After the section dedicated to return intention, the following two sections discuss virtual branding potential and recall of a Web site's brand and URL.

3.5.8.8. Virtual branding potential

Virtual branding potential is the ability of a Web site to gain recognition and establish its existence in the minds of consumers and public. This construct was proposed by Simeon (1999, 2001) when comparing the branding potential and Internet strategies of American and Japanese banks. Virtual branding is different to traditional offline branding due to differences in the ability to gain and maintain users is different in each mediums. Simeon (1999) affirmed that there are many advantages to creating virtual brand equity as this would provide the most sustainable competitive advantage to Internet driven firms.

Not only a Web site with an established online brand can persuade its current visitors to visit it repeatedly, but it can also receive income from utilising the Web site for advertising other sites through Web links. Whilst it is common to measure the success of a Web site with the traffic it receives, for instance through search engines, this is not representative of the popularity of the Web site. Virtual branding provides a more accurate measure of a Web site's strategic potential (Simeon, 2001). In this direction Whelan and Wohfeil (2006) affirmed that the most successful companies on the Internet are those that have clear brand policies. These researchers stated that 'knowing your customer' is a well praised belief in marketing practice and literature.

Simeon (1999) utilised three measures in order to measure virtual brand equity:

1. high level presentation, that is the good Web design with rich content;
2. overall attractiveness to represent that content, graphics and mechanisms of delivery have been organised in a fashion that creates a positive experience; and
3. customer site recommendation as a measure of willingness to introduce a particular Web site to other people. Web sites with strong name recognition are linked to a clear set of services in the minds of consumers. These three factors are the indicators of virtual branding potential and therefore virtual brand equity.

3.5.8.9. Recall of a Web site's brand and URL

Recall relates to the ability of consumers to retrieve information from their memory (Keller, 1993). Recall has been utilised in both brand and Web site related research. Meaningful brand names that are visually represented are easier to remember (Childers and Houston 1984; Keller, Heckler and Houston, 1998; Lutz and Lutz 1977). Associative strength theory of memory (Ellis and Hunt, 1983) suggested that effectiveness of recall depends on how strongly a reminder word or picture is associated with the information to be retrieved. Accordingly, the stronger the meaning of the salient word or cue is associated with the target information to be retrieved from a Web site, the easier it will be for a visitor to retrieve the target information, that is, to remember a Web site (Mu and Galleta, 2007). A brand name that semantically suggests the benefits of a product might

be associated more strongly in the memory of consumers and can facilitate recall of that benefit. This can take place in a situation in which the brand name is used as a retrieval cue by consumers, for instance, when making a decision within a store (Keller et al., 1998).

Cognitive studies have found that humans remember pictures with meaning much more easily than those without meaning. Also it has been proved that people remember meaningful words and sentences much more easily than meaningless ones. Web sites where salient pictures and words have business meaning suggestive of brand or product benefits have the highest recognition, while Web sites with salient pictures and words without either a linguistic or business meaning have the lowest recognition. Accordingly, Web sites should utilise salient brand and product-related names, pictures, and media content in general suggestive of the product benefits in order to increase Web site recognition and the likelihood of obtaining repeat visits. When using search engines to access Web sites, consumers can quickly forget even the sites that appear on the top positions of a results list. This is particularly relevant in online searches as users have instant and direct access to millions of Web sites (Mu and Galleta, 2007).

One of the oldest notions in memory literature is that repeated exposure to a stimulus enhances recall of that stimulus, helping to 'stamp in' an item in a human and increases the strength of an item. Regarding the effects of repetitions, Sawyer (1974) found that recall and recognition increases as a function of presentation frequency, and also that as repetition increases, there are decreasing increments in memory performance. It is also known that recall performance is better when the number of repetitions is spaced in time, rather than massed (Postman, 1975).

Recall has been utilised in branding research, as described in the following section.

Branding is the process of creating a brand image that engages the hearts and minds of customers and is what separates similar products from each other (Duncan, 2005; Opoku, 2007). Consumers give significant weight to brands when making purchase decisions (Zhang et al., 2007). Building strong loyalty on the Web may be particularly challenging due to the relative difficulty of differentiating one Web site from another. In competitive environments, building a brand loyal customer base is crucial because such consumers may perceive unique value in one brand that they may feel other brands cannot provide (Ha and Janda, 2008; Reichheld and Schefter, 2000).

There is a misconception in marketing literature that brand experiences have to be 'mass produced' and then communicated to consumers. The reality is that it is up to an individual consumer to obtain his own unique experiences with the brand, thus, brand communication can only provide the platform on which consumers obtain their individual brand experiences. Research on experience has been linked to brand recognition, proving beneficial when it can influence brand recognition (Junaini and Sidi, 2007).

Simeon (2001) felt that is the creation of brand equity which will provide the most sustainable competitive advantage to Internet driven firms. The most successful companies on the Internet seem to have clear brand policies. Research by Wang et al. (2008) suggested that there is a comparative advantage for online retailers that use social cues that provide consumers with enhanced perceptions of human connection and the formation of emotional brands. Also Li et al. (2006) referred to the human motivation to form interpersonal attachments and affirmed that the need to belong is also found in the interactions between people and objects such as a brand. This issue of association is further supported by Mu and Galleta (2007) as it has important consequences for the construction of commercial Web sites. Also Sawhney et al. (2005) referred in their research to consumer engagement in the context of online interaction with brands at commercial Web sites. Likewise Rowley (2004) affirmed that an

online brand development strategy includes creating the Web site and other communications using the brand and building the brand experience.

The accomplishment of experiential or task goals when in visiting a Web site, affects consumer propensity to be brand-loyal to the site (Holland and Baker, 2001). These researchers suggested that if customers would participate in the development of online business models, this would fundamentally change the way brands are developed. That is, instead of creating a brand and launching it on a Web site, the producer and consumer would be interactively creating an e-business brand. To maximise the opportunities of Internet branding, it is critical to measure the degree that a site is actually migrating visitors to a deeper acceptance of the company and to a greater attachment of its products and brands (Chiagouris and Wansley, 2000).

The influence between offline brands and online brands has been discussed within research. Kwon and Lennon (2008) revealed that offline brand image exerts significant effects on online brand image, that it turn, influences online perceived risk and online customer loyalty. When comparing the influence of offline branding on online branding, Danaher (2003) revealed that brand loyalty for brands that enjoyed a high market share was significantly greater than expected, with an opposite result for small share brands. Within travel research, Aincough (2005) studied how price, brand and store variables, including travel service brand names, influenced consumers' perceptions of travel service quality, perceived service value and the willingness to buy travel services. Their results revealed that the only significant brand effect was the effect of airline brand on perceived quality.

Whilst there is a consistent body of research regarding brand recall, there is scarce research regarding consumer recall of the Internet URL addresses of Web sites.

With regards to URL recall, a uniform resource locator (URL) serves to identify the location of a resource on the Internet, such as a Web site (W3 Consortium, 2001), therefore serves as the main gateway which consumers can use to access Web sites. An example of a Web site's URL address is 'www.viajesaseychelles.com'.

As some sites are more memorable than others, Mu and Galleta (2007) suggested that Web managers should attempt to make their Web sites memorable by carefully choosing salient texts used on the site, including any prominent words associated to the site such as the URL. This recommendation is consistent with the associative strength theory of memory (Ellis and Hunt, 1983) that suggests that effectiveness of recall depends on how strongly a reminder word or picture is associated with the information to be retrieved. As occurs with online brands, URLs are also likely to contribute to the development of positive brand attitudes. Ries and Ries (2000) provided 11 sets of guidelines for selecting the URL and corresponding brand name for commercial Web sites. Recall of a Web site's URL can be of particular importance for subsequent access to a Web site. For instance, if a consumer accessed a Web site after using a search engine, he can quickly forget the URL address of the site even if it was placed high on the search engines result list (Mu and Galleta, 2007).

3.6. - ONLINE CONSUMER CHOICE BEHAVIOUR

3.6.1. Introduction

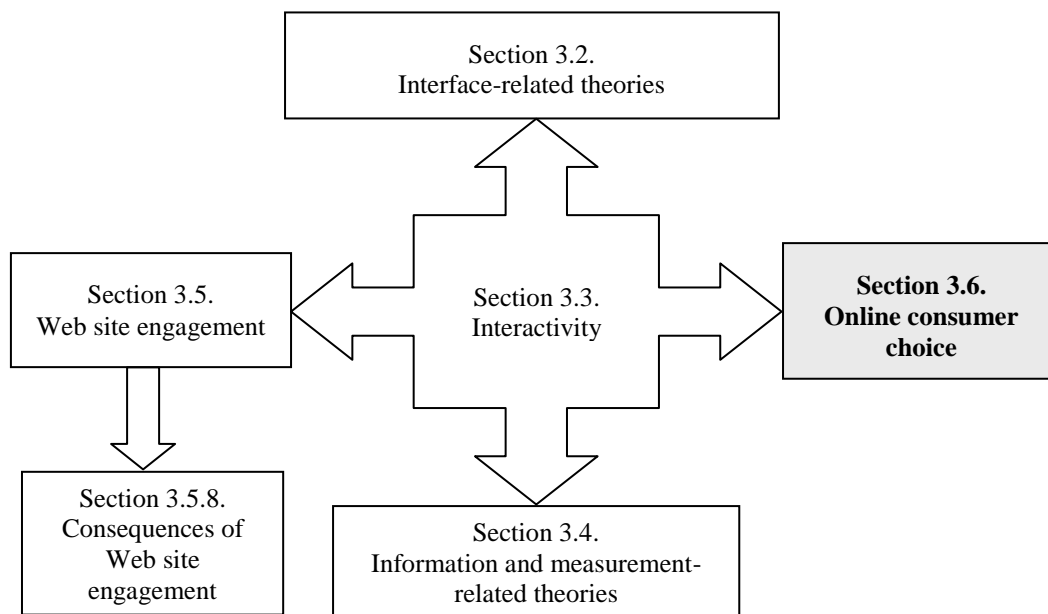
This section reviews bodies of research regarding how consumers make evaluations and decisions within product assortments also referred to as *choice sets*. Whilst in offline environments, choice behaviour is a well-established discipline of marketing (e.g. Chernev, 2007; Hamilton et al., 2007; Hoch et al., 1999; Train, 1993; Tversky and Kahneman, 1986; Simonson and Tversky, 1992), there is a lack of equivalent research within interactive environments (Steckel et al., 2005). It has been affirmed that investigations should be specifically developed for the Internet medium, as offline theories are not directly transferable for utilisation in online environments (Lurie, 2004). However, an e-commerce Web site bears the characteristics of a marketing channel, and therefore some of the existing marketing theories could be utilised for investigating consumers' online shopping behaviour (Hong et al., 2005). Whilst the Web involves a computer mediated environment, within information systems literature there are consistent bodies of research that study the influence of computer information structures and content on users, as revised in earlier sections of this chapter.

As this thesis is undertaken within the context of Internet marketing, it is not our purpose to extensively review literature in order to understand how consumer choices are formed. However, we utilise choice and decision-making research as a basis for understanding how consumers make comparisons within the alternatives or choice sets included within e-commerce Web sites. Accordingly, there are a number of both online and offline issues that are worthwhile reviewing, as they are relevant to this research.

Drawing from marketing and information systems literature, in the following sections we shall therefore revise bodies of research concerning consumer evaluation and choice, how this is affected by the interactive nature of the Internet and how the design of information structures affects comparative

consumer behaviour in online purchase decision tasks. We shall then revise literature concerning how information, product assortments including their product attributes, and how the variety and size of assortments affect online behavioural tasks, highlighting that when consumers are presented with a choice set, they tend to make decisions within a subset of products and subsequently tend to make pair wise combinations. We will also review literature pertaining to the influence of time during choice making, decision quality and justification and satisfaction of choice, which will be followed by a description of the relevancy of holistic and analytic processing of product assortments and heuristics when shopping online. To finalise this section we will describe how consumers can make comparisons on product Web sites, the effects of repeated behaviour whilst comparing, and the effect of effort during such processes. Figure 38 illustrates how this section connects with the overall literature review of this chapter.

Figure 38: Connection of section 3.6. with the theoretical framework of this chapter



Source: Developed for this research

3.6.2. Consumer choice in online environments

One of the qualities of the Internet medium is that it enables consumers to search remotely, obtain pre-purchase information, evaluate different online product and service alternatives, and therefore make choices and purchases. For consumers, a significant advantage of e-commerce is comparison shopping, as shopping Web sites may allow for more informed shopping than in offline environments (Alba et al., 1997; Ruiz and Sanz, 2009). The making of comparisons is central to consumer decision making. Accordingly, research can be found regarding different consumer evaluation strategies that underlie comparative judgements, and the consequence of the comparison processes for decision outcomes (Dhar and Nowlis, 2004; Han, 2007; Lurie and Mason, 2007; Nagpal and Krishnamurthy, 2007). However, little research has addressed the question of how consumers evaluate and choose consumer-firm interaction mechanisms within interactive environments (Steckel et al., 2005). The eleven authors of this paper highlighted that the interactive environment is changing consumer decision-making processes.

One of the most prominent aspects learned in the consumer behaviour research over the years is that consumer behaviour and choice are context dependents (Tversky and Simonson, 1999), aspect which is highly relevant on Web sites. Accordingly, Steckel et al. (2005) encouraged to undertaking research regarding how consumers make online choices and decisions. Also van Riel et al. (2004) stated whilst user interfaces are used to access content of e-services Web sites, and suggested that further research was needed on how user interfaces influence customer evaluations on Web sites. In this direction, also Han (2007) affirmed that difficulty to make product comparisons on Web sites has been identified as the top frustration for online consumer shoppers.

3.6.3. Evaluation and Choice

The task of *choosing* enables decision makers to look for reasons to seek the advantages of selecting an option within a choice set (Nagpal and Krishnamurthy, 2007). When choosing among alternatives, consumers are faced

with a 'mixed' choice task situation as they make their choices using prior information already available in their memories as well as information they obtain from the external environment (Degegratu et al., 2000). Consumer preferences are often constructed when decisions are made, rather than retrieved from memory (Yoon and Simonson, 2008). Consumer choice is influenced by preference fluency, that is, 'the subjective feeling that forming a preference for a specific option is easy or difficult' (Novemsky, Dhar, Schwarz and Simonson, 2007). Lurie and Mason (2007) affirmed that by making it easier for consumers to compare information, this will lead to increased acquisition, weighting, and processing of information. According to Degegratu et al. (2000), providing information on products and services related to a Web site's core offerings strongly engages online shoppers and influences them to revisit the site.

3.6.4. Research on consumer choice in offline environments

Brick and mortar sensory study has been widely studied and provides a sound theoretical base upon which online researchers can build appropriate theories specific to online environments (Rosen and Purinton, 2004). When consumers shop in brick and mortar stores, they have a chance to browse the aisles and inspect products carefully and closely. These experiences are enhanced through the stimulation of senses: colours, music, scents physical inspection of products and interaction with sales people or other customers, which have been purposely developed for these environments. Online shopping lacks these experiences (Siekpe, 2005).

Researchers have focused on the differences between marketing in offline and online environments. Ten years ago, Degegratu et al. (2000) studied how choices made in online stores may differ from choices made in offline stores and concluded that there are systematic differential effects of brand name, price and other online search attributes. Specifically they argued that: 1. Online marketers who rely strongly on visual cues to influence offline purchases of their brands, may be disappointed by the level of online sales that they are able to generate, as brands names are more important online only in some categories and are

dependent on the amount of information available; 2. sensory search attributes have a lower impact on online choice and factual information has a higher impact on choice made online; 3. price sensitivity is higher online and the combined effect of price and promotion on choice is weaker online than offline. Furthermore, these researchers explained the differences between online and offline availability of information: 1. typically, more information on sensory attributes is available offline and more information on non-sensory attributes is available online; 2. search costs are lower online for the attribute information that is displayed, the difference being more pronounced for non-price attributes; 3. some convenience features, such as personal lists, available online may shift consumer focus from price to non-price attributes.

Other researchers have argued developing specific research for the online medium and not to directly utilise choice behaviour research developed for the offline world (Huang et al., 2008). Flavián et al. (2008) affirmed that due to the specific interactive nature of the Internet, *convenience* is one of the main advantages of electronic commerce for consumers. Also Hausman and Siekpe (2009) affirmed that interactivity and convenience are posited as critical for Web effectiveness. Huang et al (2008) affirmed that the Internet blurs user perceived ability to evaluate product quality prior to purchase between search goods and experience goods, which does not occur within offline settings.

3.6.5. The influence of information designs on online consumer behaviour

Several researchers have explained how the ways in which information is presented to consumers has an impact on their behaviour. Bettman and Zins (1979) affirmed that the way in which information structures are presented, influences consumer information processing strategies. Likewise, Lohse and Johnson (1996) affirmed that the format in which information is presented to consumers influences their information acquisition and subsequent behaviour. It is also known that information designs influence how structured tasks are undertaken within computer environments (Kennedy et al., 1998). According to Hoch et al. (1999) objective information structure of an assortment, including

the product attributes and their spatial positions, can explain a significant proportion of perceived variety. Display formats may influence the quality of outcomes and may influence attention and recall (Kennedy et al., 1998). As the way in which information is displayed can change decisions, and as behaviour is predictable, Lohse and Johnson (1996) affirmed that, it is necessary to understand these influences when designing interfaces for electronic commerce.

Consumer information acquisition patterns directly influence cognition and memory, and behaviour tends to be more efficient when a display is well suited to the task (Lohse and Johnson, 1996). Patterns of information processing suggest certain strategies for evaluating information (Lohse and Johnson, 1996; Payne, 1976). Subtle changes in presentation format can also change decision-making strategies (Todd and Benbasat, 1991). Research by Kennedy et al. (1998) revealed that different information formats should be implemented for the different required purposes, and suggested that their findings were of importance for the designers of human-computer interfaces. This is consistent with Junaini and Sidi (2007) who affirmed that Web sites should be tailored to suit the objective of each site. Accordingly, this issue should be taken into account by marketers involved in the design of Web site interfaces.

In the context of travel research, van Riel et al. (2004) stated that the extent to which a Web site succeeds as an interface between customer and provider will likely depend on the design of its Web pages as they appear on a screen, and on the ease with which customers can navigate between pages inside the Web site. Kuom y Oertel (1999) affirmed that besides having an adequate aesthetic design, travel e-commerce Web sites should provide detailed information of the products and allow comparison. However, van Riel et al. (2004) argued that the complexity of the offer on travel Web sites makes it difficult to display all required information efficiently and effectively. Similarly, Han (2007) affirmed that difficulty to make product comparisons on Web sites has been identified as the top frustration for online consumer shoppers.

People's cognitive maps should match computer processes. If they do not, this will cause online behavioural problems (Stibel, 2005). Maps presented on computer screens should be similar to the cognitive maps people already have (Rosen and Purinton, 2004). Product choice sets that are presented on Web pages are often organised in different information formats across different Web sites and even with the same Web site, although there does not seem to be a consensus about which is the appropriate information format (Hong et al., 2005). Accordingly, these researchers suggested that when consumers have specific objectives about what to look for online and undertake search actions, designers should arrange product information in a *matrix* format to assist their searching. On the contrary, when consumers have only general objectives about what to look for on Web sites, it is better to organise the product information in a *list* format in order to facilitate browsing.

Decision makers have to adapt their decision-making processes to the decision environment (Payne et al., 1988). Users dynamically adapt their behaviour in response to the page-by-page stimuli presented to them, even if they are not aware of their own adaptive behaviour. This has an impact on how people make choices within an online environment (Bucklin and Sismeiro, 2003; Mandel and Johnson, 2002). Information structure is also a measure of the average amount of information associated with a particular element in a choice set (Lurie, 2004). Song and Zahedi (2005) developed the Belief Reinforcement Model that explained how various categories of Web-design elements reinforce Web customers' beliefs, which in turn positively influences attitudinal constructs that lead to changes in their purchase intentions. Also Goode and Harris (2007) proved how favourable interpretations of online Web site presentational consistency and online appearance and site design were positively associated with consumer behavioural intentions.

Having described how information presentation influences online consumer behaviour, in what follows we will focus on literature concerning assortments,

their variety and size, and how consumers tend to make decisions within subsets of the assortments.

3.6.6. Assortments or *choice sets*

A choice set is a set of alternatives. These alternatives are determined by the environment of the decision-makers (Ben-Akiva and Lerman 1985). People often do not have clear and stable preferences, even when they have complete information about the characteristics of the alternatives in a choice set (Betmann et al., 1998). The manner in which a set of options is presented to consumers affects their preferences and decisions. Marketers can tactically design their assortments to influence buyers' preferences. Because preferences are constructed for a specific choice set and decision task, they depend on the particular characteristics of the options of the assortment and the manner in which they are evaluated. In many situations consumers construct their preferences when faced with a specific purchase decision (Simonson, 1999). Accordingly, Web pages, and the information within these pages, can be reorganised to allow anticipated information more assortment prominence (Stibel, 2005).

3.6.7. Variety of assortments

Hoch et al. (1999) wanted to understand how consumers perceive the variety contained in a product assortment and how these perceptions influence satisfaction and store choice. Consumers may care about variety because of an innate desire to consume different alternatives within or across occasions, and are more likely to find what they want when going to a store that offers more varied assortments, as greater variety and larger assortments increase the probability of a perfect match. Consumers who have never purchased in a particular category may seek education about available alternatives and will prefer visiting stores generally perceived to offer high variety assortments, in order to reduce their search costs. Likewise, perceived variety will matter more when preferences are uncertain, and in fact, the desire to maintain the flexibility inherent in a varied assortment may be the key driving store choice. As long as

people continue to have an innate desire for new experiences, most retailers will want to be perceived as offering more rather than less variety. Consumers rank variety of assortment behind location and price when naming reasons why they shop at their favourite stores. However, there can also be negative impacts on excess variety when customers know what they want, in particular increased confusion and increased transaction costs (Hoch et al., 1999). In this direction, contrary to the belief that more choice is always better, Chernev (2003) affirmed that selections made from large assortments can lead to weaker preferences, highlighting that several researchers have found evidence that increasing the number of alternatives or attributes in a choice set leads to a decline in the quality of consumers' choices.

Whilst customers are almost better off with greater variety, firms have to balance the demand side against the supply side. As retailers are interested not just in short-term consumer response but also in long-term customer loyalty, retailers worry that when consumers do not find preferred items or perceive that a store carries a less-varied assortment, will be then less likely to return when searching for making subsequent purchases (Hoch et al., 1999). Also, according to Broniarczyk, Hoyer and McAlister et al. (1998), variety perception of assortments influences store choice. These researchers found that variety perception were influenced by: 1. total space devoted to the category, 2. number of stock keeping units (SKUs) offered, and 3. whether the assortment included the consumer's favourite brands.

Hoch et al. (1999) thought that it would be possible to design more efficient, lower cost assortments without reducing variety perceptions and increase probability of future store visits, by helping retailers to understand the factors that drive variety perception. Accordingly, they developed a mathematical model of variety based on the complete information structure of an assortment, comprised by the multiattribute structure of assortment objects and their spatial location. On a computer setting, the researchers undertook different choice experiments based on ten differently organised assortment presentations of

products with different combinations, with three different colours, three different shapes and three different names. The researchers studied the influence of these three factors on variety perceptions: information structure of assortments; level of organization of the objects; and task orientations, promoting either analytic or holistic processing. They also took into consideration the influence of variety perception and organisation on stated satisfaction and store choice. Their research revealed the following four contributions: 1. information structure has an impact on variety perceptions; proximity of objects matters as people are more influenced by local information structures or *adjacent objects*, than nonlocal information structures; 2. organisation of displays can either increase or decrease variety perceptions: consumers perceive that organised displays offer more variety when their processing is analytic; 3. in contrast, random displays are perceived as more varied when processing is holistic; 4. both variety and organisation of assortments drive stated satisfaction and store choice. Customers stated greater satisfaction with those stores offering a perceived high variety and better organised, rather than those arranged in a random manner, and were more likely to choose those stores.

3.6.8. Assortment sizes

Research has shown that consumers are less likely to purchase a product when a store offers an extensive selection of that product than when the selection is reduced. Traditional approaches assume that more alternatives mean more information. However Lurie (2004) questioned whether it was possible to provide consumers with more alternatives but less information, and conducted research focused on understanding the influence of information structure on information overload in information-rich environments. He affirmed that *information theory*, a structural approach towards the measurement of information, would be useful to predict information overload and that information structures had implications on information acquisition. Also Broniarczyk et al. (1998) affirmed that whilst grocery retailers were suggested to reduce the number of SKUs offered in their product range in accordance with consumer demand therefore establishing an 'efficient assortment', this could

negatively affect consumer perception and, as consequence, store choice. Accordingly they suggested that only low-preference items should be eliminated whilst maintaining category space. Also Hoch et al. (1999) affirmed that retailers should prefer carrying an assortment that consumers perceive having greater variety.

Through a series of studies focused on the role of assortment size in option choice, Sela et al. (2008) demonstrated that due to the difficulty of choosing from large assortments, people select options that are easier to justify. She suggested that when assortments are enlarged, this may in turn lead consumers to be less satisfied with the chosen option, in part because of an increase of regret (Sela et al., 2008). In this direction, Chernev (2003) revealed that it is possible to identify an ideal point that determines when large assortments will strengthen consumer preferences and when large assortments will weaken preference.

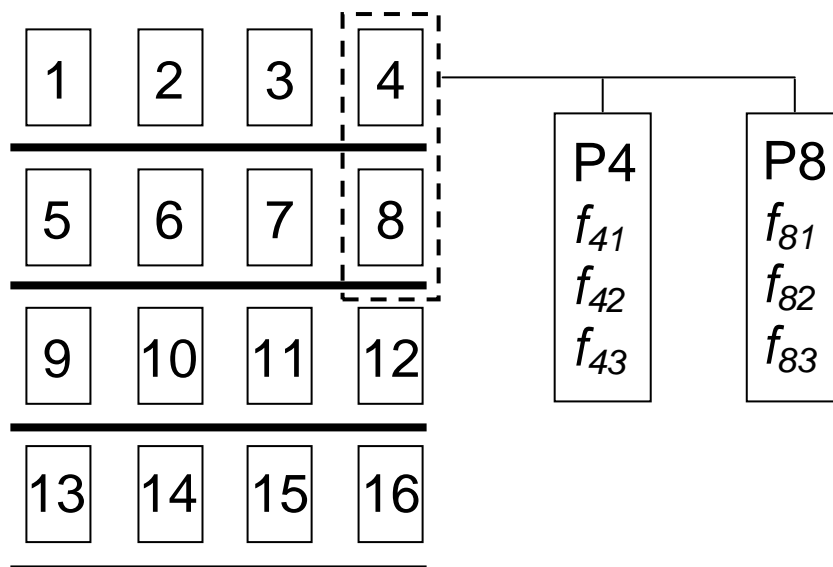
3.6.9. Subsets

Simonson (1999) suggested that assortment subsets that consumers will compare have to be carefully analysed when planning product assortments contexts and implementations. When customers are presented with a group of options in a particular context, and consider this set in order to determine the attractiveness of different options, instead of thinking globally about other available options in the same category, the subset considered by customers may have greater impact than the total assortment offered by a retailer. As consumers typically consider only a subset of the entire product assortment rather than total assortment, the subset configuration can be a determinant of purchase decisions. Retailers can alter the configuration of subsets in order to shape consumer preferences and influence the likelihood that a purchase is made (Simonson, 1999). In this direction, Xu and Wyer (2007) researched the likelihood of purchase being made when mind-sets were developed by consumers, arising from the process of determining which one of several options a customer would prefer within a set of products, finding evidence that the development of mind-sets increase the

likelihood of making a purchase, both in the situation at hand and in subsequent unrelated situations.

Häubl and Trifts (2000) suggested that when making purchase decisions in an electronic commerce setting, consumers are often unable to evaluate all available options in great depth hence tend to use two stage processes in order to reach to make their decision. When a customer is presented with large assortments with different stimuli, they tend first to make pairwise judgements of similarity between objects in the assortment, and then use these pairwise comparisons to form an overall perception of variety. The researchers also suggested that variety perceptions might be driven by subsets of pairwise combinations. Figure 39 illustrates how this was also depicted by Hoch et al. (1999). The figure shows how consumers first make pairwise judgements of similarity, represented by products 4 and 8, and then utilise these pairwise comparisons, as building blocks, in order to form the overall perception of variety.

Figure 39. A two-dimensional display of an assortment and the underlying attribute structure of one pair of objects



Source: Hoch et al. (1999)

The three items represented under P4 and P8 refer to three attributes contained within each of these two products.

Research also refers to the influence of product attributes on consumer behaviour.

3.6.10. Product attributes

It is known that distinctive attribute of products can influence consumer positive evaluations whilst making an online purchase decision (McGill, 1989; Sun and Wei, 2007). Information attributes contained within online choice sets also influence the way consumers behave. Lurie (2004) suggested that increasing the number of attributes in a choice set reduces the quality of choices made by consumers. Likewise, it is well established that the proportion of information searched in a choice process decreases as the number of pieces of information increases (Lohse and Johnson, 1996). Degeratu et al. (2000) affirmed that online product attributes can be sorted and searched with a similar amount of effort. This does not occur in offline settings, where search costs of information may vary by attribute. The even distribution of attribute levels or an increase in the number of attribute levels raises the average amount of information associated with each attribute per alternative combination. However, the even distribution of attribute levels makes it harder for decision makers to guess the attribute value for a given alternative, therefore they should take more time to acquire and process information. Choice sets with attribute levels distributed evenly across alternatives, or those with more attribute levels, are more likely to be associated with information overload than those for which attribute levels are not evenly distributed across alternatives (Lurie, 2004).

It is habitual to utilise attributes in computer based choice experiments. Lohse and Johnson (1996) considered product attributes in mouselab-based experiment where respondents were presented with a matrix-designed choice set containing alternatives and attributes. The experiment served to assess their decision making processes as consumers. Information structure also mediates the number

of alternatives on choice quality. Lurie (2004) argued that the amount of information in a choice set depends on multiple structural factors of information. By considering the number of alternatives in a choice set, the number of attributes within each alternative, the number of different attribute levels associated with each attribute, and the distribution of attribute levels across alternatives, he revealed that: 1. even distribution of attribute levels reduced decision quality; 2. an increase in the number of attribute levels lowered decision quality; 3. information structure mediated the relationship between the number of alternatives and choice quality. He assessed the amount of information processing by counting the number of times that information boxes were opened, also called *acquisitions* by Lohse and Johnson (1996). Processing selectivity was determined by the proportion of time spent on the most important attribute, the variance in time spent on each alternative, and the variance in time spent on each attribute. When studying conflict of attributes, Nagpal and Krishnamurthy (2007) found that the compatibility between valence of alternatives in a choice set and the choice task influenced decision time, decision difficulty, attribute recall, and effort, underscoring the role of the task in the study of attribute conflict. Finally, Degeratu et al. (2000) compared the effort undertaken by consumers when searching for the same attributes in both offline and online environments, revealing that some attributes could be sorted and searched online with approximately the same amounts of effort. However, when the same information was obtained offline, search costs varied by attribute.

The following five sections refer to research on decision focus, time, decision quality, choice satisfaction and justification in choice, as these have an impact on consumer choice behaviour.

3.6.11. Decision Focus

Choice within assortments is a function of consumers' decision focus (Chernev, 2006). Hamilton et al. (2007) examined consumer choice as a function of

perceptual similarity of the options in a choice set and concluded that perceptual focus can increase the choice share of an option within a core decision set.

3.6.12. Time-related research

Consumers' availability of time is also a factor considered in choice behaviour. *Closure* is defined as a consumer's wish to attain an evaluation quickly. People with a high need for closure prefer a Web site with few hyperlinks, while people with a low need for closure would prefer a Web site containing more hyperlinks (Amichai-Hamburger, Fine and Goldstein, 2004). With a time constraint, screening is based on fewer attributes and results in fewer alternatives seen in a choice set, than without a time constraint (Weenig and Maarleveld, 2002). Also Marmorstein (1992) developed a model of subjective value of time during price-comparison shopping revealing that the respondents their experiment included wage rates and perceived enjoyment of price comparison shopping into their subjective value of time.

3.6.13. Decision Quality

Stibel et al. (2008) proposed collapsing choice theory which explains how working memory capacity, probability estimation, choice alternatives, judgment and regret all interact and effect decision quality. According to Murray and Häubl (2008), as the number of choices and decision complexity increases, our ability to efficiently make good decisions is compromised. This problem is also influenced by additional constraints of time pressure and the many demands upon us beyond consumption decisions such as work and family.

3.6.14. Choice satisfaction

Su et al. (2008) studied the relationship between decision making process and customer satisfaction and proved that satisfaction with the outcome of a choice made in an online environment was positively related to the perceived benefits of the decision-making process and negatively related to perceived costs of the decision-making process. If consumers have difficulty or spend a considerable amount of time making a choice, they will feel less satisfied. In addition, if they are confident about their decision or the decision strategy they have used, they

will experience enhanced satisfaction with the outcome. Improved choice quality makes them feel confident as they can justify the decision they made and also that they have made a satisfactory choice (Su et al., 2008).

3.6.15. Justification in choice

As opposed to the traditional assumption of utility maximization (Shafir et al., 1993), people select the option of an assortment that is easiest to justify to oneself and to others. Because buyers are often uncertain about their preferences and about the utilities of the available options, they cannot assess the true utilities of the options and rely instead on the ease of justifying choices (Simonson, 1999). An increasing number of options in a choice set also increases choice difficulty, which in turn, makes people more likely to select options which are easier to justify (Sela et al., 2008).

The following two sections refer to how holistic and analytic processing of product assortments and heuristics influence online shopping behaviour.

3.6.16. Holistic and analytic processing of product assortments

Literature differentiates between analytic and holistic perception, as relevant to the understanding of what consumers might learn through different shopping experiences. When a customer is browsing a store, scanning the environment for anything of interest, their processing is likely to be more holistic and superficial. Adults process *holistically* when dealing with complex stimuli under time constraints. On the contrary, a customer trying to buy something out of an assortment is engaged in a more instrumental behaviour, therefore analytic *processing* of the assortment is more likely. When people engage in analytical processing, organised displays appear to offer more variety. When processing is holistic, random displays are seen as more varied (Hoch et al., 1999).

A conscious intention to learn leads to great analytic processing of dimensions and a selective focus on diagnostic criterial attributes. In contrast, when learning is incidental, classification learning is driven by nonanalytic factors such as

overall similarity and familiar resemblance. Whilst young children engage in holistic processing of information, older children and adults are more likely to engage in analytic processing. Likewise, adults also process holistically when dealing with complex stimuli under time constraints (Hoch et al., 1999). Spann and Tellis (2006) undertook a laboratory experiment and revealed that, despite the convenience of the Internet to consumers, most consumers still do not make strictly rational decisions and the Internet does not eliminate or lower consumers' irrational decisions as many experts expected or hoped. They questioned the assumption of strict rationality even in the context of the Internet, and affirmed that models that incorporate more realistic assumptions of consumer decision making are likely to have enhanced relevance and predictive accuracy. As a result they suggested that researchers should focus on creating display assortments that produce greater perceptions of variety at a lower cost and greater efficiency, aspect which seems easier to create on e-commerce Web sites than in offline environments.

3.6.17. Heuristics

Heuristic is an adjective for experience-based techniques that help in problem solving, learning and discovery. The word heuristics is derived from Greek, meaning 'to discover'. A heuristic method is particularly used to rapidly come to a solution that is hoped to be close to the best possible answer, or 'optimal solution' (Payne et al., 1990). Holistic perceptual processes may sometimes drive consumer judgement (Hoch et al., 1999). In choice decisions made on choice sets, the use of heuristics that save effort can also lead to decision errors (Tversky, 1969). Under time pressure, choice decisions are based on utilising the best available heuristics (Payne et al., 1990). Brandstätter, Gigerenzer and Hertwig (2006) suggested that, instead of using traditional utility theories, heuristics can be utilised to accurately predict how consumers make choices.

As one of the characteristics of the Internet is the accessibility to vast amount of data available (Park and Lee, 2008), heuristic methods can be useful for consumers dealing with these vast quantities of data, therefore avoiding

information overload. Whilst product and information hyperchoice is initially attractive, it is ultimately unsatisfying and psychologically draining (Mick, Broniarczyk and Haidt, 2004). Likewise, Öörni (2005) affirmed that particular groups of consumers are willing to pay superior prices in order to avoid the effort of dealing with vast amounts of data when purchasing leisure travel packages. Lurie (2004) suggested that the amount of information in a choice set, and therefore the likelihood of information overload, depends on multiple structural factors of information. There are multiple dimensions determining the amount of information that consumers need to process when making choices among a given set of product alternatives. A structural approach suggests that the amount of information to process increases with the number of attribute levels, and this is greatest when the attribute levels occur with uniform probability. This means that the likelihood of information overload should be higher and choice quality lower when attribute levels are uniformly distributed across alternatives or when there are more attribute levels (Lurie, 2004).

The final three sections refer to how consumers can make use of Web sites for making comparisons of products and services, the effects of repetitions whilst comparing on consumer behaviour and the effect of cognitive effort on consumer comparative behaviour and choice.

3.6.18. Making comparisons on Web sites

The Internet has become a popular medium that facilitates search of pre-purchase information, making choices and making purchases. Likewise, the Internet facilitates and encourages comparison-shopping. Online, consumers can easily find a wide range and assortments of products and detailed information which they can compare. Formatted comparison tables which reassemble choice sets allow customers to evaluate choices. Making online choices represents an advantage for Internet users, as it increases chances of finding a product suitable for their specific needs. In this direction, Ruiz and Sanz (2009) affirmed that there is little research regarding the influence of online comparison shopping on

online purchase decision. Choice behavioural research is mainly focused on 1. the outcomes of a decision process, that is, on the *which*, and on 2. the process undertaken to reach the decision, that is, on the *whether* (Burson, 2007).

Online comparison is also considered as a motivation to use search engines. Whilst high income online shoppers are not price sensitive and do not wish to invest effort in comparison shopping, convenience and time saving-oriented shoppers do use search information for their online purchases, trying to both save time and reduce their search times, in order to improve the quality of their lives (Ruiz and Sanz, 2009). These researchers studied if shopping motivations convenience, price reduction, product range and variety of assortment, only channel available and time-saving, had an influence on consumer motivation to utilise search engines for undertaking online shopping. Their studied revealed that time-saving and variety seeking had a positive impact on search engine use, and that online experience of use and online shopping experience negatively influenced use of search engines. As the experience with a channel grows, consumers perceive fewer benefits from comparing alternatives and therefore search less (Ruiz and Sanz, 2009; Teo and Yeong, 2003). Degeratu et al. (2000) affirmed that most consumers need a substantial price savings in order to persuade them to comparison shop than can actually be obtained from shopping around. Consumers gain from search by reducing risks in prices and quality of stores at a cost. Balancing the trade-off of cost expected from search, consumers will choose an optimal number of stores before making a purchase decision (Zhang and Jing, 2007).

Whilst consumers can make comparisons whilst shopping online, consumer repetitive behaviour also been considered by researchers.

3.6.19. The effect of repetitions in consumer behaviour

Repeated experience on Web site interfaces that are easy to use result in a strong preference to use them (Murray and Häubl, 2007). High breadth of use, leads to

sunk costs that in turn leads to lower tendency to switch to another Web site, considered as retention (Ye et al., 2008). Similarly, automation of making trials on Web sites, analogous to revisiting content within a Web site, leads to skill based habits that provide an exploratory mechanism, which in turn leads to consumer preference (Murray and Häubl, 2007).

One of the oldest notions in memory research is that repeated exposure to a stimulus improves future recognition or recall of that stimulus; even repetition without elaborate processing can improve recognition or recall (Krugman, 1972). Likewise, it is known that in online environments, repeat use of an activity makes consumers acquire increased knowledge about it (Alba and Hutchinson, 1987; Ruiz and Sanz, 2009). Recall performance is better when a number of repetitions is spaced in time rather than massed (Bettman et al., 1979; Postman, 1975). Similarly, Zielkshe (1959) affirmed that distributed presentation was better for a final level of recall, however, for a maximum temporary response, massed presentation is more effective.

Krugman (1972) also affirmed that consumers' interest or involvement has an effect on learning. He claimed that 3 repetitions are sufficient to learn about the contents of an advertisement: the first exposure determines a preliminary decision regarding whether an advertisement is perceived of interest to a consumer; a second exposure that generates more detailed evaluative responses and planning for subsequent actions; a third exposure serves as a reminder to execute any plan formed by the second exposure. Building on Krugman's research, Goldberg and Gorn (1974) explained how exposure to just one toy commercial affected children's' attitude and persistence to want to obtain it. In contrast, further increases of more than three exposures did not modify their attitude. Krugman (1972) also noted that in low involvement conditions, repetition had greater influence on children's' attitude, and this influence was greater when recognising a toy instead of recalling it. When involvement was high, children demonstrated greater elaborate and focused processing. Also Pieters, Rosbergen and Wedel (1999) studied the visual attention of consumers

during repeated exposures to print advertisements utilising eye tracking technology. Their findings revealed that attention durations decreases significantly across advertising repetitions and also that attentional scanpaths, which were measured with eye saccades, remain constant across advertising repetitions and also across natural conditions and experimentally induced conditions.

Research has also considered the relevancy of cognitive effort during consumer comparative behaviour and choice, as will be described in the following final section.

3.6.20. The role of cognitive effort in consumer comparative behaviour and choice

By large, comparative behaviour in choice decision making has been studied based on the effort consumers make when elaborating on a task, such as evaluating a product or an issue (Hong et al., 2005; Li et al., 2006; Lohse and Johnson, 1996; Murray and Häubl, 2007; Payne et al., 1990; Petty and Cacioppo 1980; Speier, 2006; Tversky, 1969). Cognitive effort refers to the psychological costs of performing the tasks of obtaining and processing relevant information in order to arrive at one's decision (Hong et al., 2005). Effort can be used to assess choice strategies within a specific task environment (Payne et al., 1990).

One of the most accepted studies based on the effort undertaken by consumers, is the *elaboration likelihood model* (ELM) (Petty and Cacioppo 1980). This theory explains the likelihood that people have to exert a cognitive effort, in other words *to think*, when evaluating the characteristics of a product or issue. These researchers conjectured that personal relevance increased a person's motivation for engaging in a diligent consideration of an issue or product-relevant information. When the personal relevance or consequence of a product or issue increases, it becomes more important for the person to forming a reasoned opinion, and in consequence, to devote an effort.

A diligent consideration of an issue or product-relevant information not requires the motivation to think, but also the ability to process information (Petty et al., 1983). The ELM considers two distinct routes to exerting an effort: a central route and a peripheral route. The central route views attitude change as resulting from a person's diligent consideration of information that he feels is central to the true merits of a particular attitudinal position. Attitude changes induced via the central route are postulated to be relatively enduring and predictive of behaviour (Cialdini et al., 1981; Petty and Cacioppo 1980). In the peripheral route, attitude changes do not occur because an individual has personally considered the advantage or disadvantages of an issue or product, but because the attitude issue or object is associated with positive or negative cues, or because a person makes a simple inference about the merits of an advocated position based on various simple cues in the persuasion context.

Users can also exert significant cognitive effort when navigating on a Web site, including searching, sorting and filtering information, and adapting to Web site interfaces (Li et al., 2006). Likewise in a mouselab setting, users make effort when operating the computer or whilst making eye fixations (Lohse and Johnson, 1996). Effort made in online settings can lead to learning and to a strong lock-in effect (Zauberman, 2003), to retention (Li et al., 2006), and to a lower tendency to switch to alternative Web sites (Ye et al., 2006), as the exerted effort increases the cost gap between the current Web site and other alternative sites (Murray and Häubl, 2007),

Invested size of time is also used to measure for cognitive effort (Hong et al., 2005). Time may act as a psychological inducement to maintain a relation and stick to a Web site as a consumer that terminates use with a Web site would need to search for alternative and to learn how to use a new one (Li et al., 2006). Johnson et al. (2003) found that when examining Web sites, cognitive costs decreased along time and individuals gained experience. Bucklin and Sismeiro (2003) computed time durations as the difference in seconds between time stamp events that display or conclude the display of an event. For instance, page-view

durations were computed as the time difference between when a product was displayed on the screen and the request to exit that product screen.

Hong et al. (2005) utilised effort to measure consumers' online shopping behaviour when presented with two different information formats, revealing that cognitive efforts were lower when the information format presented matched the shopping task. In their research they utilised two variables from scanpath theory: 1. *shopping experience*, which refers to consumers' perceptions of cognitive effort when completing a shopping task and their attitude towards using the Web site; 2. a *performance measure*, comprised by both shopping efficiency and communicated effectiveness, that is, the reflected product information that can consumers could recall from the Web site. Their results suggested that cognitive effort would be lower when the information format of Web sites matched the consumer shopping task.

3.7. CONCLUSION OF THIS CHAPTER

In this chapter we have undertaken a theoretical revision that will consequently allow us to answer to the research questions and issues of this thesis which is focused on proposing a Web site construct and understanding its antecedents and consequences. Accordingly, we concentrated on: 1. the implications of Web design and information structures of online consumer behaviour, the implications of interactivity, usability and fit theories on online consumer behaviour; 2. the capability of the Internet for providing information to consumers and to companies and the capability of the web as a measurable medium; 3. a theoretical framework of Web site engagement, dimensions, antecedents and consequences; 4. a review of potential consequences of Web site engagement with relevant managerial interest; 5. a literature review on online consumer choice behaviour. Whilst each section already contained its own conclusion, we shall present a summary of the most relevant aspects.

With regards to how computer interface design and Web design influence online consumer behaviour. Web design and information structures can impact the effectiveness of online consumer behaviour, can influence decision making, and can contribute to competitive advantage, improved relationships with clients and future return intention. Despite the heterogeneity of Web designs there are still no general guidelines which can be followed in order to adequately design Web sites. Research is fragmented does not address the process by which an entire Web site is developed. We described two fit theories regarding how users' performance can be improved when there is an appropriate fit between humans and computers.

In relation to the role of interactivity on online consumer behaviour, whilst it is accepted that it is a central driver of online consumer behaviour, interactivity is still an under-researched area and it is yet not clear where it actually takes place. Researchers have suggested that interactivity, as a Web design feature, improves usability which serves to assess how easy a Web site interface is easy to use.

Regarding how consumers obtain information from the Internet, we focused on research of online searching and browsing of information as there is growing interest in understanding how consumers utilise search engines for obtaining information from Web sites and it is habitual that browsing will also be involved at certain stage. Computers can also acquire information regarding the online behaviour of consumers. This information can serve to better understand their behaviour and in consequence segment and personalise content on Web sites for their specific needs of different consumer profiles. Online consumer behaviour data can then be analysed with the appropriate tools. With clickstreams it is possible to measure consumers' navigation within a Web site and with EIPs it possible to measure behaviour within a Web page and understand how consumers make choices and decisions.

In relation to the concept of engagement, there is a recent trend of undertaking investigations within this new field of Internet-related research. However there

is still a lack of a Web site engagement construct. Industry is also making reference to this term. Engagement has been studied within contexts such as advertising engagement and online engagement. Just recently a conceptual framework for the study of online engagement has been suggested although its dimensions have not been identified. The only research found to clarify the dimensions of engagement as applicable to technology in general, has been undertaken by O'Brien (2008) who undertook three stages of research in order to propose potential dimensions. Her ongoing research could serve as evidence of the newness of engagement as applicable to any kind of consumer technology device, however researchers have argued that Web sites on their own are a particular type of technology which differs to other online applications, and therefore a specific Web site engagement scale is necessary. Based on the research of O'Brien (2008) we have described ten concepts that could form the Web site engagement construct, in particular, aesthetics, affect, focused attention, challenge, control, curiosity, feedback, involvement, transformation of time and up-to-dateness of information.

We then described bodies of research regarding how behavioural intentions and attitudes can be utilised in online consumer behavioural research and how they have a direct relationship with behaviour. This was followed by aspects highly relevant in online businesses: purchase intention, Web perceived value, switching behaviour, return intention and virtual branding potential. We also reviewed bodies of research regarding recall, focusing on the recall of online brands and Internet URL addresses of Web sites.

Finally, in relation to how consumers make comparisons and choices in online environments, online product assortments provide consumers with a visual tool which allows them to make evaluations and comparisons of product and service information offered on a Web site, and allow for more informed shopping than in offline environments. Whilst online researchers have argued that specific research should be developed for the context of Web sites, there is lack of understanding of how consumers evaluate and make choices within interactive

environments. It is known than choice behaviour is context-dependent, and researchers have recently argued that further research is needed in order to better understand the influence of online interfaces on online consumer evaluations.

The theoretical revision undertaken in these five sections will be utilised to be able to answer the research questions and issues of this thesis described in section 4.2.

CHAPTER 4
PROPOSAL OF A WEB SITE ENGAGEMENT
SCALE AND MODEL

4.1. INTRODUCTION

In chapters 2 and 3 we outlined the conceptual framework of this research, through a multidisciplinary literature review of previous consumer-technology research focusing on online consumer behaviour, Web sites, engagement and consumer choice behaviour.

The objective of this chapter is to propose a Web site engagement construct and to develop a model of relationships based on this construct. For its development we will elaborate upon a previous scale of engagement with technology (O'Brien, 2008) and on flow research (Csikszentmihalyi, 1975). Flow is considered as an area of great relevancy for research on online consumer behaviour (Schibrowsky et al., 2007). Our model of relationships will consider potential antecedents and consequences of Web site engagement. Specifically within the antecedents, we will pay special attention to the influence of consumer comparative behaviour on Web site engagement, and within the consequences, we shall focus on constructs with relevant managerial interest.

This chapter begins with a description of the research objectives and research issues. (section 4.2). We shall then justify the paradigm and method utilised (section 4.3). This will enable us to describe our proposed scale of Web site engagement (section 4.4.) and twenty research hypotheses based upon construct (section 4.5) which will allow us to propose a model of relationships (section 4.5.6).

In the next section we shall focus on the research objectives of this thesis. Accordingly, we shall formulate the main research question and four research issues which shall allow us to answer this question.

4.2. RESEARCH OBJECTIVES

The objective of this thesis, as mentioned in the introduction, is to propose a Web site engagement scale and to study the influence of potential antecedents and consequences of this construct. The engagement construct we will propose will be developed for an online context, specifically for a Web site context, therefore we shall take into account variables that pertain to these. Once we have proposed a Web

site engagement construct, its potential antecedents and potential consequences, we shall seek an answer to the research question of this thesis:

When a consumer is searching for information on an e-commerce Web site, where he can make comparisons of products or services organised within an information structure, does this comparative behaviour influence his engagement with that Web site, and does Web site engagement have an influence on consequences with relevant managerial interest?

This generic objective will be divided into four specific research issues which will then be converted into research hypotheses. Specifically this thesis will address the following four research issues:

1. Which are the dimensions of Web site engagement?
2. Which are the antecedents of Web site engagement in an online shopping context?
3. Does online comparative choice behaviour influence Web site engagement?
4. Does Web site engagement lead to consequences highly relevant for online business managers?

In the following sections we shall discuss the most suitable paradigm for this research and then will then anticipate the justification of the method utilised which shall be described in section 4.7 dedicated to the methodological process. We will then propose a Web site engagement scale which will allow us to reply to the first research issue. This will be followed by the formulation of the research hypotheses which will allow us to answer research issues 2, 3 and 4. The hypotheses have been organised in two groups. The first group corresponds to the description of potential antecedents of Web site engagement and the second group corresponds to the description of potential consequences of this construct.

In the next section we will justify the most suitable paradigm used and the research method for this thesis.

4.3. JUSTIFICATION OF PARADIGM AND METHOD

The selection of the most suitable research paradigm is the most important initial step of the research design. In this section we shall review and describe different paradigms in order to assess which one is more suitable for this research.

For Kuhn (1971) a paradigm is all research based on previous science that a community temporarily accepts as a foundation for subsequent research. Also Deshpande (1983) considers a paradigm as a set of linked assumptions about the world which is shared by a community of scientists investigating that world.

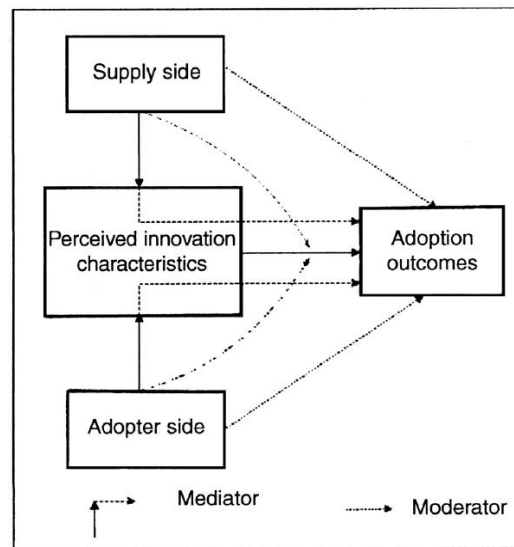
Exchange has traditionally been accepted as the core concept of Marketing (e.g. Bagozzi, 1975, Hunt, 1976). However, since the emergence of the Internet as a medium where exchange can take place between different actors, literature still does not clarify which is the most suitable for Internet marketing research. Imber and Betsy-Ann (2000) defined Internet Marketing as the process of building and maintaining customer relationships through online activities to facilitate the exchange of ideas, products, and services that satisfy the goals of both buyers and sellers. Ngai (2003) affirmed that 'Internet marketing is considered as a paradigm in the literature' however there is still absence of research built upon this affirmation.

In technology-related literature, as is the case of Internet marketing research, references are made to service-related paradigms. Vargo and Lusch (2004) acknowledge a paradigm shift from a 'goods-dominant-logic' to a 'service-dominant-logic' of marketing, affirming:

'...times have changed. The focus is shifting from tangibles and toward intangibles, such as skills, information, and knowledge, and toward interactivity and connectivity and ongoing relationships. The orientation has shifted from the producer to the consumer. The academic focus is shifting from the thing exchanged to one on the process of exchange. Science has moved from a focus on mechanics to one on dynamics, evolutionary development, and the emergence of complex adaptive systems. The appropriate unit of exchange is no longer the static and discrete tangible good'.

Within the context of online shopping, Pechtl (2003) refined the adoption paradigm developed by De Brentani (1995). The adoption paradigm consists of four components, which are illustrated in figure 40. This paradigm describes how *adoption outcomes* depend on the adopter, supplier and perceived characteristics of an innovative product.

Figure 40: The adoption paradigm



Source: Pechtl (2003)

In this direction, Uncles (2008) discussed the impact of technology on the consumer who is becoming more empowered. This is creating a ‘fragile, fractured and fragmented landscape, where it is increasingly difficult for brands to be neatly aligned with well-defined, identifiable and stable groups of consumers’, giving greater sense to what is described as a new economic order of consumer-centric commerce.

Also Ghandour et al. (2008), based on the paradigm of DeLone and McLean (2003) which takes into account three aspects of information Systems performance, *technical*, *semantic* and *effectiveness*, developed a research model incorporating dimensions of success of e-commerce Web sites. Likewise Hausman and Siekpe (2009) affirmed that in an online context, atmospherics are subsumed in the computer interface, yet little is currently known about how this interface affects consumers' purchase intentions as this may be because website design issues have

traditionally been evaluated within an information technology paradigm. Also Nahl and Bilal (2007) refer to the emergent *affective paradigm* from information behaviour research which considers two perspectives, information and emotion.

E-commerce Web sites permit undertaking decision making. Accordingly, Riesen et al. (2008) discussed two major paradigms used in decision making: one is structural modeling and the other one is process tracing. Whilst structural modeling aims to uncover psychological processes by relating provided information to decisions or judgments, typically via multiple linear regression analysis, the aim of process tracing is to directly describe the processes taking place during the pre-decisional phase. Participants' information search and integration is closely observed while they work on a decision task.

The overall objective of this research is to reveal the dimensions of a Web site engagement construct its antecedents and consequences. Paradigm *positivism* assumes that 'science quantitatively measures independent facts about a single apprehensible reality' (Healy and Perry, 2000). The main data collection techniques in positivism include sample surveys and experiments that are outcome-oriented (Christie et al., 2000). In this research we wish to understand what respondents feel when engaged with a Web site and study their comparative behaviour whilst navigating on a Web site. It will therefore be a requirement to study their behaviour within the context of a Web site which shall be made available on an online context. Accordingly, positivism seems to be the most suitable paradigm for this thesis.

However, we argue that it is not yet clear which would be the most suitable paradigm for research conducted within the domains of Internet marketing, as there is still controversy within Internet marketing literature and there is yet no Internet marketing paradigm. Based on the discussion previously made, we make one step forward and acknowledge this gap within research.

Having justified a suitable paradigm for our research we shall now justify the research method. The four research issues identified in section 4.2. lead to the utilisation of two different methods which shall be described in section 4.7.

dedicated to the research methodology. Whilst each research issue will be dealt with a different method, in what follows we shall provide an overview of the two methods utilised.

In order to reply to research issues 1, 2 and 4, regarding the dimensions, antecedents and consequences of Web site engagement we shall evaluate if online surveys are the most suitable method. Engagement has been considered as a mental state (Mollen and Wilson, 2010) and a subset of flow (Webster and Ahuja, 2004). Accordingly, O'Brien (2008) utilised surveys to assess people's perception of being engaged with a technology. In order to reply to research issue 3, concerning the online comparative of consumers on Web sites, Johnson et al. (2008) affirmed that process modelling deserve the utilisation of process data. Accordingly, in section 4.7.2.2., we shall assess if a process tracing method is suitable for our objectives. This will ultimately lead to the development of a *data acquisition Web site* in order to capture online consumer comparative processes. Table 25 anticipates an overview of the four research issues, the method we will propose for each issue, and the process through which the data will be collected. As discussed at the beginning of this section, these methods will be justified and described in detail in section 4.7.

Table 25. Method and data collection process for each research issue

RESEARCH ISSUE	METHOD	DATA COLLECTION PROCESS
1. Proposal of a Web site engagement scale	Proposal of a new construct based on a previous scale	Online survey after navigating on a data acquisition Web site
2. Antecedents of Web site engagement: flow-related antecedents and purchase involvement	We propose antecedents based on flow and purchase decision research and test the relationship with Web site engagement	Online survey before and after navigating on a data acquisition Web site
3. Consequences of Web site engagement	We propose consequences based on managerially relevant research and test the relationship with Web site engagement	Online survey after navigating on a data acquisition Web site
4. Relationship between comparison and Web site engagement	We propose Web site navigation variables as antecedents of Web site engagement and test their relationship	Online comparative behaviour will be traced whilst respondents navigate on a data acquisition Web site and will be contrasted with the dimension of engagement obtained with an online survey

Source: Developed for this research

The following section is dedicated to one of the most aspects of this thesis: the proposal of a Web site engagement scale.

4.4. PROPOSAL OF A WEB SITE ENGAGEMENT SCALE

In section 3.5. we undertook a thorough theoretical review on engagement research with the intention of gathering all existing literature regarding the utilisation of this concept within Internet and online environments.

Despite there are growing bodies of research related to online retention constructs (Agarwal and Karahanna, 2000; Huang 2006; Li et al., 2006; Li et al., 2007; Tarafdar and Zhang, 2008; Zauberaman, 2003), the literature on online engagement is very scarce and there is absence of specific research on Web site engagement. A Web site engagement construct would be highly valuable as commitment in online environments is not as strong as in other contexts. Industry has confirmed an interest in understanding what Web site engagement is and how it should be measured (McKinsey, 2008; Nielsen, 2005; TV week, 2008).

Academically, engagement has been researched in offline contexts including employee engagement with organisations (Corace, 2007; Seijts and Crim, 2006), engagement with the environment (Leshed et al., 2008), learning engagement (Gupta and Bostrom, 2006; Webster and Ho, 1997), engagement through narration (McLellan, 1993), with children's computer stories (Calvert et al., 2005), with wine (Knight and Pitt, 2001) and brand engagement (Buckingham, 2008).

Online and technology-related engagement has also been considered by some researchers as is the case of civic engagement through technology (Daily and Brennan, 2008), e-learning engagement (McGinnis et al., 2008), and physical activity Web sites (Leslie, et al., 2005). These researchers have focused on the concept of engagement as social engagement that occurs with a community of people. Prior research on technology-related engagement has been was undertaken in other areas such as advertising (Calder and Malthouse, 2008), with multimedia presentations (Webster and Ho, 1997), online engagement (Mollen and Wilson,

2010) and engagement with technology (O'Brien, 2008). Specifically, within the context of Web site related literature, except for a recent contribution of Mollen and Wilson (2010) on online engagement there is an absence of research. However in their research article a Web site engagement construct was not suggested either.

4.4.1. Conceptualisation of Web site engagement

In plain English language, to *engage* is to '*involve (a person or his or her attention) intensely*' (Collins Essential English Dictionary, 2006). In academic research something that 'engages' is something that draws us in, that attracts and holds our attention' (Chapman et al., 1997). Within the context of multimedia research, Jacques (1995) suggested that an engaging experience is an active process, in which a system 'catches', 'captivates', 'holds' and 'retains' the 'interest' and 'attention' of the user. For Brandtzaeg et al. (2003) engagement makes users feel 'in control during an interaction'.

Researcher Marci (2006) defined engagement as 'the combination of audience synchrony plus intensity', where synchrony is 'the degree to which an audience's physiological state uniformly changes when exposed to a media stimulus' and intensity is 'the cumulative strength of physiological response to a media stimulus'. For researchers Mollen and Wilson (2010) 'online engagement is a cognitive and affective commitment to an active relationship with a brand as personified by the Web site or other computer-mediated entities designed to communicate brand value'. According to these researchers, online engagement is characterised by dimensions of dynamic and sustained cognitive processing and the satisfying of instrumental value (utility and relevance) and experiential value (emotional congruence with the narrative schema encountered in computer-mediated entities). Lin et al. (2008) considered that engagement occurs when a person's attention is focused on an activity. Likewise, Garris et al. (2002) used the term *motivation* to describe to an individual's choice to engage in an activity, and the intensity of effort or persistence in that activity.

For O'Brien (2008), *engagement with technology* is 'a holistic construct that encapsulates user's perspectives of the human-computer interaction, as well as its

system and user constituents'. Being engaged could also be considered as being 'biologically connected', as Nahl and Bilal (2007) considered being engaged as 'the opposite of being disconnected'.

With the context of advertising, Heath (2007) viewed engagement as a 'subconscious emotional construct' expressed as 'the amount of feeling going on when an advertisement is processed'. Industry magazine TV Week (2008) affirmed that engagement is a measure of how much attention advertising gets. Calder and Malthouse (2008) considered engagement as the collective experiences that a reader has with the editorial content of a magazine. Their research addressed the question of whether the overall average level of engagement with a magazine affects the reaction to the advertisements contained within it. In a second research undertaken within the context of advertising Web sites, Calder and Malthouse (2008) described 'engagement as a sense of involvement, being connected with something', affirming that 'consumer engagement with a Web site is a collection of experiences with the site.' They differentiated between personal engagement and interactive engagement that were measured with dimensions: community, talking/sharing, temporal, participation and socialising, self-esteem and civic mindness, stimulation and inspiration, time out and utilitarian. In a third research, Calder and Malthouse (2009) extended their research differentiating between personal engagement and social-interactive engagement. They affirmed that personal engagement could be measured with dimensions: community, intrinsic enjoyment, self-esteem and civic mindness, social facilitation, stimulation and inspiration, temporal and utilitarian; and social-interactive engagement could be measured with community, intrinsic enjoyment, participating and socialising, and utilitarian.

There is recent human-technology research that refers to the term engagement whilst, except for the case of the engagement with technology scale of O'Brien (2008), no other researchers suggest how to measure this construct (e.g. Bardzell et al., 2008; Chanel et al., 2008; Ginnis et al., 2008; Leshed et al., 2008; Morrison et al., 2007; Scott, 2008; Seddon et al., 2008). Furthermore, none propose a Web site engagement scale.

Overall it seems that engagement been approached from two perspectives, the first being *personal engagement* (Bardzell et al., 2008; Brandtzaeg et al., 2003; Buckingham, 2008; Calder and Malthouse, 2008; 2009; Chanel et al., 2008; Chapman et al., 1997; Ginnis et al., 2008; Jacques, 1995; Knight and Pitt, 2001; Lin et al., 2008; Heath, 2007; McMillan and Hwang, 2002; Mollen and Wilson, 2010; Morrison et al., 2007; O'Brien, 2008; Scott, 2008; Seddon et al., 2008; Webster and Ho, 1997), and the second is *social engagement* that pertains to a group of people (Calder and Malthouse, 2009; Calvert et al., 2005; Corace, 2007; Leshed et al., 2008; Gupta and Bostrom, 2006; McLellan, 1993; Seijts and Crim, 2006). In this research we are interested in developing a personal Web site engagement scale seen from the perspective of how an individual engages with an e-commerce Web site considered as a representative of a business (Li et al., 2006).

Based on the definitions of Chapman et al. (1997), Jacques (1995) and Brandtzaeg et al. (2003) and due to the fact that our proposal of engagement will be specific for the context of e-commerce Web sites, for the purpose of this research, we accordingly suggest the following definition of Web site engagement:

'Web site engagement is a consumer experience that occurs when a user's attention is captivated and held by a Web site, and the user wants to remain interacting with the Web site in a concentrated fashion during a period of time'

We will base our proposal of a Web site scale based on the engagement with technology construct suggest by O'Brien (2008). This researcher suggested that engagement could be measured with twelve subscales grouped in six factors, which are: aesthetics, focused attention, endurability, involvement, novelty and perceived usability. Focusing on factor perceived usability, O'Brien (2008) suggested that challenge and control are subscales of this factor. *Challenge* is a construct that refers to how difficult is it to use a Web site relative to the skills of the user (Ghani, 1995) and therefore researchers have related this construct to the usability of a Web site (Huang, 2003; Guo and Poole, 2008). In flow theory challenge has been considered as a dimension of flow by some researchers (e.g. Csikszentmihalyi, 1996; Hoffman

and Novak, 2000) and excluded by others (Chen, 2006; Lu et al., 2009). Furthermore, Guo and Poole (2008) specifically highlighted that it is difficult to assess how challenging a Web site can be during its design due to the different levels of skills of its different users. This implies that it is not clear whether challenge is construct that should be assessed from the point of view of consumers or from a combined consumer-technology viewpoint. Should challenge be a dimension of Web site engagement, this would mean that it is a variable that depends on the levels of skill held by a Web site user combined with the level of usability of a Web site. Should it not result to be a dimension of Web site engagement, it would mean that engaging experiences only occur within the eyes of consumers and is subject to the architecture of a Web site.

With regards to *control*, this construct is closely related to interaction, as within the context of Web site-related research, control refers to the individual's perception that he exercises control of the interaction with a Web site (Guo and Poole, 2008; Huang, 2003) or with technology in general (Ghani and Deshpande, 1994; O'Brien, 2008). Teo (2003) operationalised a seven-level scale of control, based on the level of control that consumers had over different levels of interactivity. In this scale different levels of control are required for different levels of interactivity. Likewise, in flow research control has been recognised as one of the six dimensions of flow (Csikszentmihalyi, 1988) and has also been considered as a dimension of this construct in online-related research (e.g. Ghani et al., 1991; Hoffman and Novak, 1996; Hausman and Siekpe, 2009). Also Brandtzaeg et al., (2003) affirmed that engagement makes users feel in control during an interaction. Accordingly, due to the interaction that can take place between a Web site and a user, and due to the close relationship between control and interactivity, it is not clear if control over interaction should be a dimension of Web site engagement.

As overall conclusion of this discussion is that it is not clear whether control and challenge are dimensions of Web site engagement. If they are then Web site engagement it could be argued that it is a state that takes place between a system and a consumer. If they are not, it could be concluded that Web site engagement is a psychological state that takes place in the minds of consumers.

In the following eight sections we will describe the eight dimensions that we suggest will compose a Web site engagement scale, in particular *positive affect, focused attention, challenge, control, curiosity, involvement, transformation of time* and *up-to-dateness of information*.

4.4.2. Positive affect

The construct of affect is relatively new to the field of marketing and there is still a lack of agreement on its definition (Krohn, 2008). Some researchers have used the term affect to equally refer to what psychology research calls *feelings* or *emotions* (Feldman-Barrett and Russell, 1999; Peterson, Hoyer and Wilson, 1986; Russell and Feldman-Barrett, 1999). In contrast Fredrickson (2001) rooted the meaning of affect on the assessment of personal meaning and described it as a broader term that also includes *moods* and *feelings* (Aaker and Myers, 1987; Batra and Ray, 1986; Holbrook and Batra, 1987). Jennings defined affect as 'the emotional investment users make in order to be immersed in an environment, and sustain their involvement in the environment' (Jennings, 2000). In a computer environment, Stone et al. (2005) considered affect as 'a user's emotional response to an information system'. Bloch et al. (1986) related pleasure and recreation to experiencing positive affect and having fun. They affirmed that these hedonic aspects could be sufficient motive for consumers to continuously search for information, without necessarily having any specific purchase need or decision to make. Accordingly, consumers may enjoy browsing to obtain information as end in itself and ongoing search represents a leisure pursuit as an end goal (Arnold and Reynolds, 2003). Affect has an influence on users' current and future use of information systems (Rozell and Gardner, 2000). Affective cues can be incorporated into interface designs through the use of intrigue (Jennings, 2000). Webster and Ho (1997) also revealed a relationship between positive affect and interest, when studied how audiences engage in multimedia presentations. When studying the role of affect in human computer interaction, Hudlicka (2003) affirmed that an 'affective HCI' is an 'effective HCI'. Webster and Ahuja (2004) suggested that engagement in the context of online shopping could be not only purposeful but pleasurable, and that affect could make people return to a specific product or company Web site.

McCarthy and Wright (2004) affirmed that affect could be categorised as positive affect and negative affect. Positive affect is related to hedonic qualities such as enjoyment, fun, feelings of success, accomplishment, and physiological arousal, and negative affect is related to boredom, guilt, information overload, uncertainty and frustration with technology. Similarly, Nahl and Bilal (2007) considered that an ‘affective state’ could include bipolar reactions such as like and dislike, bored and excited, approach and avoid, emotions such as joy, sadness, frustration, and fear complex emotions such as shame, guilt and jealousy. According to Krohn (2008) it could be possible to view affect as the net state of positive affect, negative affect or a combination of both.

O’Brien (2008) considered positive affect as a component of engagement with technology, forming part of two of the six factors that she utilised to measure this construct, in particular, involvement and durability. Likewise she considered negative affect to be a subscale of perceived usability. Whilst positive affect relates to feelings of success and accomplishment, negative affect is related to uncertainty, or to experiencing physiological arousal information overload, frustration with technology, boredom and guilt, and could be a reason to disengage.

As one of the objectives of this research is to suggest a new measure of Web engagement, we propose that positive affect is a component of Web site engagement. Likewise, we shall not consider negative affect as a dimension of this construct as it can be considered as a factor that leads to terminating engagement.

4.4.3. Focused attention

In online consumer research, focused attention has been defined as ‘the degree to which a user’s attention is focused on Web site interaction’ (Huang, 2003). Focused attention differs to *attention*, which was defined by Kahneman (1973) as ‘a series of activities in which users selectively allocate cognitive resources’ and by (MacInnis and Jaworski, 1989) as ‘the allotment of an individual’s mental activity to the task of concern’. Attention has also been defined by Matlin (1994) as ‘the concentration of mental activity’ It is influenced by users’ cognitive judgements of the relevance of stimuli to a person’s task, needs, and affective state (Wells and Matthews, 1994).

In Web site research literature, focused attention has been defined as ‘the degree to which the user’s attention is focused on the interaction’ (Huang, 2003) and is equally called *concentration* by other researchers (Guo and Poole, 2008; Lu et al., 2009; Jiang and Benbasat, 2004). Focused attention has been widely researched in flow related literature (Csikszentmihalyi, 1990; Ghani et al., 1991; Jacques et al., 1995; Jennings, 2000; Koufaris, 2002; Huang, 2003; Lu et al., 2009; Matlin, 1994; Novak et al., 2000; Trevino and Webster, 1992; Webster and Ho, 1997; Wells and Matthews, 1994) and has been considered as a component of flow within Web sites (Hausman and Siekpe, 2009; Hoffman and Novak, 1996; Li and Browne, 2004, 2006; Nel et al., 1999). Likewise, focused attention has also been researched within engagement related literature (Chapman, 1997; Chapman et al., 1999; O’Brien, 2008). In online environments such as the Web, multiple objects on the screen will constantly compete for limited attention of humans (Hong et al., 2005). For Web sites users to be in ‘flow state’ they must first concentrate on their activities. If they perform many tasks simultaneously and cannot focus on a limited field, they will not be able to reach flow state (Koufaris, 2002; Novak et al., 2000). Concentration was also considered by Lu et al. (2009) when developing a model regarding how users focus their attention when chatting or playing games when using Internet messaging (IM).

O’Brien (2008) considered attention as a subscale component of engagement with technology included within a factor called focused attention. She referred to focused attention as the ‘degree of awareness about what was taking place outside of user interaction, concentration and perception of time’ measured with items that pertained to being absorbed and losing track of the external surroundings, in line with being concentrated on a task. Grounded on the fact that focused attention is also considered equal to concentration (e.g. Guo and Poole, 2008) and also that numerous researchers consider focused attention a dimension of flow applicable to online environments, we postulate that this construct will be a component of Web site engagement, and not *attention* which refers to the allocation of cognitive resources.

4.4.4. Challenge

The challenge of an activity is to apply one's knowledge of the functional capabilities of a tool such as a Web site, thus the challenge derives from the difficulty of the task relative to one's skill (Ghani, 1995). In the study of flow theory, challenge has been considered a component of flow by some authors (Csikszentmihalyi 1996, Ghani et al., 1991; Trevino and Webster 1992; Pace, 2004; Hoffman and Novak 1996; Novak et al., 2000; Webster and Ho, 1997) and has been excluded by others (Chen, 2006; Huang, 2003; Koufaris, 2003; Lu et al., 2009).

Csikszentmihalyi (1993) combined in one unique measure, challenge and skill, suggesting that the balance between these two factors were an antecedent to the state of flow. When the challenge experienced by a person exceeds his capabilities, he experiences worry and frustration; in contrast when his skill is greater than the challenge, he experiences boredom (Csikszentmihalyi, 1975). Pace (2004) suggested that the Web has the capability to provide immediate challenge to a user's level of skill, as Web users can rapidly adjust their mode of navigation to suit their level of ability. This research acknowledged that Web users have different levels of skill and also different interests, therefore in search and browsing activities, the level of challenge differs. When challenge matches skill, the experience has the potential to lead to flow. In order to reach flow state, users should perceive challenges to be higher than their skills, but not so high that they cannot undertake an online task. In this direction, Guo and Poole (2008) referred to the difficulty of integrating 'clear goals' and 'challenge' when designing a Web site.

Chen (2006) suggested that it was *positive* challenging experiences those that lead to flow, however he decided to exclude this dimension in his model due of the difficulty of conceptually measuring a Web users' perceived challenge. Hong et al. (2005) related challenge to effort, affirming that challenge represents a cognitive decision effort and should be therefore measured with the effort exerted by Web users. When measuring the perceptions of consumers during their shopping experiences, these researchers also related effort and Web site usability to cognitive effort and attitude towards a Web site. They stated that Web users would prefer to undertake a shopping task investing as little cognitive effort as possible, and

therefore included cognitive effort as an indicator of a user-friendly interface design. Also Huang (2003) related challenge to system variables, including complexity or information richness, interactivity and navigability and found that complex information can detract users from utilising Web sites, as an overload of information can interfere with users' concentration and navigability. Challenge has also been related to curiosity, as curiosity can initiate interactions (Skelly, 1994).

O'Brien (2008) considered challenge as a component of engagement with technology, and defined this construct as 'the cognitive and physical effort users perceive they are expending when interacting with technology'. Following O'Brien (2008) we propose challenge as a component of Web site engagement. This is further supported by the notion that the Web is able of provide immediate challenge to a user's level of skill and interest (Pace, 2004). Due to Web context where this research is undertaken, we shall specifically consider challenge from two viewpoints: the effort exerted by users when navigating on a Web site, and the usability of the site. This will be taken into account when selecting the scale that best measures this variable.

4.4.5. Control

In flow theory, Csikszentmihalyi (1988, 1990) referred to control as 'the sense of exercising control in difficulty situations'. Also Siekpe (2005) used this dimension in order to capture a user's individual's perception that he exercises control over the interaction with technology. Likewise, when proposing a measurement of engagement with technology, O'Brien (2008) defined control as 'how in charge' users feel over their experience with a technology.

Within online consumer behaviour research based on flow theory, this construct refers to 'the control a user exercises over interaction with a Web site' (Huang, 2003). This author went one step further and suggested that 'control is a facilitator of Web performance'. Such statement suggests a possible relationship between control and interactivity, and also between control and usability. In this direction, in research by Schneiderman and Plaisant (2005), participants expressed their desire to perceive they were in control of the interaction. Also Net et al. (1999) affirmed that the

placement and structure of options within a Web site can be done in order to make users feel more in control. This also suggests a relationship between control and Web design, including the information structure and the content within the site. In this direction, Venkatesh (2000) and Huang (2006) suggested that control is related to an individual's perception of the availability of the knowledge, resources, and opportunities that are required to perform a specific behaviour. Furthermore, the outcomes of an activity on a Web site are also related to control, as suggested by Guo and Poole (2008) in their research grounded on flow theory and applied to Web sites, where they stated 'there is a sense that the outcomes of the activity are, in principle, under the person's own control'.

O'Brien (2008) considered control as a component of engagement with technology, referring to control as the 'users' sense of control' over their interaction with the technology. Following research based on flow theory, and as mentioned previously, research seems to suggest that it is not interactivity what is important to a Web user, but the control the user exercises over interactivity (Teo et al., 2003). As a result of this deliberation, in this research we shall and propose that control is a dimension of Web site engagement and will consider it as a 'user's perception that he exercises control over the interaction with a Web site (Ghani and Deshpande, 1994; Huang, 2003; Siekpe, 2005).

4.4.6. Curiosity

Curiosity means tapping into the extent an experience arouses an individual's sensory and cognitive curiosity (Agarwal and Karahanna, 2000; Malone, 1981). Curiosity is one of the components of flow utilised in online consumer behaviour research (Agarwal and Karahanna, 2000; Huang, 2003, Nel et al., 1999). Webster et al. (1993) suggested that heightened curiosity excites users regarding the available possibilities when using a Web site. Excitement, in turn, serves to reduce perceived cognitive burden that occurs during interaction (Agarwal and Karahanna, 2000).

Instead of curiosity, O'Brien (2008) considered novelty as a component of engagement with technology, referring to the extent a technology was perceived as novel. However, the Internet has surpassed the early adopter stage (Hoffman et al.,

2004) and is utilised by users of every age group, socioeconomic class and level of technical experience (Taylor and Strutton, 2009), therefore Web sites from a technological point of view are not a novelty anymore.

However, one of the advantages of interactive media such as Web sites are their capability to present and up-to-date information (Chaffey et al., 2000) and content instantly (Sádaba, 2000), therefore it seems reasonable to suggest that it is the content of Web sites that incites curiosity instead of the novelty of using them. Literature does in fact consider curiosity and novelty similar constructs (Huang, 2003). We postulate that instead of novelty, it should be curiosity that will be a dimension of Web site engagement. Stell and Paden (1999) affirmed that novel stimuli arouse the curiosity of users. Also Huang (2003) suggested that novelty can act as a curiosity generating mechanism that arouses the imaginations of users and captures their interest towards new information, experiences or a combination of both, created by freshness of content.

We therefore propose that curiosity is a dimension of Web site engagement, following researchers such as Agarwal and Karahanna (2000), Huang (2003) and Nel et al. (1999) who considered curiosity as a component of flow as applied to the study of online consumer behaviour.

4.4.7. Involvement

Involvement is a needs-based cognitive state of psychological identification with an object or activity. It depends on the needs of the individual and his perception about the need-satisfying potential of the object or situation, and is sometimes considered phenomena synonymous to motivation (Kappelman, 1995). Involvement determines attitude, strength and the probability of consistent behaviour, and can influence both the direction and intensity of an individual's attention (Foxall and Bhate, 1993). As described in the previous chapter, involvement can be a process, a quality and a state (Sánchez and Bigné, 2001). Likewise there are different types of involvement, such as product involvement defined as the 'perceived relevance of a product class based on the consumer's inherent needs, interests and values' (Zaichkowsky, 1985) and purchase decision involvement, defined by Mittal (1989) as the 'extent of interest

that a customer rings to bear on a purchase decision task'. Zaichkowsky (1985) affirmed that the inherent involvement with an item creates differences in the amount of effort a consumer is willing to exert when purchasing a product. Clark and Belk (1978) revealed that involvement with purchase leads one to search for more information and spend increased time searching for the right selection.

Involvement can occur in different contexts. Whilst information contexts can influence the way information is processed (MacInnis and Jaworski, 1989), a consumer's level of involvement determines his motivation to process information. In a purchase setting purchase involvements are based on the information that consumers obtain online (Park and Lee, 2008). McMillan et al. (2003) suggested that Web sites have the capability to involve and engage customers and Web site marketers should adjust to this medium that is not bound by space or time. Likewise, Elliot and Speck (2005) suggested that online vendors should emphasise Web features that best suit the involvement and experience profile of the primary users of the Web site. Huizingh and Hoekstra (2003) found that involvement with the topic of a Web site influenced the use of a Web site. In this direction, Chen (2008) affirmed that online consumers highly involved with a product that are motivated and able to seek product information, become immersed in the activity of searching information, and can ultimately experience feelings for pleasure and escapism. Similarly, Balabanis and Reynolds (2001) revealed that increased time on a Web site is a manifestation of increased attention, which is an indication of increase motivation, this is, a higher level of involvement.

Involvement serves as the basis for the elaboration likelihood model of persuasion (Petty and Cacioppo, 1986) based on the fact that a consumer's processing of information differs by his level of involvement. Accordingly, literature generally distinguishes between high and low situations of involvement (Zaichkowsky, 1986) and self and intrinsic involvement (Daugherty et al., 2005). Likewise Huang (2003) differentiated between situational involvement which occurs when a consumer is intrinsically motivated and self-relevant, and situation involvement that occurs when he is extrinsically motivated (Houston and Rothschild, 1978; Laurent and Kapferer, 1985; Richins and Bloch, 1986).

O'Brien (2008) considered involvement as part of engagement with technology. She suggested an involvement factor that comprised 3 subscales: motivation, positive affect and also a subscale also called engagement. The involvement factor described users' feelings of being drawn in, interested and having fun. Likewise Mollen and Wilson (2010) affirmed that involvement was an important dimension of engagement. Elliot and Speck (2005) affirmed that online retailers should prioritise Web factors that best suit the involvement profile of their primary users. Even, Pine and Gilmore (1998) emphasised that the creation of involving online experiences may be competitive battlefield where online retailers should engage. Whilst O'Brien (2008) considered a factor comprised with three subscales, in this research we propose that involvement is one of the central dimensions of Web site engagement and will consider it as a subscale on its own. O'Brien included in the involvement factor a subscale termed *engagement* we consider that as this label coincides with the name of the construct we are trying to develop therefore it should be different. Analysing the indicators of the subscale proposed by O'Brien (2008), it seems that the subscale 'engagement' resembles the concept of involvement. Researchers Mollen and Wilson (2010) had affirmed that 'involvement is an important dimension of engagement'. Also Kappelman (1995) used the term involvement to refer to the psychological engagement of users with a process.

Accordingly, we shall propose that involvement is a core dimension of Web site engagement and will select the most suitable scale for its measurement.

4.4.8. Transformation of time

Transformation of time is a perception that time appears to pass very slowly or very rapidly compared to ordinary experience (Guo and Poole, 2008). Considered by Csikszentmihalyi (1998, 1990) as one of the original components of flow, this construct is equally referred to as *time distortion*, *time dissociation* (Guo and Poole, 2008) and *distorted sense of time* (Pace, 2004). Numerous researchers (e.g. Chen, 2006; Ghani and Deshpande, 1994; Guo and Poole, 2008; Novak et al., 2000) considered transformation of time as a dimension flow, whilst others did not (e.g. Koufaris, 2002; Lu et al., 2009; Senecal et al., 2009; Siekpe, 2005). This ongoing discrepancy was recently acknowledged by Hoffman and Novak (2009). McMillan

and Hwang (2002) had previously suggested that experiencing intense engagement on a Web site could in turn lead to spending increased time on it. However they did not describe how to measure Web site engagement. Novak et al. (2000) did consider time distortion as a component of flow and defined this concept as ‘the perception of time passing rapidly when engaged in an activity’. Likewise Sánchez-Franco (2006) included this construct as a dimension of flow when studying Web navigation, and so did Chen (2006) who considered it as a high-order construct alongside telepresence, concentration and loss of self-consciousness. In tourism research, Skadberg and Kimmel (2004) confirmed that transformation of time was a component of flow when measuring the levels of tourists flow experience. Similar results were confirmed by Filep (2008) who considered transformation of time when assessing the positive experiences enjoyed by tourists during visits.

O’Brien (2008) suggested ‘perceived time’ as a component of engagement with technology. Accordingly, we posit that it will also be a component of Web site engagement. In this research we shall refer to this construct as ‘transformation of time’ as utilised by Guo and Poole (2008).

4.4.9. Up-to-dateness of information

Up-to-dateness of information refers to the freshness of information presented on a Web site. Novelty can be created with the freshness of information contained within a Web site (Huang, 2003). According to Supphelen and Nysveen (2001), Web site revisits can be encouraged by changing information content frequently so that sites always have something new to offer. Chaffey et al. (2000) affirmed that frequent updating of content was a determinant of customers’ intentions to revisit Web sites. Klopping and McKinney (2004) utilised questions related to up-to-dateness of and usefulness of information when studying fit between a Web site and its visitors. In contrast, Öörni (2003) highlighted that obsolescence of information results problematic in Web sites shopping environments. Up-to-dateness of information could also have an impact on future online shopping intention. As Bigné et al. (2008) revealed that future shopping intentions were influenced by consumer dependency on online shopping information, as well as the innovativeness of the consumer, it seems to make sense that Web sites should offer their visitors up-to-date

information and not fall into out datedness. Up-to-dateness of information differs to usefulness of information, which is 'the degree to which a consumer believes that the use of a system will increase his or her job performance' (Davis et al., 1989).

Following O'Brien (2008) who considered novelty as a component of engagement with technology, whilst referring to the extent that a technology was perceived as novel, we suspect that up-to-dateness of information is a dimension of Web site engagement, our argument being that one of the reasons why users would engage with Web sites, could be because of the freshness of content (Huang, 2003) that might serve to attract and maintain the attention of users whilst keep them on the site, as they involve with the information for either hedonic or utilitarian purposes. We therefore suggest a new measure, *up-to-dateness of information*, and propose that it is a dimension of Web site engagement.

4.4.10. Dimensions excluded from the engagement with technology scale as potential formative dimensions of Web site engagement

There are five dimensions from the engagement with technology scale (O'Brien, 2008) that we shall not consider as formative dimensions of Web site engagement but rather antecedents, consequences or shall be excluded. These five dimensions are aesthetics, negative affect, feedback, motivation and intention to return.

Aesthetics are concerned with a Web site's visual appeal and relates to the use of visual aspects such as colours, fonts, graphics and images (Demangeot and Broderick, 2006). The reaction of consumers to the aesthetic aspects of Web sites is increasing gaining importance as a determinant of online consumer behaviour (Shun et al., 2008). Jennings had already affirmed that aesthetic experiences lead to creating engaging and immersive Web site environments, suggesting that an aesthetic environment will inherently engaging Web sites with potential customers. Similarly, Sevener (2003) affirmed that aesthetics produce a major effect on the first impression of a product. Also Filep (2008) suggested that an aesthetic experience leads to active discovery. Based on this research, we shall postulate that aesthetics is an antecedent to Web site engagement and not a dimension of the construct, as it the visual appeal of a Web site that could lead consumers to engaging with it.

Negative affect was considered by O'Brien (2008) as a subscale of perceived usability of a technological device. Negative affect is related to information overload, frustration with technology, boredom and guilt, and could be a reason to disengage from a technological device. We shall not consider negative affect as a dimension of Web site engagement construct as it can be considered as a factor that leads consumers to disengage from a Web site.

Feedback is the information communicated to others regarding actions that have occurred and results that have been achieved (O'Brien, 2008). Information systems that deliver effective feedback and match user's expectations help the users to accomplish their tasks, reduce their cognitive effort, and correspond to their actions and task visualisations (Te'eni et al., 2007). Csikszentmihalyi (1993, 1996) considered feedback as an antecedent to flow. Likewise, O'Brien (2008) measured

feedback with items that pertained to the organisation of information of Web sites including how coherent, confusing and easy it was for users to utilise technology. We postulate that it will be these qualities that could lead to engaging with a Web site and therefore feedback should be considered as an antecedent of Web site engagement.

With regards to motivation, the items which O'Brien (2008) utilised to measure this construct resemble the marketing concept of Web perceived value, as the four items used to measure this construct referred to the interest, worthiness, feeling of reward and success of undertaking a task. Accordingly, we shall consider this construct as a potential consequence of Web site engagement and re-label it to 'Web perceived value'.

With regards to intention to return, following Karson and Fischer (2005), Koufaris (2002) and Mu and Galleta (2007), such intention could only occur after having experienced engagement. O'Brien (2008) considered intention to return as subscale as part of a factor called durability the 'assessment of users' feelings of success with a task, and their willingness to use an interface in the future or recommend it to others'. Accordingly, intention to return should be a consequence of Web site engagement.

In summary, whilst O'Brien considered the five dimensions aesthetics, negative affect, feedback, motivation and intention to return as dimensions of engagement with technology, we shall therefore postulate that aesthetics and feedback are potential antecedents to Web site engagement, and intention to return is a consequence. Due to the marketing nature of this thesis, we shall re-label motivation to Web perceived value and consider it a consequence. Finally, negative affect shall be purposely excluded as this quality would lead to disengaging with a Web site and should therefore not be considered as a dimension of Web site engagement.

4.4.11. Summary of the proposed dimensions of a Web site engagement scale

Having described the eight dimensions that we propose form part of Web site engagement and that will enable us to reply to the first research issue, table 27 presents a summary of these factors along with a brief description of each dimension and the theoretical foundations that provide support to our proposal.

Table 27: Proposed dimensions of Web site engagement

DIMENSION	THEORETICAL FOUNDATION
1. Positive affect: the emotional investment a user makes in order to be immersed in an environment, and sustain involvement in the environment	Aaker and Myers (1987); Arnold and Reynolds (2003); Babin and Attaway (2000); Batra and Ray (1986); Bloch et al. (1986); Hudlicka (2003); Jennings (2000); McCarthy and Wright (2004); Nahl (2007); O'Brien (2008); Rozell and Gardner (2000); Stone et al. (2005); Webster and Ho (1997)
2. Focused attention: the degree to which the user's attention is focused on Web site interaction	Chapman (1997); Chapman et al. (1999); Csikszentmihalyi (1990); Ghani et al. (1991); Guo and Poole (2008); Jacques et al. (1995); Jennings (2000); Koufaris (2002); Matlin (1994); Novak et al. (2000); Novak and Hoffman (2000); O'Brien (2008); Trevino and Webster (1992), Webster and Ho (1997); Wells and Matthews (1994)
3. Challenge: the amount of effort users perceive they are expending	Chen (2006); Csikszentmihalyi (1990); Koufaris (2002); Hoffman and Novak (2000); Novak et al. (1998); O'Brien (2008); Pace (2004); Webster and Ahuja (2004)
4. Control: the user's perception that he exercises control over the interaction with the Web site	Csikszentmihalyi (1990); Ghani et al. (1991); Guo and Poole (2008); Hoffman and Novak (1996); Huang (2003); Koufaris (2002); Novak and Hoffman (1999); Novak et al. (2000); O'Brien (2008); Scheiderman and Plaisant (2005); Siekpe (2005); Trevino and Webster (1992); Venkatesh (2000); Webster et al. (1993); Webster and Ho (1997)
5. Curiosity: tapping into the extent an experience arouses an individual's sensory and cognitive curiosity	Abouafia and Bannon (2004); Agarwal and Karahanna (2000); Huang (2003); O'Brien (2008); Toms (2000)
6. Involvement: need-based cognitive state of psychological identification with an object or activity	Chapman (1997); Chen (2008); Laurel (1993); Jacques et al. (1995); Hull and Reid (2003); Kappelman (1995); Makkonen (1997); O'Brien (2008); Said (2004); Sánchez and Bigné (2001); Webster and Ahuja (2004); Webster and Ho (1997); Zaichkowsky (1985)
7. Transformation of time: perception that time appears to pass very slowly or very rapidly compared to ordinary experience	Agarwal and Karahanna (2000); Chan and Ahern (1999); Chan and Repman (1999); Chen and Nilan (1999); Chen (2006); Csikszentmihalyi (1988, 1990); Davis and Wiedenbeck (2001); Guo and Poole (2008); Li and Browne (2004); Moon and Kim (2001); O'Brien (2008); Shin (2006); Skadberg and Kimmel (2004)
8. Up-to-dateness of information: Extent to which a Web site contains information that is sufficiently up to date for the purposes of its users	Based on Chaffey et al. (2000); Klopping and McKinney (2004); Huang (2003); Supphelen and Nysveen (2001); O'Brien (2008)

Source: Developed for this research

4.5. FORMULATION OF RESEARCH HYPOTHESES

The previous section described the potential dimensions of a Web site engagement scale. In what follows we shall formulate twenty hypotheses that will be submitted to statistical tests in order to contrast the proposed relationships between potential antecedents and Web site engagement, and Web site engagement and potential consequences. The relationships which will lead to the proposal of a model based on Web site engagement. Likewise, the verification of the research hypotheses will serve as the vehicle to reply to research questions 2, 3 and 4 of this dissertation, as previously specified.

With the purpose of presenting these hypotheses with clarity, they have been organised following the order of the four research issues. The first objective of this research is to propose the dimensions of Web site engagement. Based on this construct, we shall formulate two groups of hypotheses that correspond to the proposed potential antecedents of Web site engagement, in accordance with research issues 2 and 3, and one group of hypotheses that corresponds to the relationship of Web site engagement with proposed potential consequences of Web site engagement, as addressed in research issue 4. The contrast of the total hypotheses will allow us to suggest a model where Web site engagement will be the core construct.

Accordingly, we shall first introduce a first group of three antecedents, that corresponds to research issue 2 that includes two flow-related antecedents which are *aesthetics* and *feedback*, and a further antecedent, *purchase involvement*. We shall then describe the proposed relationship between the second group of antecedents which pertain to the *online comparative choice behaviour of consumers*, in accordance with research issue 3. Finally, we shall address research issue 4, which refers to the relationship between Web site engagement and a group of seven proposed consequences of Web site engagement with high managerial relevancy: *Web perceived value*, *purchase intention*, *switching intention*, *return intention*, *virtual branding potential*, *unaided brand recall* and *unaided URL recall*. We shall also formulate six additional hypotheses concerning one further potential

consequence of aesthetics, one further potential consequence of up-to-dateness of information and four potential consequences of Web perceived value.

4.5.1. Hypotheses regarding the antecedents of Web site engagement

In what follows we shall formulate seven hypotheses. Two of these are concerned with the relationship between two antecedents utilised in flow theory, aesthetics and feedback, and Web site engagement. We shall then formulate a further hypothesis concerning the relationship between purchase involvement and Web site engagement. Finally, we shall formulate four hypotheses regarding the relation between the online comparative behaviour of users with Web site engagement.

Hypotheses concerning the relationship between flow-related antecedents aesthetics and feedback with Web site engagement

Influence of aesthetics on Web site engagement

Previous research on engagement has suggested that engaging systems are able to ‘catch and captivate user interests’ (Jacques et al., 1995), ‘draw people in’ and ‘encourage interactions’ (Quesenbury, 2003). Jacques et al. (1995) suggested that visual and sensory features can attract users’ attention, and that multimedia users demonstrated strong preferences for visually-based devices. Further research has also suggested that aesthetic elements contributed to web users first impressions (Lingaard, Fernandes, Dudek and Brown, 2006; Shenkman and Jonsson, 2000). O'Brien (2008) revealed that visual presentation was an aspect of experience that predicted engagement with technology, based on an active discovery component proposed by Beardsley (1982), and could also be connected to experimentation and problem solving. Aesthetics requires that users make an emotional investment (O'Brien, 2008). If the aesthetics result appealing to the user, an effort will be involved (Hong et al., 2005; Petty et al., 1983) that could lead to engaging with a Web site.

Accordingly, we hypothesise:

H1a. *Web site aesthetics positively influences Web site engagement*

Influence of feedback on Web site engagement

In chapter three we reviewed research concerning interface design (Rosen, 2004) and Web site design research (Hausman and Siekpe, 2009), interactivity (Shrum et al., 2008), usability (Teo et al., 2003) and fit theories (Hong et al., 2005; Te'eni, 2007) as relevant issues as to how users involve with Web site interfaces and their features. Research has suggested that coherent structural and content features of Web sites affect consumers attitudes towards Web site, their performance (Hong et al., 2005) and can convert visitors into customers (Hausman and Siekpe, 2009)

Cognitive fit theory refers to the fit between user, task and computer (Hong et al., 2005) explaining that decision performance improves when the task representation and problem representation (i.e., information presentation format) allows decision-makers to develop a more accurate mental representation of a problem (Speier, 2006). Likewise, technology task fit theory (Te'eni, 2006) suggested that technology could only have a positive performance impact on people when it fits the task they are undertaking. For fit to occur, the representation on a computer screen should be fit for the purpose of the task (Janiszewski, 1988). In this direction, competition for attention theory is based on the idea that multiple objects on a screen are considered as potential candidates competing for the attention of users (Janiszewski, 1988). Also scanpath theory (Norton and Stark, 1971) was suggested in order to model the patterns of eye movements while viewing and recognising objects. This theory was used by Hong et al. (2005) when tracing eye movements, as they investigated its applicability under different browsing and searching situations, with low and high attention, and with and without surrounding objects. In all these situations, users must undertake effort to resolve a task.

As feedback refers to how well are organised the contents of a Web site (O'Brien, 2008), we suggest that feedback should be an antecedent to Web site engagement. The better a Web site has been designed for its purpose, the lower will be the barriers users will encounter, and the lesser the effort respondents will have to exert, which could lead to being engaged with a Web site. Therefore we propose that:

H1b. *Web site feedback positively influences Web site engagement*

Having proposed two hypotheses concerning the relationship between two flow-related antecedents and Web site engagement, we shall now describe a proposed relationships between purchase involvement and Web site engagement.

Influence of purchase involvement on Web site engagement

Involvement is ‘a needs-based cognitive state of psychological identification with an object or activity that depends upon the salient needs of the individual and his perception about the need-satisfying potentialities of the object or situation’ (Kappelman, 1995). Involvement with a product is defined as ‘the perceived relevance of a product class based on the consumer’s inherent needs, interests, and values’ (Zaichkowsky, 1985). Likewise, purchase decision involvement is ‘the extent of interest and concern that a customer brings to bear on a purchase decision task’ (Mittal, 1989). This construct is closely related to motivation, are even considered as synonymous phenomena (Kappelman, 1995). Purchase involvements can take place equally offline and online (Chen, 2008; Park and Lee, 2008).

If the outcome of a purchase decision is highly relevant for a consumer, he will be motivated to make a careful purchase decision (Clarke and Belk, 1978). Generally, buying online decisions are typified by high involvement and complex decision making (Pitta, 2005). Involvement with purchases leads one to search for more information and spend more time searching for the right selection (Clarke and Belk, 1978). Also Chen (2008) affirmed that online shoppers highly involved with a product use their own motivation and ability to seek product information and become immersed in an information search activity. Involvement with the topic of a Web site is a relevant predictor of the consumer’s use of a Web site (Huizingh and Hoekstra, 2003). In this direction, Park and Lee (2008) affirmed that individuals who are highly involved with a product are more likely to engage in thoughtful and effortful processing of persuasive arguments.

Accordingly, we posit that users who have a high purchase involvement with a Web site, will be likely to search for information and spend time, therefore investing effort when navigating, and are likely to engage with the site.

We therefore hypothesise:

- H2.** *Purchase involvement in a Web site positively influences Web site engagement*

Having described the proposed relationship between two flow-related antecedents, aesthetics and feedback, as well as purchase involvement with Web site engagement these three hypotheses are summarised in table 28.

Table 28. Hypotheses in relation to the influence of antecedents on Web site engagement

HYPOTHESES IN RELATION TO THE INFLUENCE OF ANTECEDENTS ON WEB SITE ENGAGEMENT	
H1a.	Web site aesthetics positively influences Web site engagement
H1b.	Web site feedback positively influences Web site engagement
H2.	Purchase involvement in a Web site positively influences Web site engagement

Source: Developed for this research

In what follows we shall describe four hypotheses concerning the influence of online comparative behaviour on Web site engagement.

Hypotheses concerning the relationship between online comparative behaviour variables and Web site engagement

In order to capture the online comparative behaviour of users, we shall make use of static and dynamic indicators from research on EIPs and clickstream data as discussed in chapter 3. Tables 17 and 19 illustrated EIPs and clickstream utilised in previous research. Following the recommendations of Kennedy et al. (1999) we have selected the EIPs and clickstreams in order to capture better within-page and within-Web site consumer online comparative behaviour on a Web site. These indicators have been subject to an exploratory factor analysis which has in four groups of indicators. We shall utilise these four factors to measure the comparative behaviour of users on Web sites. Table 29 illustrates the results of this analysis.

Table 29. Comparative behaviour factors

FACTOR	RESEARCHERS
1. Cell comparisons	Bettman et al. (1990); Johnson et al. (1999); Kennedy et al. (1998); Lohse and Johnson (1996)
2. Cell reacquisitions	Bettman et al. (1990); Lohse and Johnson (1996)
3. Product comparisons	Bucklin and Sismeiro (2003); Johnson et al. (1999); Lohse and Johnson (1996); Senecal et al. (2005)
4. Web site depth of navigation	Bucklin and Sismeiro (2003); Lohse and Johnson (1996); Senecal et al. (2005)

Source: Developed for this research

These four factors were interpreted and compared with previous literature and were labeled ‘cell comparisons’, ‘cell reacquisitions’, ‘product comparisons’ and ‘Web site depth of navigation’ as these terms explain the contents of the indicators comprised within each of the four factors. These four factors are summarised in table 29 and will be immediately described.

Factor 1. Cell comparisons

Decision tasks can include the making comparisons (Kennedy et al., 1998). In computer settings, comparisons can be made within information structures presented on computer screens. The cell comparison factor refers to the comparisons users have undertaken when navigating on a Web product menu with different cells, that when clicked, lead to product pages containing detailed product information. This factor is based on EIP measures from Bettman et al. (1990), Kennedy et al. (1998) and Lohse and Johnson (1996) utilised in mouselab-based experiments and as described in the previous chapter. These researchers utilised elementary information processes in order to measure the amount of effort users invested when making decision in choice tasks.

Our proposed definition of Web site engagement suggests that users will become engaged when a user’s attention is captivated and held by a Web site, and the user wants to remain interacting with the Web site in a concentrated fashion. A high level of interest towards a product presented on a Web site may result in an increased online navigation (Jepsen, 2007). Whilst comparing, we assume that respondents are looking at the computer screen and consequently are investing effort. The more cells

are revealed and repeated on a choice set, the greater will be the effort invested (Johnson et al., 1999).

We hypothesise that when the content of a Web menu is relevant and of interest to a user, he will invest effort that could eventually lead to engaging with a Web site.

Accordingly:

H3a. *Cell comparisons on a Web site positively determines Web site engagement*

Factor 2. Cell reacquisitions

Lohse and Johnson (1996) utilised a cell reacquisition ratio in order to measure the memorisation effort made by users in order to cope with increasing efforts when making fixations, as memorisation eliminates the need for reacquisition. In accordance with the *reacquisition rate* variable of Lohse and Johnson (1996) this factor comprises two variables that measure reacquisition and memorisation of information based on the unique cells visited by a Web user.

When a user is interested in the content of the Web site, this could lead to wanting to invest effort therefore reacquiring cell content information.

Accordingly we hypothesise that:

H3b. *Cell reacquisitions on a Web site positively influences Web site engagement*

Factor 3. Product comparisons

The product comparisons factor computes the comparisons users have undertaken between Web product pages, which are presented to them after having been requested with a cell click. This third factor comprises the behaviour respondents have undertaken when comparing product pages whilst performing navigation. As well as has occurred in the previous factor, we assume that users are looking at the screen and consequently are investing an effort. A greater number of product views and repetitions might indicate that users have expressed an interest in deepening in

the Web site content, as they might find the content appealing and will want to keep exerting effort. The more products are revealed and repeated, the greater the effort invested (Johnson et al., 1999).

We hypothesise that this sustained interest could eventually lead to Web site engagement.

Accordingly,

H3c. *Product comparisons on a Web site positively influences Web site engagement*

Factor 4. Web site navigation depth of navigation

This factor refers to the depth of navigation users have taken when navigating on the Web site (Bucklin and Sismeiro, 2003). A greater number of clicks made on cells requesting Web product pages and an investment of time whilst viewing them might mean that users either have an intrinsic motivation to undertake interaction (Huang, 2003) or because they find that the content is of interest to them (Pace, 2004). Huang et al. (2008) affirmed that experience goods involve greater depth than search goods, which can be measured by the time spent on Web pages, and lower breadth of search which can be measured with the total number of pages viewed.

In accordance with previous research by Bucklin and Sismeiro (2003), this fourth factor refers to a group of variables that pertain to the depth users have made whilst visiting the contents of a Web site. Bucklin and Sismeiro (2003) demonstrated how within-site browsing behaviour changed with use of a Web site. They found that visitors' browsing behaviour changed as a function of the depth of a given site visit and the number of repeat visits to the site. Repeat visits lead to learning effects, consistent with within-site lock-in and stickiness. They found that users accommodate to browsing patterns and time saving strategies, corroborating the research of Johnson et al., (2003) who proved that visitors spend less time per session the more they visit a site. In our proposal of a Web engagement construct we expected that curiosity would be a component of engagement. Curiosity is the

tendency to seek out elements that are new, interesting, or unusual in one’s environment (Huang, 2003).

As well as in the previous hypotheses, when users have expressed an interest in visiting a Web site with further depth, they are exerting effort which could lead to being engaged with the site.

Accordingly we hypothesise:

H3d. *The depth of navigation on a Web site positively influences Web site engagement*

Having described four hypotheses concerning the relationship between four online comparative behaviour factors and Web site engagement, these four hypotheses are summarised in table 30.

Table 30. Hypotheses in relation to the influence of user comparative behaviour on Web site engagement

HYPOTHESES IN RELATION TO THE INFLUENCE OF USER COMPARATIVE BEHAVIOUR ON WEB SITE ENGAGEMENT	
H3a.	Cell comparisons on a Web site positively determines Web site engagement
H3b.	Cell reacquisitions on a Web site positively influences Web site engagement
H3c.	Product comparisons on a Web site positively influences Web site engagement
H3d.	The depth of navigation on a Web site positively influences Web site engagement

Source: Developed for this research

In this section we have formulated seven hypotheses concerning the relationship between seven potential antecedents and Web site engagement. They were organised in two groups. The first group of four antecedents included two flow-related antecedents, aesthetics and feedback, as well as a further potential antecedent, purchase involvement. The second group contained four hypotheses concerning the relationship between four online comparative behaviour factors and Web site engagement.

4.5.2. Additional hypotheses formulated within the section of antecedents

Besides the seven hypotheses formulated in the previous section, we are also interested in contrasting two further hypotheses concerning the influence of aesthetics on purchase involvement and up-to-dateness of information on purchase involvement. These shall be formulated as follows.

Influence of aesthetics on purchase involvement

Consumer reaction to the aesthetic aspects of Web site is increasingly being recognised as an important determinant of consumer behaviour (Shun et al., 2008). Sensory features can attract users' attention, and multimedia users demonstrate strong preferences for visually-based devices (Jacques et al., 1995). Aesthetic elements contribute to Web users first impressions (Lingaard et al., 2006; Shenkman and Jonsson, 2000). Presentational consistency, that is, the extent to which Web sites are perceived to be consistent in design, appearance and overall aesthetics, is a driver of consumer intentions and actions. When shopping online, users think like shoppers and not like computer users, and want to feel that they are in a familiar shopping context (Demangeot and Broderick, 2006). Aesthetics can lead to experimentation and problem solving (Beardsely, 1982). The aesthetics of e-commerce Web sites determines shopping experience (Junaini and Sidi, 2007; Man et al., 2005). If the aesthetic content of an e-commerce Web site results appealing to consumers, this could lead them to wanting to involve in a purchase process.

Accordingly, we hypothesise:

H4a. *Web site aesthetics positively influences purchase involvement on the Web site*

Influence of up-to-dateness of information on purchase involvement

Information presented on Web sites attracts consumers (Su et al., 2008) due to the benefits of reduction of search efforts (Ariely, 2000). Consumers will search for information as long as their perceived benefit from doing this is larger than the cost involved (Jepsen, 2007; Bettman et al., 1998). Reduction in search costs for products

and product-related information is one of the key benefits of online shopping (Ariely, 2000).

Kulviwat et al. (2004) revealed that the benefits of online shopping have a positive effect on the motivation to continue to search for information on e-commerce Web sites, as it is the availability and depth of information that attracts consumers to engage in online shopping (Su et al., 2008). Consumers can involve in a Web site for utilitarian purposes (Bigné et al., 2008). If perceived benefit of the information contained in a Web site results attractive to a consumer, this can lead to wanting to involve in a purchase process. Accordingly,

H4b. *The up-to-dateness of information on a Web site positively influences the purchase involvement on the Web site*

Having formulated two hypotheses concerning the influence of aesthetics on purchase involvement and up-to-dateness of information on purchase involvement, these are summarised in table 31.

Table 31. Hypotheses in relation to the influence of aesthetics and up-to-dateness of information on purchase involvement

HYPOTHESES IN RELATION TO THE INFLUENCE OF AESTHETICS AND UP-TO-DATENESS OF INFORMATION ON PURCHASE INVOLVEMENT	
H4a.	Web site aesthetics positively influences the purchase involvement on the Web site
H4b.	The up-to-dateness of information on a Web site positively influences the purchase involvement on the Web site

Source: Developed for this research

Having formulated a total of nine hypotheses in the antecedents section, in what follows we will formulate a group of hypotheses which deal with the potential consequences of Web site engagement.

4.5.3. Hypothesis regarding the potential consequences of Web site engagement

In this section we will describe seven hypotheses concerning the relationship between Web site engagement with seven potential consequences of relevant

managerial interest. Three of the consequences have been measured based on the intentions of respondents. Intentions capture the motivational factors that influence behaviour. They are indications of how hard people are willing to try, and how much effort they are planning to exert in order to perform a behaviour (Ajzen 1991; Walter, 2007).

Influence of Web site engagement on Web perceived value

Perceived value is the 'interactive, relativistic and preference experience that results from visiting a Web site'. It is dependent on both the characteristics of a Web site and on personal aspects of its users. User favourable attitudes towards a Web site, as well as their utilitarian and hedonic experiences, are positively related to Web site perceived value of Web site (Steenkamp and Geyskens, 2006). In relation to our suggested definition of Web site engagement, engaged users will have enjoyed positive experiences. In the engagement with technology scale, O'Brien (2008) utilised a scale labelled *intrinsic motivation*, which contained four items that, from a marketing perspective, refer to consumers' Web perceived value whilst undertaking an online shopping task, that is, how interesting and worthwhile users found a technology, and how rewarding and successful was the experience of using it. A Web site's perceived value can only be assessed after using it.

Accordingly we hypothesise:

H5a. *Web site engagement positively influences the perceived value of a Web site*

Influence of Web site engagement on online purchase intention

Consumer purchase intention towards a product means a probable willingness to buy it (Dodds et al., 1991). Research has previously demonstrated that Web navigation experiences are drivers of online purchase (Tucker, 2008) and that higher levels of experience are predictive of user's intentions towards making a purchase decision (Boyer and Hult, 2006; So et al., 2005). Sismeiro and Bucklin (2003) demonstrated a relation between online browsing behaviour and purchase behaviour. Also Korzan (2003) and Luna et al. (2003) found a positive relation between online flow and online purchase intention. Likewise, Richard and Chandra (2005) demonstrated how online

flow influenced pre-purchase intention. Similarly, Gefen and Straub (2003) revealed a positive relationship between use of a product and purchase intention as cognitive costs increases the probability that a consumer will continue to choose a product over competing alternatives (Johnson et al., 2003). It is also known that consumers are even willing to pay higher prices when a Web site is convenient for their planned purchases, as they might not be willing to invest effort searching within other Web sites (Öörni, 2005).

We postulate that users who have engaged with a shopping Web site have invested a significant amount of effort that in turn could lead to purchase intention.

Accordingly we hypothesise:

H5b. *Web site engagement positively influences the purchase intention on a Web site*

Influence of Web site engagement on switching intention

Online switching is a critical issue for technology providers, and will continue to be as long as there are alternatives available to Web site users (Ye et al., 2008). The Internet makes it relatively easy to switch from one Web site to another one that provides similar products or services (Li et al., 2006) therefore consumers are constantly facing the option of switching between Web sites (Ye et al., 2008). Whilst ease of switching is an advantage for users of Web sites, companies want to retain consumers as long as possible on their Web sites, hence exposing them to more product information (Hong et al., 2005). Acquiring customers is more expensive on the Internet than in conventional channels (Li et al., 2006) and firms need to recover the investments they have made in order to acquire customers (Chen and Hitt, 2002).

Switching costs refers to the effort and expenses involved in switching from one product to another (Demirhan et al., 2007; Klemperer 1987a, b). It is know that when consumers have exerted cognitive costs, there is an increased chance that they will continue to choose products they are already using over competing alternatives (Johnson et al., 2003). Although the Internet serves as a gateway to vast amounts of

shopping related information, consumers have limited processing capacity. Whilst easy access to information hyperchoice is initially attractive, it can lead to overload (Lurie, 2004) and dissatisfaction (Mick et al., 2004). It is also known that in certain business sectors such as travel, consumers are even willing to pay higher prices in order to avoid exerting further effort (Öörni, 2005). Dependence on a current supplier will be low if there are many good online alternative suppliers (Li et al., 2006), however in online consumer markets, dependence of online consumers on the present Web site is related to the quality of level of the best alternative Web sites (Li et al., 2006; Rusbult et al., 1998). In this direction, Chen and Hitt (2002) had proved that a Web site's ease of use was positively correlated with non-switch behaviour. If the perceived benefit of switching Web sites is low, customers will stay on a first Web site, while if the perceived benefit is high, the customer will almost certainly switch to another one (Goode and Harris, 2007).

We postulate that when users are engaged with a Web site, they will devote significant effort with the Web site's content, therefore will be more hesitant to switch to other sites for a similar purpose, as they would have to devote both switching efforts, even perhaps have to assume learning costs of an alternative Web site.

Accordingly,

H5c. *Web site engagement negatively influences the intention to switch to another Web site*

Influence of Web site engagement on return intention

Return intention, a commonly-held measure of success utilised by Web advertisers, is the extent to which visitors return to a previously visited Web site (Mu and Galleta, 2007; Palmer, 2002). The more attractive the content or brand being evaluated, the more likely the visitor is to return to it (Raney et al., 2003). Return intention is a satisfactory approximation of customer retention (Karson and Fisher, 2005; Koufaris, 2002). Attitude towards a Web site is a determinant of a user's intention to revisit a site (Supphelen and Nysveen, 2001). Revisits to a Web site are determined by offering high-quality content, valuable information and up-to-date

information, in order to make consumers perceive that there is always fresh content on it (Chaffey et al., 2000; Supphelen and Nysveen, 2001). In this direction, Rosen and Purinton (2004) found that effective Web site design leads to repeat visit through coherence of design, complexity of richness of content and legibility or understanding of the site. If users have engaged with a Web site, that is, the site will have captivated and held their attention, whilst keeping them interacting on it in a concentrated fashion. They will have felt attracted to that site and might therefore have the intention to return to it in the future.

Accordingly,

H5d. *Web site engagement positively influences intention to return to the Web site*

Influence of Web site engagement on virtual branding potential

Virtual branding potential is the ability of a Web site to gain recognition and establish its existence in the minds of consumers and public. Virtual brand equity provides the most sustainable competitive advantage to Internet driven firms. Virtual branding is different to traditional offline branding due to differences in the ability to gain and maintain online users. A Web site with an established online brand can persuade its current visitors to visit the Web site repeatedly. Virtual branding provides an accurate measure of a Web site's strategic potential (Simeon, 2001, 1999) compared to current methods of measuring the success of a Web site with clickstream data. Accordingly, Whelan and Wohfeil (2006) affirmed that the most successful Internet companies are those that have clear brand policies.

If a visitor has engaged with a Web site, this might have occurred because the site had features that were considered of his interest. If the Web site was not of his interest, the visitor would have not devoted the required effort to remain engaged on the Web site. These reasons could be either hedonic or utilitarian. Virtual branding is assessed with the content richness of a Web site, its overall attractiveness and worthiness of recommendation to other people (Simeon, 2001), which could evidence an interest towards a Web site on behalf of a visitor.

Accordingly we hypothesise:

H5e. *Web site engagement positively influences the virtual branding potential of a Web site*

Influence of Web site engagement on unaided brand recall and unaided URL recall

Recall is the act of remembering or bringing to mind. The stronger the meaning the content of a Web site, the easier it is for a user to remember the site (Mu and Galleta, 2007). The associative strength theory of memory (Ellis and Hunt, 1983) suggested that effectiveness of recall depends on how strongly a reminder word or picture is associated with the information to be retrieved. Cognitive studies have proved that humans remember pictures with meanings much more easily than those picture without meaning. Web sites where salient pictures and words have business meanings suggestive of the benefits of the brand or product have the highest recognition. In contrast, Web sites with salient pictures and words without meaning have the lowest recognition (Mu and Galleta, 2007). Also Keller et al. (1998) revealed that brand names that explicitly convey the benefit of a product, leads to higher recall of an advertised benefit claim that is consistent in meaning with the brand name, compared to other brand names which are non-suggestive. It is also easier to remember meaningful brand names that are visually represented (Childers and Houston, 1984). Therefore Web sites should utilise salient brand and product-related names, pictures, and media content in order to suggest the product benefits and gain Web site recognition (Mu and Galleta, 2007).

Based on this notion, the brand name and URL of the data acquisition Web site utilised in this research, designed as an online travel agency, described exactly what it was selling to the respondents, that is, travel packages to the Seychelles islands, or *Viajes a Seychelles*, in Spanish language. Accordingly the brand name assigned to the Web site was VIAJES A SEYCHELLES and the URL of the Web site was <http://www.viajesaseychelles.com>. In order to foster brand salience, the brand name was horizontally centred and located at eye level in large 36 point arial font. The salience of the URL could not be manipulated as this is an intrinsic feature of Internet browsers. It is known that repeated exposure to a stimulus enhances recall of

that stimulus, contributing to increasing strength of memory of an item. Recall performance is better when a number of repetitions is spaced in time rather than massed (Bettman et al., 1979; Postman, 1975). Zielkshe (1959) noted that distributed presentation was better for a final level of recall, however, for a maximum temporary response, massed presentation is more effective. Whilst we acknowledge that fact that respondents were subject to the experiment Web site just once, and that the site was previously unknown to them, engaged users might have invested significant effort whilst remaining concentrated and navigating on the data acquisition Web site, demonstrating qualities such as a positive affect, attention and curiosity towards the site. It is also known that brand recognition is highly correlated with interest (Mu and Galleta, 2007; Wells, 2000).

Accordingly we hypothesise:

- H5f.** *Web site engagement positively influences the unaided recall of a Web site's brand*
- H5g.** *Web site engagement positively influences the unaided recall of a Web site's URL*

Having described seven hypotheses concerning the relationship between Web site engagement with seven consequences highly relevant for business, these hypotheses are summarised in table 32.

Table 32. Hypotheses in relation to the influence of Web site engagement on seven managerially relevant consequences

HYPOTHESES IN RELATION TO THE INFLUENCE OF WEB SITE ENGAGEMENT ON SEVEN CONSEQUENCES HIGHLY RELEVANT FOR BUSINESS	
H5a.	Web site engagement positively influences the perceived value of a Web site
H5b.	Web site engagement positively influences the purchase intention on a Web site
H5c.	Web site engagement negatively influences the intention to switch to another Web site
H5d.	Web site engagement positively influences intention to return to the Web site
H5e.	Web site engagement positively influences the virtual branding potential of the Web site
H5f.	Web site engagement positively influences the unaided recall of a Web site's brand
H5g.	Web site engagement positively influences the unaided recall of a Web site's URL

Source: Developed for this research

Having described in total seven hypotheses concerning the relationship between Web site engagement and seven potential consequences, in the next section we shall

formulate four hypotheses regarding the influence of Web perceived value and four consequences highly regarded by industry: purchase intention, switching intention, return intention and virtual branding potential.

4.5.4. Hypothesis regarding the relation of Web perceived value with consequences of relevant managerial interest

Value has traditionally been considered as a trade-off between quality and price and (Wathne et al., 2001). In the context of business Web sites, perceived value is the 'interactive, relativistic and preference experience that results from visiting a Web site'. It is dependent on both the characteristics of a Web site and on personal aspects of its users. The greater the utilitarian and hedonic experiences obtained when visiting a Web site, the greater will be the perceived value of a Web site (Steenkamp and Geyskens, 2006). Perceived value will serve as a basis for the following four hypothesis.

Influence of Web perceived value on purchase intention

Consumer purchase intention towards a product probably means a willingness to buy it (Dodds et al., 1991) and predicting and understanding online-buying behaviour is of utmost importance for e-commerce Web site managers (Sismeiro and Bucklin, 2003; van den Poel and Buckinx, 2005). Purchase intention directly affects both revenue and profitability of the firm (Ranaweera et al., 2008). In offline research it has already been proven that the greater the perceived value of a product, the greater will be its purchase intention (Dodds et al., 1991). Also in online research Liu (2007) revealed a positive relationship between perceived value and purchase intention. However, the context utilised by this researcher combined four online interactive activities, including email, online shopping, online communities and online chat and discussion, and therefore did not focus on one specific online activity. In this research we have focused solely on a Web site shopping context and therefore wish to revalidate the finding of Liu (2007) specifically for the context of online shopping, our argument being that perceived value of a Web site leads to intentions to undertake activities, such as a purchase intention, based on the evaluations of the products sold on the site (Steenkamp and Geyskens, 2006).

Accordingly,

H6a. *Web perceived value positively influences the purchase intention on a Web site*

Influence of Web perceived value on switching intention

Switching costs refers to the effort and expenses involved in switching from one product to another (Demirhan et al., 2007; Klemperer 1987a, b). It is know that when consumers have exerted cognitive costs, there is an increased chance that they will continue to choose products they are already using over competing alternatives (Johnson et al., 2003). Lin (2007) had previously revealed that the perceived value of a Web site discourages switching behaviour. However, this researcher had only found partial support for this affirmation, and accordingly we wish to revalidate this finding, our argument being that if a consumer perceives that the value of the offerings of an e-commerce Web site is high, the effort involved in switching to another Web site with a potentially similar offering will discourage switching behaviour.

Accordingly,

H6b. *Web perceived value negatively influences the intention to switch to another Web site*

Influence of Web perceived value on return intention

Traditionally value has been considered as a trade-off between quality and price (Wathne, Biong and Heide, 2001). In the items used by Steenkamp and Geyskens (2006) to measure perceived value refer to considering a Web site useful, up to expectations, good experience and willingness to return. Furthermore, Mohammed et al. (2001) affirmed that potential consumers may not make a purchase during one visit to a site but may consider doing so when returning to the site at a later time.

Accordingly, we hypothesise:

H6c. *Web perceived value positively influences the intention to return to the Web site*

Influence of Web perceived value on virtual branding potential

Virtual branding provides an accurate measure of a Web site’s strategic potential (Simeon, 2001, 1999) compared to current methods of measuring the success of a Web site with clickstream data. Accordingly, Whelan and Wohfeil (2006) affirmed that the most successful Internet companies are those that have clear brand policies. Virtual branding is assessed with the content richness of a Web site, its overall attractiveness and worthiness of recommendation to other people (Simeon, 2001), which could evidence an interest towards a Web site on behalf of a visitor. Likewise, if a visitor considers that the perceived value of a Web site is high, this might have occurred because the site had features that were considered of his interest.

Accordingly,

H6d. *Web perceived value positively influences the virtual branding potential of a Web site*

Having formulated four hypotheses regarding the potential consequences of Web perceived value, these are summarised in table 33.

Table 33. Hypotheses in relation to the influence of Web perceived value and relevant managerial consequences

HYPOTHESES IN RELATION TO THE INFLUENCE OF WEB PERCEIVED VALUE AND RELEVANT MANAGERIAL CONSEQUENCES	
H6a.	Web perceived value positively influences the purchase intention on a Web site
H6b.	Web perceived value negatively influences the intention to switch to another Web site
H6c.	Web perceived value positively influences the intention to return to the Web site
H6d.	Web perceived value positively influences the virtual branding potential of a Web site

Source: Developed for this research

4.5.5. Summary of research hypotheses

In total we have formulated a total of twenty research hypotheses. Seven hypotheses correspond to the relation between seven potential antecedents to Web site engagement with this construct, and seven hypotheses correspond to the relation between Web site engagement with seven potential consequences. We also formulated six additional hypotheses concerning one further potential consequence of aesthetics, one further potential consequence of up-to-dateness of information and four potential consequences of Web perceived value.

In order to provide an overall view of the twenty hypotheses that shall be submitted to statistical analysis in chapter 4, the hypotheses are presented in the table 34 together with a representation of research upon which they are based. With the intention of presenting them with clarity the twenty research hypotheses are organised in three sections comprising the antecedents Web site engagement, additional hypothesis formulated within the antecedents section and hypotheses formulated within the section regarding the consequences of Web site engagement. The table also illustrates the research issues to which they will provide an answer and the coding of the hypotheses that shall be utilised for their identification during the rest of this research.

Table 34. Summary of research hypotheses

RESEARCH ISSUES AND HYPOTHESES		THEORETICAL FOUNDATION
ANTEDECENTS OF WEB SITE ENGAGEMENT		
<i>Research Issue 2: Which are the antecedents of Web site engagement?</i>		
H1a.	Web site aesthetics positively influences Web site engagement	Beardsley (1982); Chapman (1997); Jennings (2000); Laurel (1993); Lavie and Tractinsky (2004); Mathwick et al. (2001); O'Brien (2008); Skelly et al. (1994)
H1b.	Web site feedback positively influences Web site engagement	Brown and Cairns (2004); Guo and Poole (2008); Novak et al. (2000); O'Brien (2008); Stone et al. (2005); Webster and Ho (1997);
H2.	Purchase involvement in a Web site positively influences Web site engagement	Balabanis and Reynolds (2001); Demangeot and Broderick (2007); Huang (2006); Koufaris (2002); Laurent and Kapferer (1985); Mittal (1995); McQuarrie and Munson (1992); Novak et al. (2000); O'Brien (2008)
<i>Research Issue 3: Does consumer online comparative choice behaviour influence Web site engagement?</i>		
H3a.	Cell comparisons on a Web site positively determines Web site engagement	Bettman et al. (1985); Bojko (2006); Card et al. (1985); Kennedy (1998); Lohse and Johnson (1996); O'Brien (2008); Russo (1978); Senecal et al. (2005)
H3b.	Cell reacquisitions on a Web site positively influences Web site engagement	Lohse and Johnson (1996); Pitkow (1997); O'Brien (2008)
H3c.	Product comparisons on a Web site positively influences Web site engagement	Bucklin and Sismeiro (2003); Lohse and Johnson (1996); O'Brien (2008); Senecal et al. (2005)
H3d.	The depth of navigation on a Web site positively influences Web site engagement	Bucklin and Sismeiro (2003); Kennedy (1998); Lohse and Johnson (1996); Pitkow (1997); O'Brien (2008)
Additional hypotheses formulated in the section of antecedents		
H4a.	Web site aesthetics positively influences the purchase involvement on the Web site	Beardsley (1982); Huang (2006); Koufaris (2002); Jennings (2000); Laurel (1993); Laurent and Kapferer (1985); Mathwick et al. (2001); Mittal (1995);

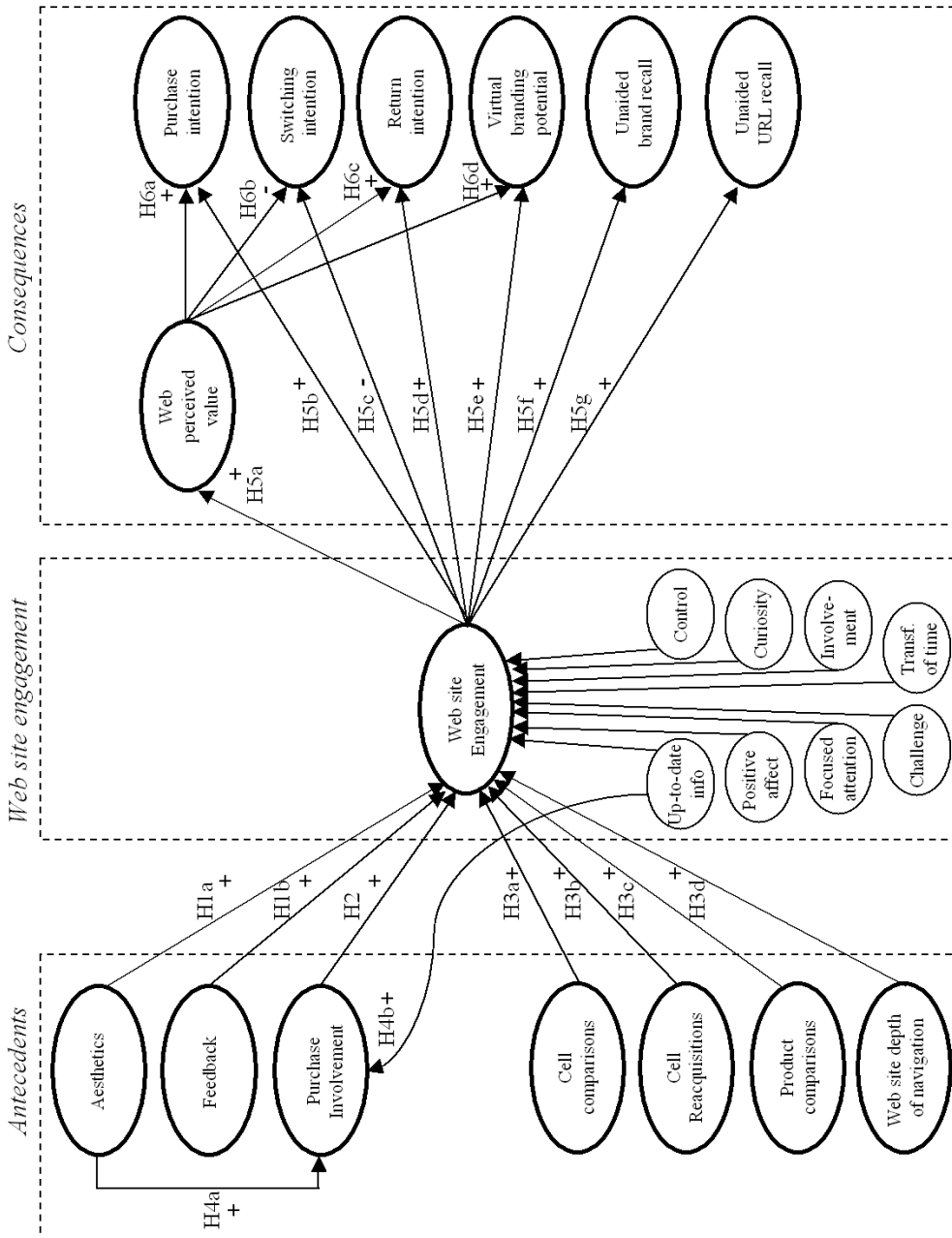
H4b.	The up-to-dateness of information on a Web site positively influences the purchase involvement on the Web site	Chaffey et al., (2000); (Huang, 2003); Klopping and McKinney (2004); Koufaris (2002); Laurent and Kapferer (1985); Mittal (1995)
CONSEQUENCES OF WEB SITE ENGAGEMENT		
<i>Research Issue 4: Does Web site engagement lead to consequences highly relevant for online business managers ?</i>		
H5a.	Web site engagement positively influences the perceived value of a Web site	Babin et al. (1994); Guay et al. (2000); Mathwick et al. (2001); Steenkamp and Geyskens (2006); O'Brien (2008)
H5b.	Web site engagement positively influences the purchase intention on a Web site	Hans van der Heijden et al. (2003); Lee and Kozar (2009); Ranaweera et al. (2008)
H5c.	Web site engagement negatively influences the intention to switch to other another Web site	Bansal et al. (2005); Li et al. (2006); O'Brien (2008)
H5d.	Web site engagement positively influences intention to return to the Web site	Koufaris (2002); Lin (2007); Demangeot and Broderick (2007); O'Brien (2008)
H5e.	Web site engagement positively influences the virtual branding potential of the Web site	Simeon (2001); O'Brien (2008)
H5f.	Web site engagement positively influences the unaided recall of a Web site's brand	Dreze and Hussherr (2003); Kim and Kim (2005); O'Brien (2008)
H5g.	Web site engagement positively influences the unaided recall of a Web site's URL	Dreze and Hussherr (2003); Kim and Kim (2005); O'Brien (2008)
Additional hypotheses in relation to the influence of Web perceived value and relevant managerial consequences		
H6a.	Web perceived value positively influences the purchase intention on a Web site	Hans van der Heijden et al. (2003); Lee and Kozar (2009); Ranaweera et al. (2008); Steenkamp and Geyskens (2006)
H6b.	Web perceived value negatively influences the intention to switch to another Web site	Bansal et al. (2005); Li et al. (2006); Steenkamp and Geyskens (2006);
H6c.	Web perceived value positively influences the intention to return to the Web site	Koufaris (2002); Lin (2007); Demangeot and Broderick (2007); Steenkamp and Geyskens (2006)
H6d.	Web perceived value positively influences the virtual branding potential of a Web site	Simeon (2001); Steenkamp and Geyskens (2006)

Source: Developed for this research

4.5.6. A proposal of a Web site engagement model

The twenty hypotheses formulated in the previous sections, allow us to propose the following Web site engagement research model, illustrated in figure 41.

Figure 41. Research model of Web site engagement, antecedents and consequences



Source: Developed for this research

The section dedicated to the formulation of the research hypotheses and proposal of a Web site engagement model will be finalised with the suggestion of a categorisation of the antecedents of the Web site engagement construct as either hedonic or utilitarian.

4.5.7. Categorisation of the antecedents of Web site engagement as hedonic or utilitarian

Customers can utilise shopping Web sites with either hedonic or utilitarian motivations (Bigné et al., 2008). Childers et al. (2001) distinguished two ways of assessing Web performance: hedonic and utilitarian. They suggested that hedonic, immersive aspects of Web play at least an equal role of instrumental or utilitarian aspects of Web, and that both approaches should be taken into account when designing online interactive retail shopping environments.

Hedonic refers to visiting a Web site for pleasure, fun and playfulness (Huang, 2003). A Web site performs well hedonically when users perceive the site to be enjoyable in its own right, apart from any performance consequences that may be anticipated (Venkatesh, 2000). Utilitarian Web performance is the evaluation of a Web site based on the assessment of users regarding the instrumental benefits they derive from its non-sensory attributes (Huang, 2003) and their purchase efficiency (Ruiz and Sanz, 2006).

In order to understand whether the reasons which lead online consumers to engage with shopping Web sites attend to mainly hedonic or utilitarian purposes, we shall classify the seven suggested antecedents to Web site engagement in this two groups. We shall ground our decision based on the ten items used by Huang (2003) in order to classify the hedonic or utilitarian performance of Web sites. In order to measure the hedonic performance of Web sites, she utilised a five item scale with the following items: 1. agreeable–disagreeable; 2. entertaining–weary; 3. nice–awful; 4. pleasant–unpleasant; and 5. soothing–aggravating. For the measurement of utilitarian performance, the items used were: 1. correct-wrong; 2. effective-ineffective; 3. ordered-chaotic; 4. reliable-unreliable; and 5. wise-foolish. Table 35 illustrates our suggested her model.

Table 35: Categorisation of antecedents as hedonic or utilitarian

ANTECEDENT	HEDONIC	UTILITARIAN
Aesthetics	√	√
Feedback		√
Purchase involvement		√
Cell comparisons	√	√
Cell reacquisitions	√	√
Product comparisons	√	√
Web site depth of navigation	√	√

Source: Developed for this research

Aesthetics is a hedonic antecedent although also could be considered as utilitarian. Aesthetics as the visual appearance of an interface as it conforms to design principles, including balance, emphasis, harmony, proportion, rhythm, symmetry and unity (Beardsely, 1982). Web shopping presents an opportunity for creating rich cognitive and aesthetic environments. Feedback is an utilitarian antecedent, as it refers to the information communicated to users about actions that have occurred and results that have been achieved (O'Brien, 2008). Purchase involvement is utilitarian. In purchase decision research, the main concern is that a decision is relevant to a consumer hence he will be motivated to make a careful purchase decision. Involvement with purchases leads one to search for more information and spend more time to search for the right selection (Clarke and Belk, 1978). Cell comparisons, cell reacquisitions, product comparisons and Web site depth of navigation, four factors that refer to the online comparative behaviour of users could be both hedonic and utilitarian. If consumers are searching a Web looking at the hedonic benefit, their search or browse behaviour will non-directed. However, if they are looking for the utilitarian benefits, their behaviour will be more goal-oriented.

4.6. CONCLUSION OF THIS CHAPTER

The chapter was dedicated to the suggestion of a Web site engagement scale as well as a Web site engagement model based on this construct. After the chapter introduction, we immediately described the research objectives and research issues of this thesis. This was followed by a justification of the suitable paradigm and research method. We then proposed a Web site engagement construct and developed a model of relationships based on this construct. The construct was based on a

previous scale of engagement with technology (O'Brien, 2008). After conceptualising the term *Web site engagement* we described the eight potential dimension of this construct, in particular positive affect, focused attention, challenge, control, curiosity, involvement, transformation of time and up-to-dateness of information. We then suggested a model of Web site engagement which comprises twenty relationships. From these twenty, seven are potential antecedents to Web site engagement, seven are potential consequences and a further six further hypotheses are formulated both within the antecedents and consequences sections of the model. Finally we suggested a categorisation of the antecedents of the Web site engagement construct as either hedonic or utilitarian.

CHAPTER 5
RESEARCH METHODOLOGY

5.1. INTRODUCTION

In chapter 4 we proposed a Web site engagement construct and developed a model of relationships based on this construct. In this chapter we shall describe the methodology developed for this thesis. Prior to describing the methodological process we shall first provide an insight into research regarding the Internet, e-commerce and the travel sector (section 5.2.1). The empirical application has been undertaken with data from a simulated online travel agency especially developed for this research, as well as its underlying technology. Whilst there are bodies of research which study how EIPs and clickstream data can be utilised to trace within-page and within-site consumer behaviour, no methodology has yet been developed that combines these two methods together. Likewise, there is an absence of research of the effects of online comparative behaviour on Web site engagement. After describing the methodological process (section 5.3) including the the design of instruments and data collection process, we shall illustrate how the variables utilised in this research have been measured, for the Web site construct (section 5.4.), for its antecedents (section 5.5.) and for its consequences (section 5.6.). After describing the survey structure (section 5.7.) and some ethical considerations, finally we shall make some chapter conclusions (section 5.8).

5.2. THE INTERNET AND ONLINE TRAVEL

This research is undertaken within the research area of online consumer behaviour with an empirical application undertaken with data from a simulated online travel agency. Prior to describing the methodological process, in the following three sections we shall provide an insight into research regarding the Internet, e-commerce and the travel sector.

5.2.1. The Internet

Ten years ago, Watson et al., (2000) affirmed that the Internet would change distribution like no other environmental force since the industrial revolution, highlighting that current distribution channels would transform and even some of the channels would disappear. Nowadays while the Internet has moved from beyond the early adopter stage and is still a relatively new medium for commercial transactions,

it has already changed distribution substantially (Ranaweera et al., 2008; van den Poel and Buckinx, 2005). The Web has become a major source of business products, Web services and information for many people worldwide (Chen et al., 2003; Spink and Jansen, 2007). Table 36 presents an overview of the World's percentages of users.

Table 36. Internetworldstats. Regions

REGION	USERS IN 2009	% OF WORLD USERS	GROWTH IN 2000-2009	PENETRATION (% POPULATION)
Africa	67,371,700	3.9 %	1,392.4 %	6.8 %
Asia	738,257,230	42.6 %	545.9 %	19.4 %
Europe	418,029,796	24.1 %	297.8 %	52.0 %
Middle East	57,425,046	3.3 %	1,648.2 %	28.3 %
North America	252,908,000	14.6 %	134.0 %	74.2 %
Latin America & Caribbean	179,031,479	10.3 %	890.8 %	30.5 %
Oceania & Australia	20,970,490	1.2 %	175.2 %	60.4 %
World Total	1,733,993,741	25.6 %	380.3 %	100.0 %

Source: <http://www.internetworldstats.com> (accessed, November 2009)

In 2009, the total number of European Internet users was 24.1% of the world's total number of Internet users, ranking second after Asia (42.6%) and one position ahead of North America (14.6%). The total number of Europeans connected to the Internet exceeded 418 million, with a growth rate during the last 9 years of almost 300%. The current penetration rate in the population is of 52% (www.Internetworldstats.com, 2010).

Table 37 presents a ranking of the World's leading Internet using countries classified by both the number of users and the rate of penetration.

Table 37. Internetworldstats. Leading countries and rate of penetration

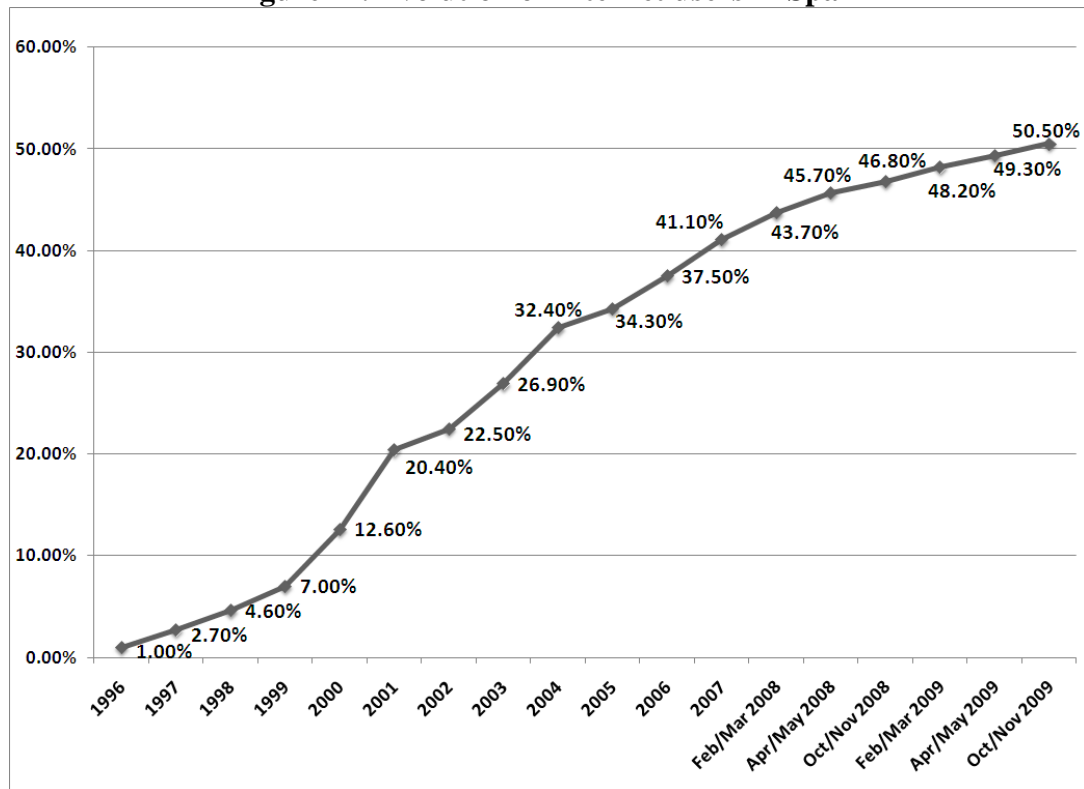
NUMBER OF USERS			RATE OF PENETRATION		
Countries	Position	No. of Users	Countries	Position	Penetration (% population)
China	1	360,000,000	Falkland Islands	1	100.0 %
United States	2	227,719,000	Iceland	2	93.2 %
Japan	3	95,979,000	Norway	3	90.9 %
India	4	81,000,000	Greenland	4	90.3 %
Brazil	5	67,510,400	Sweden	5	89.2 %
Germany	6	54,229,325	Netherlands	6	85.6 %
United Kingdom	7	46,683,900	Denmark	7	84.2 %
Russia	8	45,250,000	Finland	8	83.5 %
France	9	43,100,134	Australia	9	80.1 %
Korea South	10	37,475,800	New Zealand	10	79.7 %

Source: <http://www.internetworldstats.com> (accessed, November 2009)

The UK occupies the 20th position in the World ranking by number of users, with a total of 21.000.231, and Spain occupies the 21st position with 19.204.771 users, being third and fifth respectively after Germany, Finland and Italy in the European ranking. Focusing on Spain, Figure 42 illustrates the evolution of Internet users since 1996. The percentage of Internet penetration in Spain is 50.5% amongst the population older than 14 years of age (AIMC, 2009). Progression of the number of users during the last 14 years is stable with an average annual growth of 26.2%.

Whilst it is possible to utilise the Internet for different typologies of business, the next section is dedicated to the description of e-commerce.

Figure 42. Evolution of Internet users in Spain



Source: Spanish General Media Study (AIMC, 2009)

5.2.2. E-commerce

E-commerce is considered as a type of retail channel that can be compared to traditional shopping channels such as supermarkets and other indirect channels such as catalogue order (Alreck and Settle, 2002; Liebermann and Stashevsky, 2009).

The Web has become a major source for all kinds of commerce-related information, and accessing commerce-related information on the Web is becoming an everyday activity for many people in the digital age (Chen et al., 2003; Spink and Jansen, 2008). With the vast amounts of product information available online, consumers very often learn about new products through the Internet. E-commerce Web sites serve both as a marketing tool for product information dissemination, and not only provides an environment for facilitation of consumer decision-making, but also for communication of product information and creation of enjoyable experiences (Hong et al., 2005). E-commerce has made it easier for sellers to inform consumers of their offers and for consumers to respond to those offers more than it has been possible in traditional retail channels (Spann and Tellis, 2006). More and more people use the Web to gather product information to buy products and services as people can now purchase products and services without having to travel to retail outlets, or even browse for enjoyment (Bigné et al., 2007; Demangeot et al., 2006). Web sites can provide more detailed and updated information in real time to support decision-making (Liebermann and Stashevsky, 2009). Internet-based companies include portals, travel Web sites, online shops, information providers and financial services sites. These companies have an influence in the structure of the Internet and in the digital economy, as they compete to obtain a strategic position in the market (Rao and Smith, 2006). The future of economic competitiveness for most online enterprises relies on entrance and active participation in the e-commerce market (Tucker, 2008).

There has been an explosive growth in the numbers of online retailers and an exponential growth in the volume of online shoppers (Goode and Harris, 2007). Forrester (2010) expects in Europe an annual growth of 11 percent for online retail sales, going from 68 billion € in 2009 to 114.5 billion € in 2014. In the US, overall e-commerce sales will represent 8 percent of all retail sales in 2014, up from 6 percent in 2009. From trimester IV-2008 to trimester III-2009, e-commerce in Spain reached a total of 5426.23 million €, 9.4% higher than in the previous year, representing a total of 6934 million transactions. From the overall Spanish volume of electronic commerce, air travel represented 14.8% of total sales (803.08 million €) and 15.8% corresponded to sales made by tourism travel agents in general (857.34 million €).

These two categories are the first and second in the 2009 ranking of the Spanish commission for the market telecommunications (CMT) which is illustrated in table 38.

Although online shopping is still growing it is not doing so as pervasively as predicted and many Web sites fail to help companies reach their objectives (Hausman and Siekpe, 2009). With the proliferation of commercial Web sites and the increasing acceptance of online transactions by consumers (Demangeot and Broderick, 2006), it was expected that online transactions were likely to constitute a significant part of future commercial activity (Ranaweera et al., 2004). Liebermann and Stashevsky (2009) argued that the diffusion processes associated with B2C e-commerce are still their initial stage as it only accounts for 2.3% of total B2C sales.

Table 38: Spanish distribution of business volume and transactions of electronic commerce per business sector

BUSINESS SECTOR	Sales ⁴ (millions of €)	% of sales ⁵
Travel agents and tourism operators	857.34	15.8
Air Transport	803.08	14.8
Direct marketing	406.97	7.5
Road transport of passengers	396.11	7.3
Games and gambling	309.30	5.7
Artistic, recreational and sports events	206.20	3.8
Legal services, accounting and management	195.34	3.6
Education	146.51	2.7
Hotels, apartments and camping	130.23	2.4
Computers and software	124.80	2.3

Source: Spanish Commission for the Market of Telecommunications (2009)

Accordingly they suggested that, many consumers are still not aware of its capabilities. However Zhou et al. (2007) affirmed that research findings have greatly improved online retailing practice. Although as a relatively new research field, there are still a lot of research questions that remain unsolved (Hausman and Siekpe, 2009). Spink and Jansen (2008) demonstrated how a combined category of commerce, travel, employment and economy representing 30.4% of total Web queries, overtaking email on a daily usage basis.

⁴ Based on data from IV-08, I-09, II-09 and III-09. ⁵ Based on data from III-09

Having made an introduction to the Internet and e-commerce, we shall now make an insight into travel and tourism research, focusing on investigations made for the online medium.

5.2.3. Online travel

Travel is one the fastest growing global business sectors and sales made over the Internet continue to grow in importance (Andreu et al., 2009). It is nowadays widely accepted that the Internet is an effective marketing tool for tourism (Buhalis and Law, 2008). The development of the Internet and information technology has dramatically modified the tourism industry (Law et al., 2010). It is expected that travel and tourism will represent 9.2% of the world's total GDP in 2010 (World Travel and Tourism Council, 2010). Growth in 2010 will be 0.5% although it is expected to average 4.4% per annum until 2020. Tourism accounts for one of every twelve jobs on the planet. Therefore all changes that might occur in this industry should be of interest for both academic and professionals (Öörni, 2003). In 2008, tourism represented 11% of the gross domestic product of Spain (INE, 2008).

Marketing of travel and tourism highly depends on the availability of up-to-date information. This is the reason why information communication technologies have always been at the heart of the global distribution of these services (Kuom and Oertel, 1999). Sales of travel and tourism services on the Internet also increase the level of knowledge and availability of different options, which is consequence increases overall sales (Lewis and Semejin, 1998). Tourist experiences are often profound and help to shape the social world of actors (McCabe and Foster, 2006) and holiday talk becomes a topic as people organize their lives, activities and social relationships (McCabe and Stokoe, 2010). The benefits of tourism can be wide ranging, extending to benefits to the economy, social life for people living in destinations as well as personal benefits to tourists (McCabe, 2009) and more and more tourists utilise the Internet and travel Web sites for vacation planning (Pan and Fesenmaier, 2006).

Travel, as well as services in general are not physically examined prior to purchase therefore should not present disadvantages when comparing products (Öörni, 2005).

Whilst traditional travel agencies have an important role in the tourism distribution system, they are forced to introduce new technologies in their business processes (Andreu et al., 2009; Buhalis and Law, 2008). Within the context of B2B, Bigné et al. (2008) affirmed that the adoption of IT needs to be taken into account in service business like travel agencies, given their positive effect on sales growth, cost reduction and long-term relationships. There is an ongoing debate concerning the competitive environment of travel agencies, with regards to dis-intermediation and re-intermediation (Andreu et al., 2009). As consumers no longer needed travel agents to access airline reservation systems, the travel industry is therefore faced with a challenge and should find ways of attracting and maintaining customers (Mamaghani, 2006).

Travel is a growing business sector. Sales have consistently doubling sales during the 2005-2010 periods (Forrester Research, 2007). On a global scale, 95% of Web users have searched the Internet in order to information for travel (Lehto and Kim, 2006). Also 22% of all holidaymakers have used online travel agencies to book their holidays (Papathanassis and Knolle, 2010). In Europe, online travel will surge from 28% in 2008 to 34% by 2010. While the total European travel market experiences a double-digit decline, online leisure and unmanaged business travel will grow slightly in 2009. As effects of the recession linger into 2010, consumers are increasingly shopping online for better deals (PhocusWright, 2009).

Focusing on Spain, in 2008, 12.5% of Spanish internal travel has involved using the Internet for their organisation. 67.4% of tourists utilised the Internet to make a reservation and 30.8% used it to make final payment. Also 35.4% of Spanish tourists used the Internet to make reservations or pay tourism services. Likewise 76.5% of tourists used the Internet to make a reservation and 51.8% to make payment (Familtur, 2008). In total, Spain's online tourism and travel, including airlines, road transport and accommodation, accounted for 40.3% of overall e-commerce sales, with a turnover of 2452.64 million €.

5.3. METHODOLOGICAL PROCESS

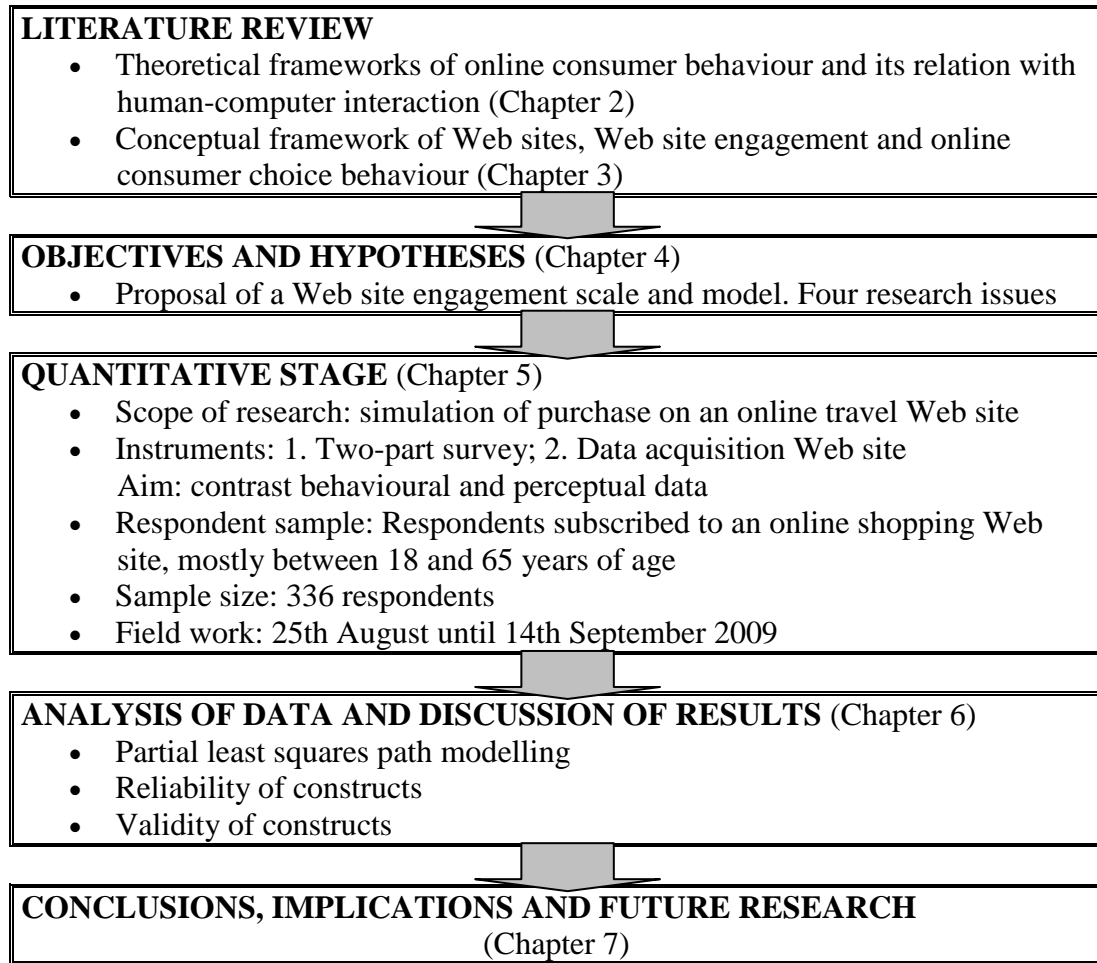
5.3.1. Introduction to the methodological process

As described in the introduction chapter, the objective of this dissertation is to propose a Web site engagement construct, to analyse the influence of two groups of proposed antecedents of Web site engagement, and to study the relation between Web site engagement and seven potential consequences highly regarded by managers, therefore suggesting a Web site engagement model. The model will be estimated with partial least squares path modelling (PLSPM). The data utilised was obtained from respondents that completed a two-part survey and a navigation experiment on a data acquisition Web site especially developed for this research. Surveys were utilised for the assessment of respondents' engagement experience and for the measurement of proposed antecedents, corresponding to research issue 2, and proposed consequences of Web site engagement, which corresponds to research issue 4. Another group of antecedents, online comparative behaviour, has been assessed with data from the acquisition Web site that captured online navigation behavioural EIP and clickstream data from respondents whilst undertaking an online shopping task. This corresponds to research issue 3.

One of the contributions of this research is of methodological nature. The combination of online surveys and online data acquisition has not been studied together previously within one unique methodological framework, and should prove useful for the attainment of the objectives of this research. Dennis et al. (2010) has recently suggested that there is a scarcity of combined consumer-technology research. Accordingly our methodology takes into account both technology and consumer issues. Table 43 illustrates the overall methodological process.

In relation to how the data was obtained, this was done through the Internet, which enables field experiments to be taken easily (Spann and Tellis, 2006). Likewise Web-based choice experiments are visually appealing and an easy-to-use format that result in a high level of respondent's involvement (Verma et al., 2008). Due to these advantages for undertaking online research and based on previous research regarding how to utilise data acquisition techniques, in order to trace user online behaviour

Figure 43. Illustration of the methodological process

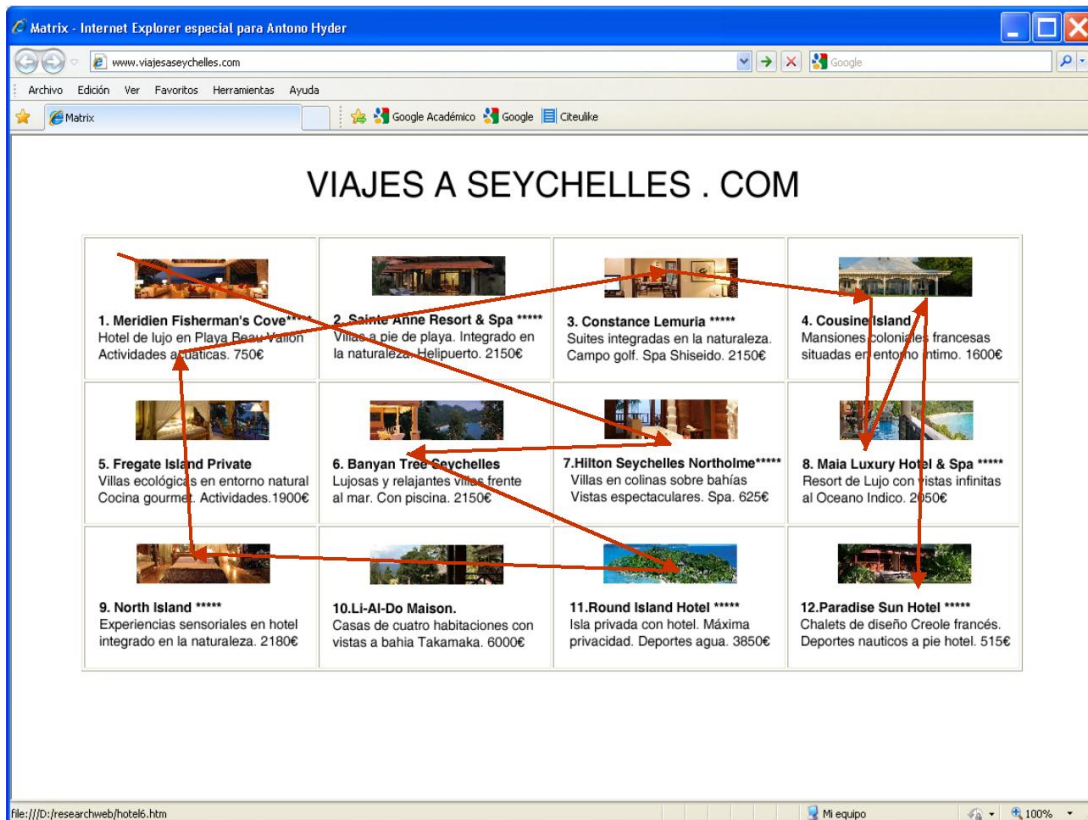


Source: Developed for this research

(Bucklin and Sismeiro, 2003; Lohse and Johnson, 1996; Senecal et al., 2005) we developed a Web site, as well as its underlying technology, capable of remotely recording highly-precise user online consumer navigation behaviour. As far as we know, whilst computer process tracing methods using EIP data and clickstream data for the tracing of online within-Web page and within-Web sites of consumers site have been previously utilised separately, in this research, for the first time, we combine these two methods together. Accordingly, a *data acquisition Web site* was developed for this research so that it could acquire and record online *within-page* and *within-site* behaviour. This experimental Web site resembled an online travel agency selling twelve holiday packages. Our respondents were subscribed to a well-known shopping directory and were directed to the experimental Web site through an email invitation. Subsequently they had to navigate on the Web site until they chose one of the twelve holiday packages.

When respondents were presented with the task, first they had to complete one of two online surveys. Secondly, they had to undertake the choice navigation task. Within-page behaviour was obtained with EIPs tracing respondent behaviour on the site's Web product menu that comprised abbreviated descriptions of twelve travel packages and a picture of the travel destination fitted into twelve different cells resembling an online choice set. These twelve cells were linked to twelve Web pages containing detailed product descriptions. Accordingly when users clicked on a cell they were presented with the corresponding Web page. This process was used to trace within-site behaviour. Comparisons made amongst the twelve cells, that is, within-page comparisons, were traced with elementary information processes as utilised in *mouselab* experiments (Lohse and Johnson, 1999). Figure 44 illustrates a sequence of within-page navigation made by a respondent across a group of twelve

Figure 44. Tracing within-page behaviour on the experimental travel agency



Source: Developed for this research

cells. This process served to assess *within-page comparisons* which may ultimately result in a choice. It may be observed how all twelve cells have been viewed at least

once and three cells been seen twice. Comparative behaviour amongst the twelve product pages which were loaded when any one of the cells was clicked, or *within-site comparisons*, was traced with clickstream data (Bucklin and Sismeiro, 2003). Overall, the use of both EIPs and clickstreams allowed tracing with precision the integral respondent navigation behaviour on the Web site until they reached to the holiday of their choice. Once the holiday was selected, respondents were presented with part two of the online survey. Once completed, the task reached to the end.

In the following sections we shall describe the methodology, including the data collection process, the instruments utilised, the research pre-test and test phases, and finally we shall detail how the sample data was prepared for analysis, issue that shall be dealt with in chapter 5. We shall also describe the data collection process, the instruments used, and provide an insight into the coding and administration of data. Figure 45 provides an illustration of the research method and design.

5.3.2. Data collection process

The process of data collection and the correct quantification of variables subject to analysis are two fundamental stages in any research as they determine, to a great extent the obtained results (Guinaliu, 2005). Researchers such as Luque (1999) and Lyons, Cude, Lawrence and Gutter (2005) provided guidelines regarding how to conduct online surveys. In this research we utilised two types of instruments: email surveys and a Web based computer process tracing tool which we will refer to as *data acquisition Web site* during the rest of this thesis.

Emails surveys are a habitual tool utilised when conducting Internet marketing research (Bagozzi and Dholakia, 2006; Steenkamp and Geyskens, 2006). Email surveys have the same capability of collecting data as traditional surveys, and also present numerous advantages. They allow fast speed of data transmission and faster response times. As the data has already been collected, they do not have to be entered again into the computer. Likewise, email surveys facilitate coding of response data.

Figure 45. Overview of research method and design

Sequence followed						
1. Development stage		2. Test stage		3. Survey launch and data collection		
Design stage	Test stage 1	Test stage 2	Final consideration of observations			
1. Survey <ul style="list-style-type: none"> • Propose items • Translation into Spanish • Wording auditing by 8 auditors • Word validation • Programmed into Dreamweaver • Upload to Internet server in restricted URL • Navigation experiment 	1. Test survey works correctly	Test integral data acquisition procedure with 8 auditors	Researcher and programmer refined observations made by the auditors and concluded entire data collection systems process	Launch of data collection procedure	End of data collection procedure	Retrieval of information, integration and export to spread sheet for refinement of data and commence of data analysis
2. Data acquisition Web site <ul style="list-style-type: none"> • Selection and design of graphical content • Code programming • Upload to Internet server in non-public URL address 	2. Test data acquisition programme works correctly					
3. Integration	3. Test sequence works correctly when merged and data is correctly exportable					
4. Email invitation <ul style="list-style-type: none"> • Design of email • Prepare email database (with subscribers to citylogo.com newsletter) • Integrate into emailing software 	4. Test emailing procedure works					
5. Data correctly received and stores	5. Test data is received correctly					

Source: Developed for this research

Both these issues can be time and resource consuming. Whilst they basically have the same wide reach as traditional mediums, they can also access harder to reach populations. Email surveys are an inexpensive process with low marginal costs. This method also permits sending reminders with ease therefore researchers have a second chance for obtaining replies (Luque, 1999; Lyons et al., 2005). Respondents

can also choose when to complete surveys which is helpful when managing their time for replying to them (Gurrea, 2006).

According to Lyons et al. (2005), a significant amount of time must be invested before an online study is launched. Also a substantial infrastructure must be put in place. Accordingly, before opting to conduct an online survey, researchers should consider the objective of the study, the available resources and the target population of respondents. Researchers should think about the necessary time to reply to the survey as response rates are higher if they are kept short. Volpe, Kotel and Chen (2002) suggested limiting time to 15 minutes. Disclosure of personal information of the researcher, email address and telephone number can increase the quantity of information respondents reveal about themselves. Guarantee of anonymity of respondents also increases response rate (Lyons et al., 2005).

The survey can contain links, drop down menus and graphics to help respondents in their replies. The design of the survey should allow vertical scrolling so that respondents can see its length before completion. Researchers should count on someone who has the skill to programme the survey onto the Web and pre-test the survey before it is launched to ensure it is working properly and that the responses entered are being adequately collected and stored (Lyons et al., 2005). To minimise variations in presentation it is suggested to adapt the survey so that it does not exceed the 'lowest common denominator' of computer technology of the target population being surveyed, taking into account issues such as browser versions and monitor size (Wharton, Hampl, Hall and Winham, 2003).

5.3.2.1. Survey content. When undertaking online surveys it is habitual to collect data from respondents at the end of a task (Lyons et al., 2005). Whilst researchers can utilise ready-made software such as *surveymonkey.com*, we found that these types of software cannot be integrated into navigation tasks as they are not capable of tracking the identity of respondents over multiple stages. Accordingly, we were obliged to develop our own survey software which could cope with this limitation and utilised the survey features offered by Web development software *Dreamweaver*. Figure 46 illustrates how the part two of the survey was being built

with this software. The survey would have to be connected to a database that could store the respondents' data.

Figure 46. Survey part 2 of 2

The screenshot shows a web survey form titled 'Encuesta Segunda Parte' in the 'Design' view of Macromedia Dreamweaver MX 2004. The form contains 20 numbered items (36-60) with Likert scales (1-7) and radio buttons for Yes/No. The items are grouped into sections: 'Si tuviera que hacer la compra del viaje...', 'Mientras navegaba por la web me sentía...', and 'Recuerda haber visto...'. The interface shows the 'Design' view and the 'Properties' panel at the bottom.

36- Mi curiosidad por el contenido de la web me hacía seguir buscando	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
37- La experiencia ha satisfecho mi curiosidad	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
38- El contenido de la web provocaba mi curiosidad	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
39- La información en la web está lo suficientemente actualizada para mi propósito	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
Si tuviera que hacer la compra del viaje ...	
Totalmente Desacuerdo <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 Totalmente de Acuerdo	
40- ...tendría la intención de hacerlo en esta web	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
41- ...lo haría en esta web	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
42- ... es posible que cambiara a otra web	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
43- ... es probable que cambiara a otra web	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
44- ... seguro que cambiaria a otra web	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
45- Si en un futuro tuviera que comprar este tipo de viajes regresaría a esta web	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
46- Recomendaría esta web a otros usuarios	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
47- Recomendaría esta Web a otra persona que quisiera que hacer el mismo tipo de compra	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
48- Deseo volver a comprar en esta web	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
49- ¿ Recuerda haber visto el nombre de la web ?	<input type="radio"/> SI <input type="radio"/> NO
50- En caso afirmativo, por favor escriba el nombre	<input type="text" value="escribe aquí el nombre de la web"/>
51- ¿ Recuerda haber visto la dirección de la web ?	<input type="radio"/> SI <input type="radio"/> NO
52- En caso afirmativo, por favor escriba la dirección:	<input type="text" value="escribe aquí la dirección de la web"/>
Mientras navegaba por la web me sentía ...	
Totalmente Desacuerdo <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 Totalmente de Acuerdo	
53- ...entusiasnado	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
54- ...enérgico	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
55- ... contento	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
56- ... satisfecho	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
57- ... audaz	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
58- ... harto	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
59- ... aburrido	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7
60- ... dormido	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7

Source: developed for this research

In this research we utilised an online survey that was administered to respondents in two parts. Between these two parts it was a requirement that respondents completed an online navigation task on the data acquisition Web site which enabled us to trace and store their online comparative behaviour. The following section describes how process tracing methods can be used in order to trace online consumer behaviour.

5.3.3. Process tracing methods

Process tracing methods are used for examining how consumers search for information, which can subsequently lead to making choices. As internal cognitive processes are not directly observable, researchers must infer underlying cognitive strategies from the data being acquired with the process tracing method (Lohse and

Johnson, 1996). Table 39 describes four widely accepted process tracing methodologies, as well as a fifth combined method recently proposed by Reisen (2008).

Table 39. Process tracing methods

TECHNIQUE	DESCRIPTION	RESEARCHERS
1. Retrospective verbal protocols	Participants are asked to say whatever comes to their minds whilst working on a task	Ericsson and Simon (1984)
2. Information boards	Participants are asked to collect relevant information from a card or board	Payne, (1976); Payne, Bettman and Johnson (1993)
3. Computerised process tracing	Participants acquire information about choice alternatives either by revealing cell content on a computer screen with tracking device. Devices include <i>mouselab</i> and eye tracking	Lohse and Johnson (1996); Russo and Leclerc (1994); Russo and Rosen (1975)
4. Active information search, AIS	Aimed at discovering information that is requested by the decision maker	Huber, Wider and Huber (1997)
5. InterActive process tracing	Combination of retrospective verbal protocol, CPT and AIS	Reisen (2008)

Source: Developed for this research based on Reisen et al. (2008)

The first of the process tracing methods are *retrospective verbal protocols* (Ericsson and Simon, 1984), where respondents are asked to ‘think aloud’, that is, to tell the researcher what comes or came to their minds when undertaking a task. Information is therefore collected after task completion. In the second method, information boards (Payne, 1976) respondents are presented with information on a board or in an envelope containing a card with one piece of information. Respondents can consult or *acquire* one piece of information at a time. This information is subsequently utilised by respondents to make choice decisions, and the researcher can measure how many pieces of information were acquired.

The third method is computerised process tracing (CPT) (Lohse and Johnson, 1996). This is the computerised version of information boards and is used to observe information acquisition behaviour in computer settings. The most well-known CPT tools are *mouselab* and laser-based tracking systems. In a *mouselab* study (Johnson et al., 1989), respondents are presented with a choice set, and can acquire information and *make choices* based on different alternatives available by moving a mouse pointer within in a computer interface with cells that represent the different alternatives (Lohse and Johnson, 1996). Each cell or alternative contains different product attributes. *Mouselab* permits researchers to record the behaviour of

respondents whilst they are acquiring information, that is, whilst they are undertaking a task where they can compare the different options available in a choice set. This is the precise nature of making *comparisons*, which is, comparing different options presented to them within a page such as a computer interface or a Web page (Kennedy et al., 1998). In mouselab-based experiments, just one piece of information is revealed at a time, that is, it is impossible to open two cells simultaneously. Likewise mouselab cannot acquire user behaviour made out of the out of the choice set (Lohse and Johnson, 1999). With this CPT, researchers can collect respondent behavioural data such as the amount of cells viewed, the order in which they were seen, the time spent looking at each one, and the final option selected, which means that respondents have made a choice decision and therefore the task is completed. Laser-based eye tracking devices, such as eyeglaze and tobii, are similar to mouselab as they also record information which is presented on a computer screen and produce similar data. In the last decade eye-tracking technologies have had rapid growth in Europe, the United States, Asia and Australia for the assessment of the effectiveness of visual marketing efforts (Wedel and Pieters, 2008). Whilst eye tracking is capable of resembling a natural situation such as simple reading, eye tracking equipment are expensive, can only be used on one respondent at a time, and do not permit to remotely acquire respondent behaviour through the Internet. For this to be possible, each respondent would have to have an eye tracking device. A further discussion on eye tracking and its use in marketing research can be followed in Pieters and Wedel (2004) and Pieters, Wedel and Zhang (2007).

The fourth method, active information search, is aimed at obtaining the information that is requested by a decision maker. In an AIS study, decision tasks have as little structure as possible. Respondents receive a very brief description of a decision situation and need to ask the researcher for more information. In these types of experiments, participants can build up a cognitive image of a task that is hardly affected by the setup of the experiment. Finally, Reisen (2008) proposed a fifth tool called InterActive process tool, *IAPT*, which is a combination of 3 tracing tools: active information search, mouselab, and retrospective verbal protocols. As occurs with AIS, first participants select the attributes they consider important, second they

make a choice experiment with either mouselab or eye tracking, and finally they are interviewed regarding their decision strategies.

Having reviewed these five process tracing methods, as it was a requirement to remotely acquire online navigation behaviour within a Web site context that is a fundamental part of our research, we found it natural to utilise a CPT tool. In order to achieve the objectives of our research, we therefore designed a Web-based CPT, called it *data acquisition Web site* and connected it with a two-part online survey. The next section is dedicated to this issue.

5.3.3.1. A data acquisition Web site based on *mouselab*

In order to answer our third research issue, it was a requirement to acquire user comparative behaviour both within one unique Web page and across different Web pages comprised within a Web site that permitted respondents to make comparisons of commercial products or services. Whilst mouselab (Johnson et al., 1989) was originally developed to trace behaviour within one unique page, it is not capable of acquiring behaviour within a Web site containing different pages. As one of the objectives of our research is to measure online comparative behaviour, both within-page, as happens in the offline world when a consumer is faced with a an assortment or choice set (Hoch et al.,1999; Tversky, 1969), and within-site, as is habitual in e-commerce Web sites such as travel agencies (Bucklin and Sismeiro, 2003; Senecal, 2005), in order to overcome the limitation of mouselab, we developed technology capable of tracing both kinds of online consumer behaviour which was then integrated into the new data acquisition Web site.

Accordingly, based on *within-page* EIP data acquisition research (Bettman et al., 1990; Johnson et al., 1989; Lohse and Johnson, 1996) and *within-site* clickstream research utilised previously (Bucklin and Sismeiro, 2003; Senecal et al., 2005) we developed the first data acquisition Web site capable of remotely tracing and recording within-Web page and within-Web site consumer behaviour. This system allowed us to trace the path a consumer takes both within the Web site and also within the Web site's main interface page containing a product catalogue with twelve different holiday packages which we will refer to as *web product menu* during the

rest of this thesis. The site was programmed so that differently designed choice sets containing holiday packages, such as matrices or lists, could be presented. As previously described EIPs can be used to acquire the overall navigation of users within a *Web page* (Lohse and Johnson, 1996). Likewise, clickstreams can be used for acquiring data concerning the internal usage of a specific Web site (Bucklin and Sismeiro, 2003) and for the understanding and prediction of consumer choice behaviour (Chorus and Timmermans, 2008). Habitual clickstream variables utilised are the *number of page views* and *unique page views*, *session time* and *click ratios*. However, a limitation clickstreams is that they cannot be not utilised for the tracing and storing online consumer behaviour within one unique page. However, EIPs have been specifically developed for this purpose Due to the newness of the data acquisition Web site developed for this research the following section will describe its underlying technology.

5.3.3.1.1. Technical design of the data acquisition Web site. The data acquisition Web site was designed and programmed so that it could trace and record online navigation behaviour both within-page and within-site (Bucklin and Sismeiro, 2003; Johnson et al., 1989; Lohse and Johnson, 1996; Senecal et al., 2005). The original mouselab concept was modified by registering events in real time that is, recording the online behaviour in a tailored database as the navigation of the respondents occurred. The programming languages used for the development were AJAX, Dreamweaver and JavaScript. Acquired data was recorded in a MYSQL database and was subsequently exported to a Microsoft Access version 2000 database, as this version allows that formulas and results can be integrated into one unique database, which therefore permits an easier treatment of data. Calculations were made with SQL sentences and with functions programmed with Visual Basic for Applications (VBA). Process data calls were asynchronous and all data were recorded sequentially. All EIP and clickstream data were associated to a time stamp (Lohse and Johnson, 1996). The traced data were recorded following the natural sequence of the navigation actions undertaken by respondents. As raw EIP and clickstream data were recorded sequentially into a computer log file, for future research it is possible to retrieve the information and for instance, calculate new variables based on the raw

data. This can be done by using the calculation functions provided on Microsoft Access.

We also took great care in ensuring that both the surveys and data acquisition Web site would not exceed the ‘lowest common denominator’ of computer technology of the target population being surveyed (Wharton et al., 2003). Following Hong et al. (2005) and due to the fact that the majority of users in Spain have computer screens of at least 12” (source: Citylogo.com), we ensured that the content of the data acquisition Web site and surveys presented to respondents could be perfectly read in computer screens of at least this size. Tests were made so that the Web site operated correctly in the most well-known internet browsers: Firefox and Google Chrome, Internet Explorer. In order to host the survey and data acquisition Web site, it was necessary to use an adequate server for the technical requirements of the overall technical design (Lyons et al., 2005). We selected 1and1.es as it offered a SQL database which could keep large strings of sequential raw data and survey replies. It also presented output in a manner that could be subsequently exported to Microsoft access via a proxy.

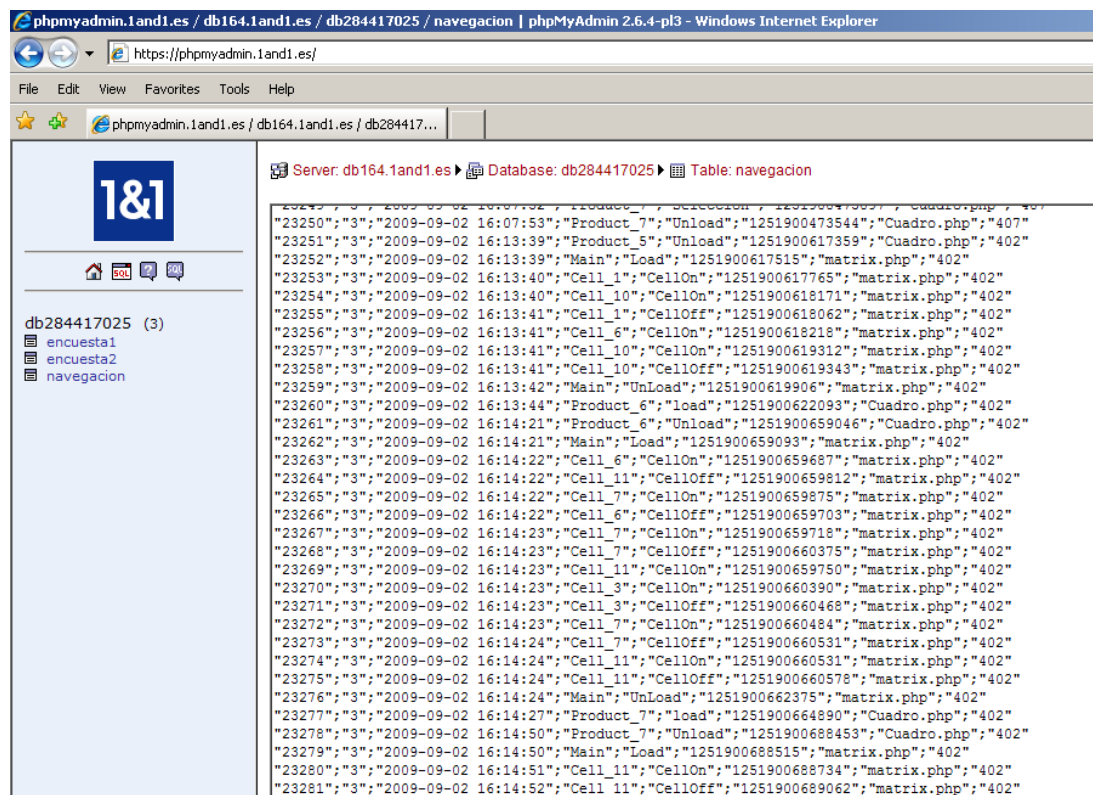
The next step of the research design was to code the survey and comparative behaviour variables, and to accommodate them within the data acquisition Web site.

5.3.3.1.2. Coding and administration of the process tracing data. In order to obtain the data corresponding to the twelve static and dynamic EIP and clickstream variables utilised to capture within-page and within-site navigation behaviour, the Web site generated a stream of raw data that contained all the actions undertaken by respondents whilst undertaking the navigation task, associated with a time stamp. Figure 47 provides an illustration of the raw data acquired prior to being exported as a large text file to the Microsoft access database. Once imported, a further programme converted the raw data into the twelve variables utilised for analysis of respondents’ behaviour.

5.3.3.1.3. Coding and administration of the online survey data

Once the design of the two-part survey was completed, its variables were assigned a variable label and item number (e.g. the three items that compose variable transformation of time (TT), were assigned to three labels: TT1, TT2 and TT3). Likewise, all fifty five items in the surveys were assigned a sequence number (e.g. 7, 8 and 9 for TT). The fifty five items were then sequentially programmed into Dreamweaver. We utilised double coding in order to reduce subsequent errors that could arise during the rest of the data treatment process. As the survey data was collected in two stages, each stage was obtained with a survey and stored in two different data files, which were merged into the database at the end of the navigation task. The database was programmed so that it would it would generate a formatted report which was then exported into a spread sheet for revision, cleaning and exported into Microsoft excel. Finally it would be re-exported to EQS and SPSS in order to commence statistical analysis.

Figure 47. Sequence of acquisition of EIP data



The screenshot shows a web browser window displaying a database table named 'navegacion'. The browser address bar shows 'https://phpmyadmin.1and1.es/'. The table data is as follows:

ID	Date	Time	Product	Action	File
"23250"	"3"	"2009-09-02 16:07:53"	"Product_7"	"Unload"	"1251900473544";"Cuadro.php";"407"
"23251"	"3"	"2009-09-02 16:13:39"	"Product_5"	"Unload"	"1251900617359";"Cuadro.php";"402"
"23252"	"3"	"2009-09-02 16:13:39"	"Main"	"Load"	"1251900617515";"matrix.php";"402"
"23253"	"3"	"2009-09-02 16:13:40"	"Cell_1"	"CellOn"	"1251900617765";"matrix.php";"402"
"23254"	"3"	"2009-09-02 16:13:40"	"Cell_10"	"CellOn"	"1251900618171";"matrix.php";"402"
"23255"	"3"	"2009-09-02 16:13:41"	"Cell_1"	"CellOff"	"1251900618062";"matrix.php";"402"
"23256"	"3"	"2009-09-02 16:13:41"	"Cell_6"	"CellOn"	"1251900618218";"matrix.php";"402"
"23257"	"3"	"2009-09-02 16:13:41"	"Cell_10"	"CellOn"	"1251900619312";"matrix.php";"402"
"23258"	"3"	"2009-09-02 16:13:41"	"Cell_10"	"CellOff"	"1251900619343";"matrix.php";"402"
"23259"	"3"	"2009-09-02 16:13:42"	"Main"	"UnLoad"	"1251900619906";"matrix.php";"402"
"23260"	"3"	"2009-09-02 16:13:44"	"Product_6"	"load"	"1251900622093";"Cuadro.php";"402"
"23261"	"3"	"2009-09-02 16:14:21"	"Product_6"	"Unload"	"1251900659046";"Cuadro.php";"402"
"23262"	"3"	"2009-09-02 16:14:21"	"Main"	"Load"	"1251900659093";"matrix.php";"402"
"23263"	"3"	"2009-09-02 16:14:22"	"Cell_6"	"CellOn"	"1251900659687";"matrix.php";"402"
"23264"	"3"	"2009-09-02 16:14:22"	"Cell_11"	"CellOff"	"1251900659812";"matrix.php";"402"
"23265"	"3"	"2009-09-02 16:14:22"	"Cell_7"	"CellOn"	"1251900659875";"matrix.php";"402"
"23266"	"3"	"2009-09-02 16:14:22"	"Cell_6"	"CellOff"	"1251900659703";"matrix.php";"402"
"23267"	"3"	"2009-09-02 16:14:23"	"Cell_7"	"CellOn"	"1251900659718";"matrix.php";"402"
"23268"	"3"	"2009-09-02 16:14:23"	"Cell_7"	"CellOff"	"1251900660375";"matrix.php";"402"
"23269"	"3"	"2009-09-02 16:14:23"	"Cell_11"	"CellOn"	"1251900659750";"matrix.php";"402"
"23270"	"3"	"2009-09-02 16:14:23"	"Cell_3"	"CellOn"	"1251900660390";"matrix.php";"402"
"23271"	"3"	"2009-09-02 16:14:23"	"Cell_3"	"CellOff"	"1251900660468";"matrix.php";"402"
"23272"	"3"	"2009-09-02 16:14:23"	"Cell_7"	"CellOn"	"1251900660484";"matrix.php";"402"
"23273"	"3"	"2009-09-02 16:14:24"	"Cell_7"	"CellOff"	"1251900660531";"matrix.php";"402"
"23274"	"3"	"2009-09-02 16:14:24"	"Cell_11"	"CellOn"	"1251900660531";"matrix.php";"402"
"23275"	"3"	"2009-09-02 16:14:24"	"Cell_11"	"CellOff"	"1251900660578";"matrix.php";"402"
"23276"	"3"	"2009-09-02 16:14:24"	"Main"	"UnLoad"	"1251900662375";"matrix.php";"402"
"23277"	"3"	"2009-09-02 16:14:27"	"Product_7"	"load"	"1251900664890";"Cuadro.php";"402"
"23278"	"3"	"2009-09-02 16:14:50"	"Product_7"	"Unload"	"1251900688453";"Cuadro.php";"402"
"23279"	"3"	"2009-09-02 16:14:50"	"Main"	"Load"	"1251900688515";"matrix.php";"402"
"23280"	"3"	"2009-09-02 16:14:51"	"Cell_11"	"CellOn"	"1251900688734";"matrix.php";"402"
"23281"	"3"	"2009-09-02 16:14:52"	"Cell_11"	"CellOff"	"1251900689062";"matrix.php";"402"

Source: Developed for this research

Having the described data collection design process, the instruments used, and after providing an insight into the coding and administration of data, we shall now detail the scope of this research.

5.3.4. Scope of research

This research is undertaken within the commercial context of the Internet. We considered it was important to utilise a relevant e-commerce business sector from which adequate data can be obtained. The empirical application shall take place with data from the travel sector for following reasons: first, we have chosen the travel industry, as the majority of e-commerce transactions are made with products and services from this business sector. Sales of holiday packages over the Internet are recognised by e-commerce research as being ideal for sale on e-commerce (Marcussen, 1999). Second, we utilised the recommendation of Lohse and Johnson (1996) who suggested the use of rich stimuli when undertaking research on computer-mediated choice environments. Whilst assessing pictures from different holiday destinations, pictures from the Seychelles Islands appeared to be both beautiful and engaging. Third, holiday packages are non-sensorial products. They are not tangibly examined prior to purchase (Öörni, 2005). Therefore holiday packages seem to be appropriate for this research. Travel packages have been utilised previously by other researchers. Ranaweera et al. (2008) undertook their research with a sample of respondents who were asked to imagine they had to book a vacation hotel in the Caribbean. Similarly, we thought that it would be suitable to present to our respondents with a Web site simulating an online travel agency selling holidays in the Seychelles islands.

5.3.5. Selection of the data acquisition Web site URL and brand name

According to the associative strength theory of memory (Ellis and Hunt, 1983), effectiveness of recall depends on how strongly a reminder word or picture is associated with the information to be retrieved. Likewise Web sites should utilise salient brands and product-related names, pictures, and media content that is in general suggestive of the product benefits, as this increases web site recognition and the likelihood of a repeat visit (Mu and Galleta, 2007).

As it was our intention to simulate a Web-based travel agency which permitted recall of the brand and URL address of the site, we first needed to secure a suitable URL address. We found that the address www.viajesaseychelles.com was available for registry. Accordingly, we considered calling the Web site ‘Viajes A Seychelles’ and utilised the URL with the same name, viajesaseychelles.com, as its Internet URL address. Once we had secured this URL address, we were then in the position to garnishing the data acquisition Web site so that it visually resembled a travel agency offering a choice of twelve holiday packages to well-known destinations in the Seychelles islands.

5.3.6. Design of an experimental online travel agency

Based on the previous deliberations, we garnished the data acquisition Web site so that it visually resembled a travel agency selling twelve holiday packages in the Seychelles Islands. Holiday packages to Seychelles were chosen as the context of the experiment for the following three reasons:

1. Holiday packages to destinations with island and beaches are habitually sold in Spanish travel agencies.
2. The Seychelles Islands are not as well known in Spain as other travel destinations and could provide a sense of novelty and perhaps curiosity to respondents.
3. The pictures of the Seychelles islands are beautiful and exotic and could contribute to creating an engaging experience to respondents.

The simulated travel agency included a range of twelve holidays with a different hotel assigned to each one that offered a complete range of services including exotic accommodation facilities, restaurants, and water and sports facilities. Likewise each hotel integrated in a natural an exotic environment. These twelve hotels were obtained from the official Web site of the Seychelles: www.seychelles.travel.

The data acquisition Web site was developed on the theoretical underpinnings described in chapters 2 and 3, where we described bodies of research from both consumer and technology viewpoints regarding: 1. consumer behaviour within

technology; 2. implications of Web site design on online consumer behaviour; 3. how Web sites and consumers can both acquire information from each other; 4. engagement and its potential consequences; and finally 5. online consumer choice behaviour. These five sections have therefore served as the theoretical basis for the development of the data acquisition Web site. Whilst the URL address of the Web site was unknown to the respondents and could therefore incur into issues of *trust*, we purposely did not take this aspect into account as it is beyond the objectives of this research.

5.3.6.1. Theoretical underpinnings used for the design of a data acquisition Web site

Whilst planning how the data acquisition Web site and online travel agency would be visually presented to respondents, we utilised research reviewed in chapter 3. Overall we wanted to resemble a habitual online travel agency design where consumers are first presented with a Web product menu with different options. Based on previous research, we designed the Web site so that it was interactive (e.g. Goode and Harris, 2007; Li et al., 2001) as when cells were clicked, it lead respondents to Web product pages and vice-versa. Respondents could interact with the Web site interface (e.g. Stibel, 2005) and with its content (e.g. Sicilia et al., 2005). Likewise the Web site was designed so that it was very easy operate and therefore made navigation very simple (e.g. Flavián et al., 2008; Rosen and Purinton, 2004) and ease to control (e.g. Teo et al., 2003), therefore creating a usable experience (e.g. Lee and Kozar, 2008).

The content was both utilitarian and hedonic (e.g. Bigné et al., 2008; Childers et al., 2001). A browsing cost and effort was involved, as well as an interactive effort (e.g. Lohse and Johnson, Payne et al., 1990; Petty and Cacioppo 1980). The site could be used to obtain quality information (e.g. Virtsonis and Harridge-March, 2008), the content contained the most up-to-date product information including pricing available at that time of launching the Web site (e.g. Johnson et al., 2004; Sádaba, 2000), and was designed to minimise overload (e.g. Lurie, 2004; Park and Lee, 2008). User also could also have a goal directed and experiential behaviour (e.g. Hoffman and Novak, 1996). All interaction could be measured (e.g. Kennedy et al.,

1998). We acquired all data with clickstreams (e.g. Bucklin and Sismeiro, 2003; Senecal et al., 2005) and EIPs (Johnson and Payne, 1985; Lohse and Johnson, 1996) which could be measured and subsequently analysed (e.g. van den Poel and Buckinx, 2005).

It was a requirement that the Web site would be designed in such a way that it permitted undertaking choices within an online Web site. Accordingly, we designed the Web product menu as a choice set. Following the bodies of research previously described, the choice set was designed so that users could make evaluations (e.g. Lohse and Johnson, 1996; Tversky and Kahneman, 1986). The content of the choice set was purposely designed (Johnson et al., 1989), the size of the assortment was limited to twelve options (e.g. Broniarczyk et al., 1998), it permitted that users could establish their own sub sets (e.g. Häubl and Trifts, 2000), it was varied (e.g. Chernev, 2003), permitted effectuating pairwise combinations (e.g. Hoch et al., 1999), contained well balanced attributes (e.g. Degeratu et al., 2000), respondents could focus whilst making their decision (e.g. Hamilton et al., 2007), and the overall experiment was timed (e.g. Marmorstein, 1992). Following cognitive fit theory (Vessey, 1991), the Web product menu was structured following a matrix format (e.g. Hong et al., 2005), permitted competition for attention (Janiszewski, 1988) and undertaking comparisons (e.g. Ruiz and Sanz, 2009). The final holiday package choice set was supervised by a senior regional director of a large travel agency chain in Spain and by the director of the Seychelles Tourism Board in Europe.

5.3.6.2. Information format

The next stage was to decide on the information format of the Web site. Following the suggestions of Rosen and Purinton (2004) we would opt for an interface design that would be as simple as possible. Whilst authors such as Senecal et al. (2005) utilised more complex interfaces such as newspapers containing hyperlinks distributed within the Web content, this was not necessary in our research. Accordingly, we revised the habitual interface structures of online travel agencies which currently operate such as lastminute.com and viajesiberia.es where different options are presented on a Web product menu which when clicked would lead to a more detailed product description of that particular option.

Whilst information structure has an impact on online consumer behaviour (e.g. Goode and Harris, 2007) we evaluated three habitual information structures utilised on Web sites: list format, matrix format and Latin square (Flavián et al., 2009; Hoch et al., 2009; Hong et al., 2005) as previously discussed. Hong et al. (2005) utilised two different information formats, matrix and list formats, containing the same information (e.g. brand names, product images, prices, etc.) in order to undertake their research. Due to popularity of the matrix format which can be found in Web site and in technological devices such as mobile phones, we chose to organise our information in this well-utilised format. Hoch et al. (1999) developed an experiment which presented assorted information on a computer screen of multi-attribute products, utilising different algorithms to develop the assortments. The aim was to understand how people perceive and interpret objective changes in the information structure of assortment. Accordingly, the matrix information structure was suitable as it has been utilised previously in computer choice set scenarios (Flavián et al., 2009; Hoch et al., 1999; Hong et al., 2005) and it also resembles previous choice experiment designs utilising mouselab (Lohse and Johnson, 1986). The information format we have selected also visually resembled product assortment settings which can be found in offline retail settings (Hoch et al., 1999). As we purposely wished make the travel agency as simple as possible (Flavián et al., 2008; Rosen and Purinton, 2004), a simple design would be a Web site with just one Web product menu with twelve options or cells, that when clicked upon, would lead directly to the corresponding product page. This would allow us to maintain self-explanatory buttons (Flavián et al., 2008) whilst maintaining an interesting content (Bruner and Kumar, 2000).

5.3.6.3. Travel-related content of the Web site

In order to provide our data acquisition Web site with content (Lohse and Johnson, 1996) we accessed the official Web site of the Seychelles Islands Tourism Board, <http://www.seychelles.travel>, selected twelve holiday combinations suitable for the purposes of our research, analysed the content (Bigné, 1999), and extracted relevant descriptions of the twelve holidays which would be used in our online travel agency. As one of the objectives of this dissertation is to measure brand and URL recall, the Web site was designed so that it only sold one product range, specifically,

holiday packages for the twelve different locations on the islands. These twelve locations were three hotels, three holiday resorts, four villas, one mansion and one island with a hotel.

The next stage was to design the Web product menu and product content.

5.3.6.4. Web product menu content and product content

For the design of the travel agency we would have to develop two types of content and designs. The first one was the design of the Web product menu that contained twelve cells and the second refers to the product contained that was made with twelve product pages. The texts were designed containing key experiential features and real prices, following habitual styles utilised in online travel agencies. The formats amongst cells and amongst product pages were kept homogenous across all designs. With regards to the organisation of cells, order was not taken into account (Kennedy et al., 1998) although they were thoughtfully arranged in a visually appealing fashion. Based on research by Meyer and Johnson (1989) and Payne et al. (1990) we organised attributes based on attribute weights. Attribute weights were obtained from a report from The Ministry of Tourism of Seychelles and were rescaled to sum 100 (Johnson and Payne, 1985; Payne et al., 1988). The texts contained within both the cells and the product pages were therefore based on the four principal reasons for visiting the Seychelles islands (Seychelles tourism ‘Vision 21’ development plan for 2001-2010. Seychelles Ministry of tourism, 2002) as illustrated in table 40. In order to ensure the texts would be appealing to respondents, all of these were supervised by the regional sales director of a large travel operator in Spain, specialised in commercialising holiday packages to international exotic island destinations, and by the director of the Seychelles Tourism Board in Europe.

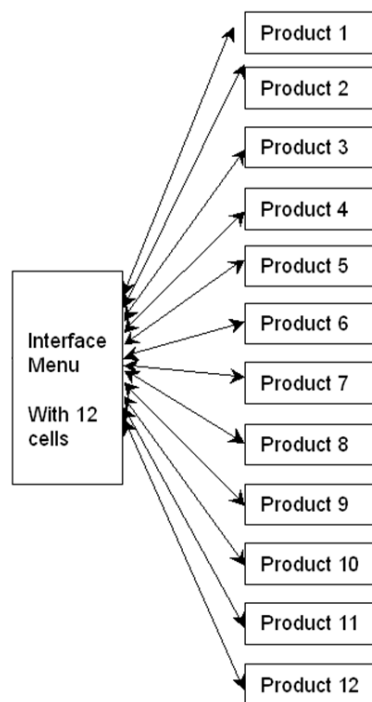
Table 40. Principal reasons for visiting the Seychelles Islands

PRINCIPAL TOURIST REASONS FOR VISITING THE SEYCHELLES ISLANDS	PERCENTAGE WEIGHT OF REACH REASON
To relax in the islands	30%
Natural and exotic environment	30%
Water sports and recreational activities	20%
Price factor	20%
	Total:100%

Source: Adapted from Seychelles tourism ‘Vision 21’ development plan for 2001-2010. Seychelles Ministry of Tourism (2002)

Designs of cells and product were thoughtfully designed in order to ensure a consistent visual transition from the cell content to the product page that would appear when the cell was clicked. Figure 48 illustrates the organization of this process.

Figure 48. Organisation of data acquisition Web site. Cells and products



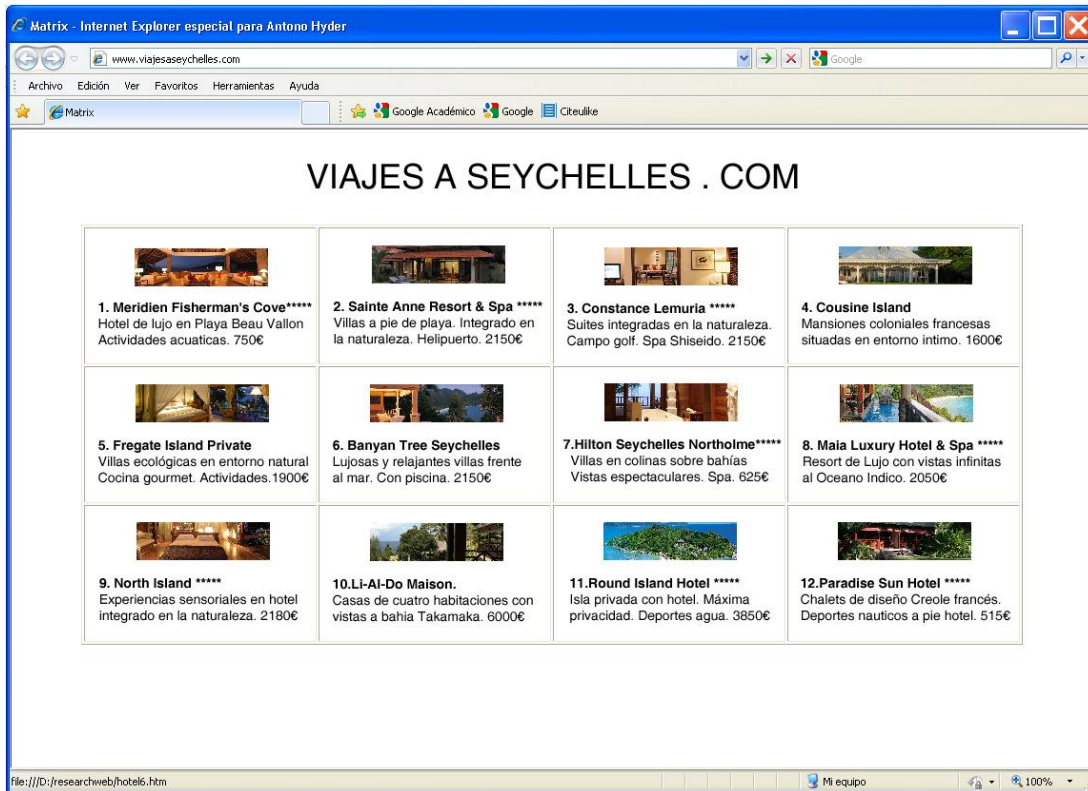
Source: Developed for this research

5.3.6.5. Design of cell content

Each cell contained six attributes that were arranged in a three lined description of the destination. The cells contained a brief description containing the attributes of the product content, in particular: the name of the accommodation in Seychelles, a reference to relaxation, the natural and exotic environment, water-related activities and the price. These four attributes were aligned with the principal reasons for visiting the Seychelles Islands (Seychelles tourism ‘Vision 21’ development plan, for 2001-2010. Seychelles Ministry of Tourism, 2002). Cells included a small picture of the destination and were designed in a fashion trying to make the content attractive and therefore encourage respondents to click on them.

Figure 49 illustrates a representation of how the interface would look if all twelve cells were presented simultaneously. These twelve cells would compete for the attention of the user. Competition of attention will affect the duration of the eye fixation that an object on the screen receives and also the efficiency of information processing (Janiszewski, 1988).

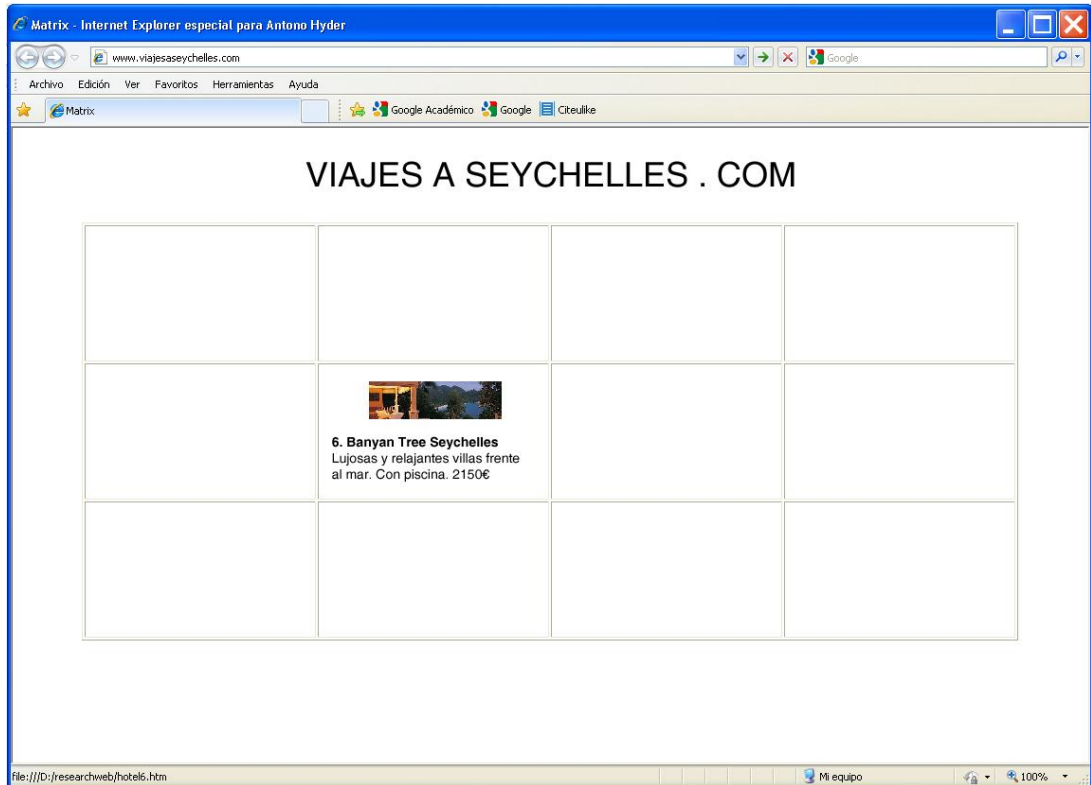
Figure 49. Data acquisition Web site: simulation of *complete* version as would be seen in a habitual commercial setting. 12 cell matrix design



Source: Developed for this research

Whilst figure 50 has illustrated how respondents would see the twelve cells should all of them be presented to them simultaneously, during the navigation process respondents would only be able to see one at a time. A cell could be viewed when the respondent would move the mouse pointer over each cell. This situation resembles CPT mouselab and serves to track the eye movement of respondents. Accordingly, figure 50 illustrates how respondents would see option 6 on the Web product menu, situation which would occur when the mouse pointer was over this cell.

Figure 50. Data acquisition Web site in *mouselab* version as seen by respondents of this research. 12 cell matrix design



Source: Developed for this research

Having described how the Web menu page and cells were designed, in what follows we shall describe how the product Web pages of the online travel agency based on the data acquisition Web site were designed.

5.3.6.6. Product Web pages

In this thesis we shall utilise the term *product Web pages* in order to refer to a Web page that contains a full description of one of the twelve holiday packages presented to the respondents on one full Web page. Figure 51 provides an illustration of one of the twelve product Web pages. As respondents would eventually select one of the twelve products, the button that the respondents would utilise to confirm their choice, marked 'select this holiday' was located at the top of the picture so that it would be always be presented on the screen.

Each of the twelve product Web pages contained a picture of the location of the island along with a detailed description of the location. The description was

purposely written in accordance with the four principal reasons for visiting the Seychelles Islands including relaxation, natural and exotic environment, recreational activities including water sports and price features. The pictures included the first three of these features (Seychelles tourism 'Vision 21' development plan, for 2001-2010. Seychelles Ministry of Tourism, 2002).

Figure 51. Illustration of one of the twelve product Web pages



Source: Developed for this research

Having described how the content of the online travel agency was designed, we shall describe how it was purposely related to the objectives of this research.

5.3.6.7. Overall relationship of the experimental online travel agency with the objectives of this research

Whilst one of the main objectives of this research is to propose a measure of Web site engagement, we purposely ensured that all pictures and text descriptions contained qualities that pertained to all of the Web site engagement dimensions

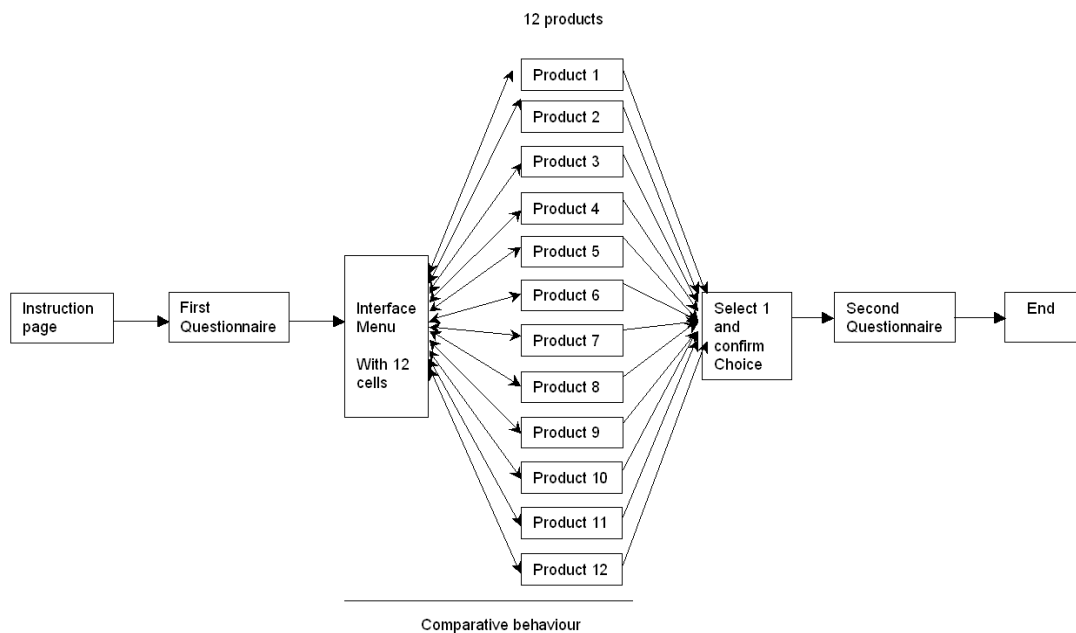
considered in this research. The simple design of the Web site permitted to maintain a situation of high respondent control and low challenge. The cells content were arranged in manner that allowed feedback. The content allowed the development of positive affect, focused attention, curiosity and involvement and transformation of time on behalf of the users. Likewise, all descriptions contained information and overall structure of the Web site contained attributes that could lead serve to measure purchase intention, Web perceived value, online retention, virtual branding, brand recall and URL recall.

The last part of this section describes how the data acquisition was integrated prior to be able to be utilised for pretesting and subsequent data collection.

5.3.6.8. Integration of the data acquisition Web site

Once the surveys and the entire data acquisition Web site was completed, they were then uploaded on the Internet server and were assigned to a temporary restricted access URL so that pretests could be made. Figure 52 illustrates the final organisation of the data acquisition Web site developed for this research.

Figure 52. Organisation of data acquisition Web site



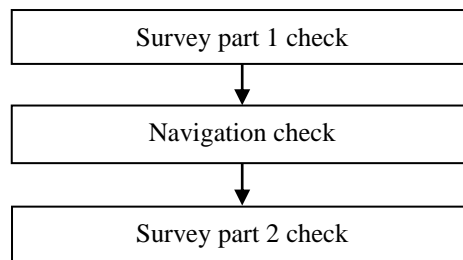
Source: Developed for this research

Having described how the data acquisition Web site was integrated, in what follows we shall describe how tests were conducted in order to ensure it would perfectly suit its purpose when launched to the respondents during the data collection process.

5.3.7. Data collection pre-test

Prior to commencing the data collection, the two-part survey and navigation task instruments integrated into the data acquisition Web site, were subject to a pre-test. The process is illustrated in figure 53.

Figure 53. Data collection pre-test



Source: Developed for this research

Sixteen independent auditors were used to pre-test the overall instrument: eight independent auditors revised the two-part survey and a different group of eight auditors tested the navigation procedure. Each group undertook two rounds of auditing. All sixteen auditors were qualified professionals from the marketing and information systems business fields. We counted on the experience of this team of qualified professionals as it the first time that such a data acquisition Web site has been developed, and it was critical that it worked correctly along the three-stage sequence of data collection. The question wordings should be clear, the online survey should work correctly and the navigation task should be easy to use. Likewise, the three sets of acquired data set should be correctly transmitted and stored with an Internet server.

Regarding the two-part survey, a first round was designed to filter any misunderstandings on behalf on the questions asked in the two sets of questions formulated to the respondents. The first group of auditors checked the clarity of scale wordings adapted from validated instruments previously utilised in other studies. The concerns of the auditors regarding the items format and worded were noted,

questions that were not clear were appropriately changed on both surveys. Some of the items were reverse coded in order to make questions easier to understand in Spanish language. Once the amendments were made, the items were provided once again to first group of auditors for their approval.

A second group of eight auditors supervised the functioning of the data acquisition Web site and concerns regarding the functioning of the site, the legibility of the texts provided, programming glitches and server concerns were corrected. In a second round of refinement, this group of eight auditors completed a full simulation with the survey and navigation task in order to ensure that data obtained from this entire process would be correctly acquired. This second round was used to control the response time and whether the task could be successfully completed in the absence of the researcher. Also fatigue issues were taken into consideration lengthy experiment could cause too much fatigue motivating respondents to leave the experiment (Lyons et al., 2005). Completion time was between 11 and 18 minutes to complete the whole task, and the auditors confirmed that the experiment could be undertaken without difficulty. This pre-test contributed to further improvement of some of the survey items. The navigation experiment was reported to work perfectly and therefore the pre-test stage was completed. We commenced the field work, which is described in the following section, on 24th August 2009. The sixteen auditors did not participate in the survey.

5.3.8. Data collection procedure

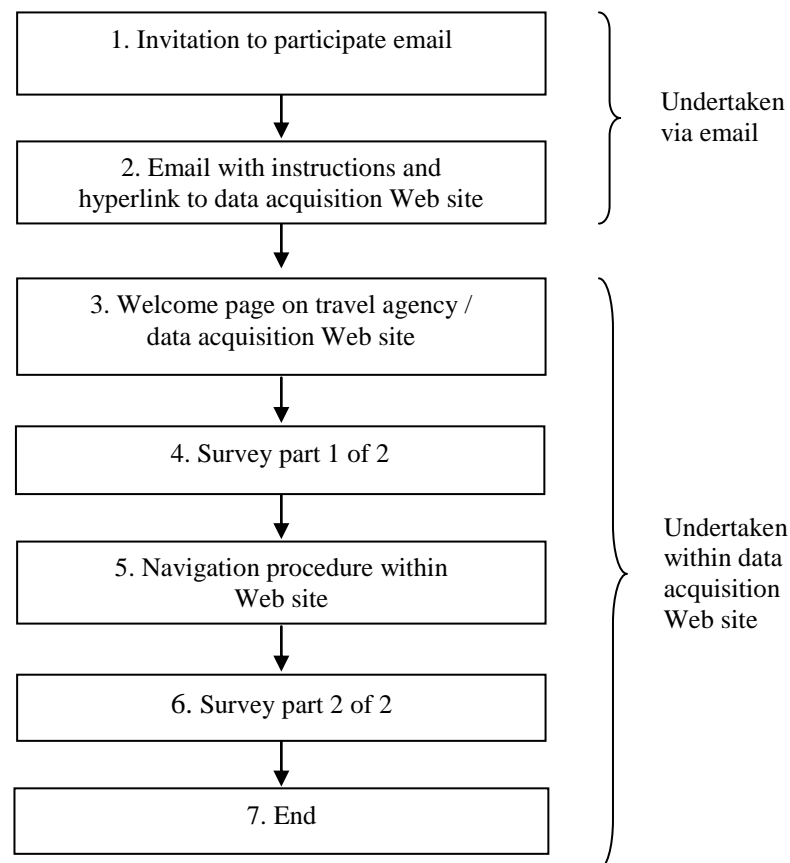
This section describes the seven stages of the field work: invitation to participate, instruction email, welcome to online experimental travel agency / data acquisition Web site, first survey, navigation procedure, second survey and end. These seven stages are illustrated in figure 54 and will be described accordingly. Appendix 2 provides illustrations of the emails utilised and of the welcome page of the Web site.

Stage 1. Invitation to participate was sent

Due to the nature of our data collect method, respondents were invited to participate in the survey via email and it was not applicable to offer an alternative method to respond (Lyons et al., 2005). Accordingly, we sent an invitation to participate email

to 9372 potential respondents that were subscribed to the newsletter of Citylogo.com, a large e-commerce shop directory Web site in Spain. These potential respondents were used to receiving e-commerce related information and were suitable for undertaking an online task simulating a real purchase scenario. The email database was large enough so that that we did not find it necessary to promote to the survey in Web sites as suggested by Lyons et al. (2005). Following the recommendation of Nunnally (1978), a sample size of 300 replies would be adequate. Industry benchmark reports suggested that response rates to subscriber-based email communications vary between 2% and 5%, therefore we expected to receive between 187 and 469 responses (Experian CheetahMail Benchmark Study, 2009).

Figure 54: Seven stages of the data collection procedure



Source: Developed for this research

Following Lyons et al. (2005) guidelines, this first invitation email included a covering letter asking potential respondents to participate in the survey. In this email

the researcher identified himself as a PhD student. An incentive was offered in order to stimulate participation and completion: respondents that completed the tasks would participate in the draw of 5 DVDs kindly provided to us by the director of the Seychelles Tourism Board in Europe, and would also receive a copy of the results of the data analysis should they wish to receive it. Respondents were informed that if they were willing to participate, they would receive a second email with instructions. All emails were sent with 'Management-Ware Mass MailingNews' mailing solution from 24th August until 10th September 2009 (18 days). The overall data collection process was expected to take three weeks.

Stage 2. E-mail with instructions to respondents

775 emails were received confirming their willingness to participate in the study. As we received these confirmation emails respondents were sent a second one with a specially coded link personalised for each respondent, which enabled us to monitor the individual replies from each respondent and send a reminder email to those who did not complete it within seven days. The researcher could access the response data on the database hosted on the Internet server as surveys and tasks were being completed.

Stage 3. Welcome page on online travel agency / data acquisition Web site

Once respondents clicked on their coded link they were presented with the welcome page of the data acquisition Web site resembling the online travel agency. They were asked to carefully read the instructions on how to complete the overall task on an individual basis. These instructions were written as a cover story: the respondent had decided to go to the Seychelles islands for a vacation, and would have to choose the most suitable holiday. Respondents were informed that the web site sold twelve different holiday packages from where to choose from, and that the stated price on each package was final and included all taxes and expenses.

Following the weighting procedure suggested by Payne et al. (1990), and citing the Seychelles Ministry of Tourism as a source, participants were informed of the four principal reasons why tourists visit the Seychelles: 1. To relax in the islands (30%); 2. Natural and exotic environment (30%); 3. Water sports and recreational activities

(20%); 4. Price factor (20%). These four attributes had also been utilised in the design of the cell and product page contents, as described in table 39. Once the task instructions presented to the respondents, they would have to click on a button marked 'START' and were then directed to the first of the two surveys.

In what follows we shall describe the three stage data acquisition sequence. Stage 1 was the first part of the online survey that collected information regarding the respondents' demographic data, use of internet and skills, and enquired their intended purchase involvement. Stage 2 was a Web site navigation task that took place between stages 1 and 3. Stage 3 was the second part of the survey that obtained data regarding engagement experience and consequences highly regarded by managers. There was no time limit for completion of all three stages.

Stage 5. Survey part 1: prior to the navigation task

The first step of the online task was to complete the first part of the online survey where respondents provided their demographic information, their level of Internet usage and skill, as well as their intended level of involvement in the purchase decision for the most suitable holiday. Once this was completed, the response data was transmitted and stored on a first log file on the Web server and respondents were directed to the navigation task.

Stage 6. Navigation task within the Web site

As previously described, the navigation task took place in a mouselab-based Web site designed to acquire respondents' behaviour. Moving the mouse cursor over one of the twelve cells revealed its content, which remained visible until the cursor was moved out of the box, therefore information was made available for only one cell at a time. Figure 50 illustrates how respondents could only see one cell at a time on the Web product menu. According to Lohse and Johnson (1996) the analysis of information using clickstream data is actually more realistic than recording eye movement. For sole purpose of illustrating how a commercial version of the travel Web site would be presented to a consumer, figure 49 illustrates the site with all cell content revealed. Accordingly, as occurs on a habitual travel Web site, respondents could see all content at the same time, although it would not be possible to track their

online behaviour. Whilst a laser-based system would be capable of doing this, it would not be possible to remotely capture consumer behaviour and therefore undertake an online survey.

During the task, participants could open as many cells as many times as they wished. Clicking on a cell opened a new Web product page which contained a screen-wide picture of a destination in the Seychelles Islands, along with detailed information of a hotel as well as additional holiday services offered. Whilst on the Web product pages, participants could either select that holiday package or navigate back to the Web product menu. Figure 51 illustrates one of the twelve Web product pages which appeared after clicking on its corresponding cell. During the navigation task, the Web site generated a stream of data corresponding to the respondents' online behaviour, such as time on each cell or Web product page, or the number of cell views, clicks, page views and their sequence. Once the respondent made a final decision and selected one of the holiday packages for purchase, they clicked on a button marked 'select this holiday', the navigation task was concluded, and the sequence of data was transmitted and stored on a second log file on the Web server.

After completing the shopping task, respondents were directed to the second part of the survey that formulated questions regarding their shopping experience.

Stage 7. Survey part 2: after the navigation task

Once the navigation task was completed, respondents were forwarded to last of the three stages, which was the second part of the online survey designed for acquiring data regarding the engagement experienced by users on the Web site, data regarding potential antecedents and consequences of Web site engagement, and unaided recall of the Web site brand and URL address. This survey was hosted in a URL different to www.viajesaseyelles.com so that respondents at this stage could not see the Web site brand and URL address they were asked to recall. It was necessary that this survey was provided after the navigation task in order to assess respondents' engagement experience as well as managerially relevant consequences such as purchase intention or return intention. Whilst completing the survey, if any reply was left unanswered the respondent would be notified so that it could be corrected. In the

last question of the survey, respondents were offered to participate in a prize draw and receive a copy of the survey results. Accordingly, respondents would have to enter their email address. Once all fields were correctly completed, users clicked on a button marked as 'Survey completed'. The survey information was then transmitted to the Web server database that received the survey information and stored it in a third log file.

7. End

Once the navigation task was completed, the Web server had received and stored three logs files stored on a server SQL database with data corresponding to the two-part survey and the navigation task. The data could then be unloaded the data from the Web server database and imported to Microsoft access database where an especially designed software programme treated the raw data and converted it into the variables which would be subsequently used and merged with the two-part survey data. The data were then imported into an excel spreadsheet where they were exhaustively reviewed. In total 375 surveys were received. The following tasks were undertaken upon these surveys:

- 2 rounds of visual supervision of email addresses.
- The I.P. addresses were checked in order to recognise any duplicity in replies.
- We ensured that there was not more than one entry from a same email address.
- Responses regarding Web site brand and URL unaided recall were coded.
- A visual supervision of navigation data obtained in order to detect any abnormalities.

During this process we found that 30 surveys were received from the same I.P. address, and were therefore removed. From the 345 remaining surveys, 9 were incomplete and were therefore discarded. The 336 fully completed and remaining were accepted as valid and will be utilised as our sample. This number is within the 187 and 469 response range we expected to receive. The data utilised for analysis corresponds to period 25th August until 14th September 2009 (21 days).

The next section provides an insight of the respondent profiles.

5.3.9. Respondent Sample

Overall, our sample universe is comprised by 336 respondents, aging from 18 to over 65 that live in Spain (85.97%) as well as Spanish-speaking Internet users who live abroad (14,03%). In terms from the Spanish population there is representation from all the regional counties in Spain. Whilst Chapter 5 will provide a detail description of the respondent sample, table 41 anticipates a summary of the main details of the quantitative study.

Table 41. Characteristics of the quantitative study

Population	From under than 18 years of age to more than 65 years of age
Geographical reach	Nationwide Spain 85% Spanish speakers living abroad 15%
Contact method	Via email
Sample Size	336
Sampling method	No sampling: direct responses were utilised
Field work	24 August until 14 September 2009

Source: Developed for this research

5.3.10. Plan of data analysis

The analysis of the data acquired, which will be analysed in the following chapter, can be divided in three parts. First, we shall undertake a descriptive analysis of our socio-demographic respondent sample, indicating their familiarity with the Internet medium. Second, we shall describe on the criteria utilised for judging the quality of this research. The model was estimated utilising partial least squares modelling (PLSPM) and this same technique shall be utilised in order to assess the validity and realibility of the measurement instruments utilised in this research. In third place we shall concentrate on the central part of the data analysis which is the contrast of the twenty hypotheses formulated at the beginning of this chapter. The contact of the research hypotheses proposed, shall be undertaken utilising partial least squares parth modelling utilising software SmartPLS 2.0. As previously mentioned, for the analysis we shall utilise data clickstream and EIP data obtained from the navigation behaviour of our respondents on an experimental data acquisition Web site, as well as perceptual data obtained with a two-part survey.

5.4. OPERATIONALISATION OF VARIABLES

In the following sections we shall describe how the variables that are used in this research are measured, justifying the election of each instrument based on previous research. Due to the objectives and context of this research, some of the scales have been adapted in order to best suit their purpose.

The variables can be classified into two major groups. The first group comprises the variables measured through surveys, which, except for two dichotomous variables, are all grounded on 7 point Likert scales. Open field text has also been utilised to capture two recall replies. The first group of variables measured the dimensions of Web site engagement, four of its antecedent and eight of its consequences. The second group comprises four online consumer navigation behaviour variables that have been used to measure the Web site navigation patterns of the respondents. The data for these variables have been obtained from raw EIP and clickstreams that were recorded with the data acquisition system.

In brief, Web site engagement variable data have been acquired with surveys, its eight antecedents were measured with both surveys and with navigation data, and its eight consequences were measured only with surveys. Following this order, we shall now describe the scales utilized for the measurement of variables. This section will finalise by describing how respondents demographic and experience with the Internet were measured.

Whilst the original scales were written in English language, it was necessary to translate the fifty five items utilised in the survey from their original English version into Spanish, as the targeted population of respondents that would participate in the data collection process were Spanish speakers. Special care should be taken when adapting scales from one language to another. Following the guidelines of Netemeyer et al. (1991), the questionnaire was first drafted in English language and was translated into Spanish by a bilingual person who was a Spanish native speaker. The translated text was then back-translated into English and it was ensured that any idiomatic or colloquistic wording was minimised (Douglas and Craig 1983; Netemeyer et al., 1991; Parameswaran and Yaprak 1987).

5.5. Dimensions of Web site engagement

Positive affect

Affect is ‘the emotional investment users make in order to be immersed in an environment and sustain their involvement in the environment’ (Jennings, 2000). Affect has an influence on users’ current and future use of computers (O’Brien, 2008). Affective cues can be incorporated into interface design through the use of intrigue (Jennings, 2000). Table 42 includes three scales utilised for the measurement of affect. The first scale was suggested by Babin and Attaway (2000) and served to measure positive and negative affect separately with a 5 point scale. The two measurements scales were 7 point scales, ranging from negative to positive affect. In this research we only needed to measure positive affect, therefore we utilised an adaption of the scale by Babin and Attaway (2000) utilising solely the positive affect items, specifically: *excited*, *bold*, *energetic*, *happy* and *satisfied*. The scales were translated into Spanish language, resulting into:

1. *Mientras navegaba por la web me sentía entusiasmado*
2. *Mientras navegaba por la web me sentía audaz*
3. *Mientras navegaba por la web me sentía enérgico*
4. *Mientras navegaba por la web me sentía contento*
5. *Mientras navegaba por la web me sentía satisfecho*

TABLE 42. Measurement of positive affect

RESEARCHERS (1)	ITEMS	SCALE	RELIABILITY
Watson et al. (1988)	1. Interested 2. Excited 3. Strong 4. Enthusiastic 5. Proud 6. Alert 7. Inspired 8. Determined 9. Attentive 10. Active	5 point scale ranging from <i>not at all</i> to <i>extremely</i>	$\alpha=0.88$
Dawson et al. (1990) (emotion)	1. Relaxed 2. Contented 3. Satisfied 4. Happy	7 point scale	$\alpha=0.72$
Dawson et al. (1990) (arousal)	1. Satisfied 2. Excited 3. Rewarded	7 point scale	$\alpha=0.70$
Babin and Attaway (2000)	When shopping at (store X), I feel: 1. Excited 2. Bold	5 point scale	$\alpha=0.83$

	3. Energetic 4. Happy 5. Satisfied		
Novak et al. (2000)	1. Happy / unhappy 2. Annoyed / pleased 3. Satisfied / unsatisfied 4. Melancholic / contented	7 point scale	$\alpha=0.861$
Lee and Kozar (2009)	Visiting the website is 1. Dull. . .Exciting 2. Pleasant. . .Unpleasant 3. Enjoyable. . .Unenjoyable	7 point scale	$\alpha=0.882$
Lin et al. (2008)	Whilst visiting the Web pages I felt 1. Happy 2. Pleased 3. Satisfied 4. Contented	9 point Likert scale	$\alpha=0.964$

(1) Chronologic Order

Source: Developed for this research

Focused attention

In online consumer behaviour research, focused attention has been defined as the degree to which the user's attention is focused on interaction (Huang, 2003). O'Brien (2008) considered focused attention as a component of engagement with technology. Essentially, focused attention has been examined from three different perspectives: allocating attention to a task (Webster and Ho, 2008), not being aware of external happenings (Lu et al., 2009) or a combination of both (Huang, 2003; O'Brien, 2008). Table 43 provides a representation of the principal one-dimensional scales used to measure this variable.

Table 43. Measurement of focused attention

RESEARCHERS (1)	ITEMS	SCALE	RELIABILITY
Ghani et al. (1991) and Koufaris (2002)	During my last visit to... 1. ... I was absorbed intensely in the activity 2. ... My attention was focused on the activity 3. ... I concentrated fully on the activity 4. ... I was deeply engrossed in the activity	7 point Likert scale	$\alpha=0.910$
Webster and Ho (1997)	1. This presentation medium keeps me totally absorbed in the presentation 2. This presentation medium holds my attention	7 point scale	n.a.
Novak et al. (2000)	1. Not deeply engrossed / deeply engrossed 2. Absorbed intensely / not absorbed intensely 3. My attention is not focused / my attention is focused 4. I concentrate fully / I do not concentrate fully	9 point scale	$\alpha=0.638$ and 0.830
Huang (2003)	1. When navigating this website, I thought about other things 2. When navigating this website, I was aware	7 point Likert scale	$\alpha=0.82$

	of distractions 3. When navigating this website, I was totally absorbed in what I was doing		
Guo and Poole (2008)	1. My attention was focused entirely on what I was doing 2. It was no effort to keep my mind on what was happening 3. I had total concentration 4. I was completely focused on the task at hand	7 point Likert scale	$\alpha=0.90$
O'Brien (2008)	1. I was absorbed in my shopping task 2. When I was shopping, I lost track of the world around me 3. I blocked out things around me when I was shopping on this website 4. I forgot about my immediate surroundings while shopping on this website 5. I was so involved in my shopping task that I ignored everything around me	5 point scale with a sixth option for 'not applicable'	$\alpha=0.889$
Lu et al. (2009)	1. When using the IM, I do not realize the time elapsed 2. When using the IM, I am not aware of things happening around me 3. When using the IM, I often forget the work I must do	7 point Likert scale	$\alpha=0.91$

(1) Chronologic Order

Source: Developed for this research

Following O'Brien (2008), we proposed that suggest focused attention is a dimension of Web site engagement. We have utilised the scale proposed by Huang (2003), as it better suited the nature of our research on Web sites, it was short, and consequently contributed to minimise the length of our survey.

The scale was translated into Spanish language as:

1. *Mientras navegaba pensaba en otras cosas*
2. *Mientras navegaba me daba cuenta si me distraían otras cosas*
3. *Mientras navegaba estaba totalmente inmerso en lo que estaba haciendo*

Challenge

The challenge refers to the difficulty of undertaking a task relative to one's skill (Ghani, 1995) such as a using a Web site. O'Brien (2008) considered challenge as a component of engagement with technology. This variable has been measured by various researchers with multi-item scales that vary in the number of items. Table 44 provides a representation of scales used to measure challenge. Whilst Webster and Ho (1997) utilised two items, Hoffman and Novak, utilised nine. In all cases, point scales were used ranging from 5 to 9 points. We have utilised an adaptation of

O'Brien (2008) scale, reducing the items from five to four, in order to avoid duplicities when translated into Spanish language.

Table 44. Measurement of challenge

RESEARCHERS (1)	ITEMS	SCALE	RELIABILITY
Webster and Ho (1997)	1. This presentation medium challenges me 2. This presentation medium encourages me to think	7 point scale	$\alpha=0.71$
Novak et al. (1998) and Koufaris (2002)	1. Using Booksamillion.com challenged me to perform to the best of my ability 2. Using Booksamillion.com provided a good test of my skills 3. Using Booksamillion.com stretched my capabilities to the limits	7 point Likert scale	$\alpha=0.803$
Novak et al. (2000)	1. Using the Web challenges me 2. Using the Web challenges me to perform to the best of my ability 3. Using the Web provides a good test of my skills 4. I find that using the Web stretches my capabilities to my limits 5. How much does the Web challenge you, compared to other things you do on the computer? 6. How much does the Web challenge you, compared to the sport or game you are best at?	9 point scale	$\alpha=0.876$ and 0.799
O'Brien (2008)	1. This shopping website was easy to use 2. Using this shopping website was mentally taxing 3. This shopping experience was demanding 4. Shopping on this website wasn't worth the effort 5. Shopping on this website was too much trouble	5 point scale with a sixth option for 'not applicable'	$\alpha=0.823$

(1) Chronologic Order

Source: Developed for this research

The scale resulted:

1. *Usar la web fue fácil*
2. *No he tenido que esforzarme mucho para usar la web*
3. *La experiencia de navegación no me supuso mucho esfuerzo*
4. *Elegir en esta web no ha sido demasiado problemático*

Control

This variable refers to 'capturing the individual's perception that s/he exercises control over the interaction with the technology' (Ghani and Deshpande, 1994; Siekpe, 2005) and 'the level of one's control over the environment and one's

actions'. Huang (2003) utilised this dimension when measure the degree of 'having control over the interaction with the site'. Control is a facilitator of Web performance and implies the freedom to act on the Web (Net et al., 1999). Table 45 provides a representation of the principal one-dimensional scales used to measure control. They have been measured with Likert scales ranging from 5 to 9 points, whilst 7 points scales are the most frequently utilised.

In this research we consider this dimension as the individual's perception that s/he exercises control over the interaction with the Web site, therefore we utilised the scale proposed by Huang (2003) as best suits our purpose and is also the shortest scale, consequently contributing the reduction of items in our survey.

The items resulted in Spanish language:

1. *Mientras que interactuaba con la web sentía que tenía el control sobre ella*
2. *Sentía que controlaba la navegación*
3. *La web me permitía controlar la interacción*

Table 45. Measurement of control

RESEARCHERS (1)	ITEMS	SCALE	RELIABILITY
Agarwal and Karahanna (2000)	1. When using the Web I feel in control. 2. I feel that I have no control over my interaction with the Web. 3. The Web allows me to control my computer interaction.	7 point scale	$\alpha=0.83$
Ghani et al. 1991 and Koufaris (2002)	During my last visit to ... 1. I felt confused 2. I felt calm 3. I felt in control 4. I felt frustrated	7 point Likert scale	$\alpha=0.813$
Webster and Ho (1997)	1. This presentation medium allows the instructor to maintain control over the direction of the lecture 2. This presentation medium gives the instructor control over the delivery of the lecture	7 point scale	$\alpha=0.81$
Venkatesh (2000) Perceptions of Internal Control (Computer Self-Efficacy)	I could complete the job using a software package... 1. if there was no one around to tell me what to do as I go 2. if I had never used a package like it before 3. if I had only the software manuals for reference 4. if I had seen someone else using it before trying it myself 5. if I could call someone for help if I got stuck	7 point Likert scale	$\alpha=0.84$

	6. if someone else had helped me get started 7. if I had a lot of time to complete the job for which the software was provided 8. if I had just the built-in help facility for assistance 9. if someone showed me how to do it first 10. if I had used similar packages before this one to do the same job		
Venkatesh (2000) Perceptions of External Control (Facilitating Conditions)	1. I have control over using the system. 2. I have the resources necessary to use the system. 3. I have the knowledge necessary to use the system. 4. Given the resources, opportunities and knowledge it takes to use the system, it would be easy for me to use the system. 5. The system is not compatible with other systems I use.	7 point Likert scale	$\alpha=0.82$
Novak et al. (2000)	1. Controlling / controlled 2. Influenced / influential 3. Dominant / submissive 4. Guided / autonomous	9 point scale	$\alpha=0.685$
Huang (2003)	1. When navigating this website, I felt in control 2. I felt that I had no control over my interaction with the Web 3. This website allowed me to control the computer interaction	7 point Likert scale	$\alpha=0.68$
Guo and Poole (2008)	1. I felt in total control of what I was doing 2. I felt like I could control what I was doing 3. I had a feeling of total control 4. I felt in total control of my action	7 point Likert scale	$\alpha=0.90$
O'Brien (2008)	1. I felt in control of my shopping experience 2. I felt in charge of my shopping task using this website 3. This shopping website offered me sufficient ways to navigate it 4. I could not do some of the things I needed to do on this shopping website 5. This shopping experience did not work out the way I had planned	5 point scale with a sixth option for 'not applicable'	$\alpha=0.736$

(1) Chronologic Order

Source: Developed for this research

Curiosity

Curiosity means tapping into the extent the experience arouses an individual's sensory and cognitive curiosity (Agarwal and Karahanna, 2000). Webster et al. (1993) suggested that heightened curiosity invokes excitement about available possibilities which serves to reduce the perceived cognitive burden that occurs during interaction (Agarwal and Karahanna, 2000). Curiosity is a catalyst of both utilitarian and hedonic information acquisition and Web performance (Huang, 2003).

Table 46 illustrates five scales utilised to measure curiosity, from which we selected the one suggested by O'Brien (2008) as it fully suited our purpose, resulting into Spanish language as:

1. *Mi curiosidad por el contenido de la web me hacía seguir buscando*
2. *La experiencia ha satisfecho mi curiosidad*
3. *El contenido de la web provocaba mi curiosidad*

Table 46. Measurement of curiosity

RESEARCHERS (1)	ITEMS	SCALE	RELIABILITY
Agarwal and Karahanna (2000)	1. Using the Web excites my curiosity 2. Interacting with the Web makes me curious 3. Using the Web arouses my imagination	7 point scale	$\alpha=0.93$
Huang (2003)	1. Navigating this website excited my curiosity 2. Interacting with this website made me curious 3. Navigating this website aroused my imagination	7 point Likert scale	$\alpha=0.71$
Nel et al. (1999)	1. Visiting the site excited my curiosity 2. Interacting with the site made me curious	6 point Likert scale	n.a.
O'Brien (2008)	1. I continued to shop on this Web site out of curiosity 2. This shopping experience satisfied my sense of curiosity 3. The content of the shopping Web site incited my curiosity	5 point scale with a sixth option for 'not applicable'	$\alpha=0.728$
Webster and Ho (1997)	This presentation medium excites my curiosity This presentation medium arouses my imagination	7 point scale	n.a.

(1) Chronologic Order

Source: Developed for this research

Involvement

As previously mentioned there are different types of involvement, and accordingly different scales for each situation. These include involvement with products (Zaichkowsky, 1985) and with tasks (Mittal, 1989), that include decision making and purchase involvement (Laurent and Kapferer, 1985). There are also scales that measure involvement based on the context where it takes place, such as involvement with information (MacInnis and Jaworski, 1989), and purchase involvement based on online information (Park and Lee, 2008).

In her scale of engagement with technology, O'Brien (2008) included an involvement factor that comprised three subscales: motivation, positive affect and

engagement. We feel that this factor is very close to what Huang (2006) considers enduring involvement, that is, the involvement that take places as a consequence of the interest a customer finds in a product or activity. Enduring involvement occurs when the consumer’s perception of the product or activity is in accordance with his/her central values or sense of self (Huang, 2006). After considering the involvement scales exemplified on table 47, and as Huang (2006) did not provide a scale in his research, we decided to choose an adaptation of O’Brien’s scale, as it was suitable for our purpose. However we shortened the original items from five to three, in order to contribute to the reduction of the total items utilised on the survey. In this research we shall consider Web site involvement as the inherent interests, values, or needs that motivate a user towards a using a Web site (Based on Chen 2008; Zaichkowsky, 1985).

Table 47. Measurement of involvement

RESEARCHERS (1)	ITEMS	SCALE	RELIABILITY
McQuarrie and Munson (1992) and Koufaris (2002)	1. Important / Unimportant 2. Irrelevant / Relevant 3. Means a lot to me / Means nothing to me 4. Unexciting / Exciting 5. Dull / Neat 6. Matters to me / Doesn't matter to me 7. Boring / Interesting 8. Fun / Not fun 9. Appealing / Unappealing 10. Of no concern to me / Of concern to me	7 point scale	$\alpha=0.929$
Novak, Hoffman and Yung (2000)	Involvement (importance) 1. Important / unimportant 2. Irrelevant / relevant 3. Means a lot to me / means nothing to me 4. Matters to me / doesn't matter 5. Of no concern / of concern to me	9 point scale	$\alpha=0.876$ and 0.923
Mathwick and Rigdon (2004)	1. Means nothing to me / means a lot to me 2. Worthless / valuable 3. Boring / interesting 4. Exciting / unexciting 5. Fascinating / mundane 6. Involving / uninvolving	7 point scale	$\alpha=0.88$
Demangeot and Broderick (2007)	1. The navigation was enjoyable 2. The navigation was boring 3. The navigation was exciting	n/a	$\alpha=0.84$
O’Brien (2008)	1. I felt involved in this shopping task 2. During this shopping experience I let myself go 3. It was easy to get wrapped up in this shopping experience 4. I was really drawn into my shopping task 5. I lost myself in this shopping experience	5 point scale with a sixth option for ‘not applicable’	$\alpha=0.749$

(1) Chronologic Order

Source: Developed for this research

The resulting scale was:

1. *Me sentí totalmente inmerso en la tarea de compra*
2. *Resultaba fácil dejarse envolver por la experiencia de compra*
3. *Me involucré mucho en la tarea de compra*

Transformation of time

Novak et al. (2000) considered time distortion, ‘the perception of time passing rapidly when engaged in an activity’ as one of the components of online flow, utilising a two item scale for its measurement. This controversial construct was found to be part of flow by Agarwal and Karahanna (2000), Chan and Ahern (1999), Chan and Repman (1999), Chen and Nilan (1999), Chen (2006), Csikszentmihalyi (1988, 1990), Davis and Wiedenbeck (2001), Guo and Poole (2008), Li and Browne (2004), Moon and Kim (2001), Novak et al. (2000), O'Brien (2008), Shin (2006), Skadberg and Kimmel (2004), and was not found to be part of flow by Koufaris (2002), Nel et al. (1999), Senecal et al. (2009), Smith and Sivakumar (2004), Siekpe (2005) and Lu et al. (2009).

O'Brien (2008) affirmed that ‘perceived time’ was a component of engagement. In her scale she utilised a scale with three items: 1. I was so involved in my shopping task that I lost track of time. 2. Time passed quickly when I was shopping. 3. The time I spent shopping just slipped away. We have utilised a scale utilised in research from Guo and Poole (2008) as we considered it easy to read and best suited our purpose. Table 48 illustrates a representation of five scales.

The resulting scale we utilised was:

1. *Parecía que el tiempo pasaba rápidamente*
2. *Perdí la noción del paso del tiempo*
3. *El tiempo pasó volando*

Table 48. Measurement of transformation of time

RESEARCHERS (1)	ITEMS	SCALE	RELIABILITY
Agarwal and Karahanna (2000)	1. Time appears to go by very quickly when I am using the Web 2. Sometimes I lose track of time when I am using the Web	7 point scale	$\alpha=0.85$

	3. Time flies when I am using the Web 4. Most times when I get on to the Web, I end up spending more time that I had planned 5. I often spend more time on the Web than I had intended		
Novak et al. (2000)	1. Time seems to go by very quickly when I use the Web 2. When I use the Web, I tend to lose track of time	9 point scale	$\alpha=0.703$
Skadberg and Kimmel (2004)	1. While I was browsing the Web pages, time seemed to go by very quickly	5 point Likert scale	n.a.
Guo and Poole (2008)	1. Time appeared to go by very quickly 2. I lost track of time 3. Time flew	7 point Likert scale	$\alpha=0.75$
O'Brien (2008)	1. I was so involved in my shopping task that I lost track of time 2. Time passed quickly when I was shopping 3. The time I spent shopping just slipped away	5 point scale with a sixth option for 'not applicable'	$\alpha=0.766$

(1) Chronologic Order

Source: Developed for this research

Up-to-dateness of information

This measure serves to capture the extent to which respondents have perceived that the information they obtain from a Web site is sufficiently up-to-date or *fresh* (Chaffey et al., 2001; Huang, 2003) for their intended shopping purposes. This is a new measure that we propose in this research. We utilised one unique item adapted from the technology task fit scale proposed by Klopping and McKinney (2004).

Table 49. Measurement of up-to-dateness of information

RESEARCHERS	ITEMS	SCALE	RELIABILITY
Klopping and McKinney (2004)	1. The online product information is sufficiently up-to-date for my purposes	5 point Likert scale	n.a.

Source: Developed for this research

Table 49 illustrates the item utilised Klopping and McKinney, resulting in Spanish language as:

1. La información en la Web está lo suficientemente actualizada para mi propósito

Up-to-dateness of information is the eighth and final dimension utilised to statistically test the dimensions of Web site engagement. Having described the group

of eight variables that we assume will form part of the construct Web site engagement we shall now describe the two groups of variables used to measure its proposed potential antecedents.

5.6. Antecedents of web site engagement

This section is organised as follows. We shall first describe how two variables proceeding from flow literature, aesthetics and feedback, have been measured. Then we shall describe a third variable: purchase involvement. These three variables were measured with surveys. Then a group of four variables that measure online comparative behaviour of respondents shall be described. In this case data was acquired tracing their navigation behaviour. These eight independent variables therefore form the eight antecedents of Web site engagement, which are illustrated in table 50.

Table 50. Proposed antecedent variables of Web site engagement

ANTECEDENTS MEASURED WITH SURVEYS	THEORETICAL FOUNDATION
Related to flow	
1. Aesthetics	Lavie and Tractinsky (2004); Mathwick, Malhotra and Rigdon (2001); O'Brien (2008)
2. Feedback	Brown and Cairns (2004); Guo and Poole (2008); Stone, Jarrat, Woodroffe and Minocha (2005); (O'Brien, 2008)
Not related to flow	
3. Purchase involvement	Balabanis, Reynolds and Simintiras (2001); Demangeot and Broderick (2007); Koufaris (2002); Laurent and Kapferer (1985); Lee and Kozar (2009); Mittal, (1995); Novak, Hoffman and Yung (2000)
ANTECEDENTS MEASURED WITH DATA ACQUISITION WEB SITE	THEORETICAL FOUNDATION
5. Cells comparison	Bettman et al. (1985); Bojko (2006); Card et al. (1985), Kennedy (1998); Lohse and Johnson (1996); Russo (1978); Senecal et al. (2005)
6. Cells reacquisition	Lohse and Johnson (1996); Pitkow (1997); O'Brien (2008)
7. Products comparison	Bucklin and Sismeiro (2003); Kennedy (1998); Lohse and Johnson (1996); Pitkow (1997); O'Brien (2008)
8. Web site depth of navigation	Bucklin and Sismeiro (2003); Lohse and Johnson (1996); O'Brien (2008); Senecal et al. (2005)

Source: Developed for this research

Following the order presented in table 49, we shall describe how these seven proposed antecedents were measured.

5.6.1. Flow-based antecedents measured with surveys

Surveys were utilised to measure two dimensions from flow theory as possible antecedents of Web site engagement: aesthetics and feedback.

Aesthetics

Aesthetics refers to a Web site's visual appeal and relates to the use visual aspects utilised in its design (Beardsley, 1982; Demangeot and Broderick, 2006). The different scales that measure this construct refer to the visual appeal of consumers to visual aspects of Web sites. Table 51 presents some of the instruments utilised in marketing for the measurement of aesthetics. The scale we selected was adapted from Mathwick et al. (2001) as the items that compose the scale best suited our purpose and it was also the shortest, therefore contributed to a reduction of the total items of our survey. The scale was translated into Spanish language, resulting:

1. *La web presenta sus productos de manera atractiva*
2. *La estética de la web es atractiva*
3. *Me gusta la apariencia de la web*

Table 51. Measurement of aesthetics

RESEARCHERS (1)	ITEMS	SCALE	RELIABILITY
Mathwick, Malhotra and Rigdon (2001)	1. The way XYZ displays its products is attractive 2. XYZ's website (catalogue) is aesthetically appealing 3. I like the way XYZ's website (catalogue) looks	7 point scale	$\alpha=0.94$
Lavie and Tractinsky (2004) (Classic aesthetics scale)	1. Aesthetic design 2. Pleasant design 3. Clear design 4. Clean design 5. Symmetric design	7 point scale	$\alpha=0.85$
Lavie and Tractinsky (2004) (Expressive aesthetics scale)	1. Creative design 2. Fascinating design 3. Use of special effects 4. Original design 5. Sophisticated design	7 point scale	$\alpha=0.87$
O'Brien (2008)	1. I liked the graphics and images used on this shopping website 2. The screen layout of this shopping website was visually pleasing 3. This shopping website was aesthetically appealing 4. This shopping website is attractive 5. This shopping website appealed to my visual senses	5 point scale with a sixth option for 'not applicable'	$\alpha=0.890$

(1) Chronologic Order

Source: Developed for this research

Feedback

Feedback is the information communicated to users about actions that have occurred and results that have been achieved (O'Brien, 2008). Table 52 presents some of the instruments utilised in marketing literature for the measurement of feedback. The scales proposed by Webster and Ho (1997) and Guo and Poole (2008) refer to the feedback users obtained from computer related tasks. In contrast, the scale suggested by O'Brien referred to arrangement of Web site content and easiness when navigating on a Web site.

The scale we have utilised in this research was adapted from O'Brien (2008) as the items that compose the scale were the ones that better suited our purpose. It was translated into Spanish language, resulting into:

1. *Tiene sentido cómo está organizada la información en la web*
2. *La organización de la información en la web era clara*
3. *La web era clara en su uso*
4. *No me llevó muchos clicks llegar hasta la descripción de los viajes*

Table 52. Measurement of feedback

RESEARCHERS (1)	ITEMS	SCALE	RELIABILITY
Webster and Ho (1997)	1. The presentation medium provides direct feedback to the students 2. This presentation medium provides clear feedback to students	7 point scale	$\alpha=0.81$
Guo and Poole (2008)	1. It was really clear to me that I was doing well 2. I was aware of how well I was performing 3. When shopping, I had a good idea about how well I was doing 4. I could tell by the way I was surfing how well I was doing	7 point Likert scale	$\alpha=0.88$
O'Brien (2008)	1. The organization of information on this Web site made sense to me 2. I found this shopping Web site confusing to use 3. I found the organization of information on this shopping Web site confusing 4. It took too many clicks to get to the product information I was looking for on this Web site	5 point scale with a sixth option for 'not applicable'	$\alpha=.0837$

(1)Chronologic Order

Source: Developed for this research

Having described how two flow related variables, aesthetics and feedback, have been measured by different researchers, we shall now describe how a third variable not related to flow was measured: purchase involvement.

5.6.2. Non-flow antecedent measured with surveys: Purchase intention

Purchase involvement is defined as ‘the extent of interest and concern that a customer brings to bear on a purchase decision task’ (Mittal, 1989). Involvement with purchases leads one to search for more information and spend more time to search for the right selection (Clarke and Belk, 1978).

Table 53 presents some of the instruments utilised in marketing literature for the measurement of purchase involvement. The scale we used in this research was adapted from Laurent and Kapferer (1985) as the items that compose the scale were the ones that better suited our purpose and was also the shortest, therefore would contribute to a reduction of the total items that would constitute our survey. The scale was translated into Spanish language, resulting into:

1. *Voy a elegir con cuidado*
2. *Me importa mucho lo que voy a comprar*
3. *Elegir adecuadamente es una decisión importante para mí*

Table 53. Measurement of purchase involvement

RESEARCHERS (1)	ITEMS	SCALE	RELIABILITY
Balabanis, Reynolds and Simintiras (2001)	1. I choose the (name of product) very carefully 2. Which of (name of product) I buy matters to me a lot 3. Choosing the (name of product) is an important decision to me	7 point Likert scale	$\alpha=0.94$
Mittal, (1995)	In selecting from the many types and brands of facial tissues available in the market, would you say that: 1. I would not care at all / would care a great deal as to which one I buy 2. How important would it be to you to make a right choice of this product? 3. In making your selection of this product, how concerned would you be about the outcome of your choice?	7 point scale	$\alpha=0.85$
Laurent and Kapferer (1985)	1. I choose my facial tissues very carefully 2. Which facial tissues I buy matters to me a lot 3. Choosing facial tissues is an important decision for me	7 point scale	$\alpha=0.80$

Novak, Hoffman and Yung (2000)	Involvement (importance) 1. Important / unimportant 2. Irrelevant / relevant 3. Means a lot to me / means nothing to me 4. Matters to me / doesn't matter 5. Of no concern/of concern to me	9 point scale	$\alpha=0.876$ and 0.923
Koufaris (2002)	<i>We would like to know how interested you are in books. Please use the series of descriptive words listed below to indicate your level of interest in books:</i> 1. Important / unimportant 2. Irrelevant / relevant 3. Means a lot to me / means nothing to me 4. Unexciting / exciting 5. Dull / neat 6. Matters to me / doesn't matter to me 7. Boring / interesting 8. Fun / not fun 9. Appealing / unappealing 10. Of no concern to me / of concern to me	7 point scale	$\alpha=0.929$
Lee and Kozar (2009)	Assuming that you visit a web portal (or an online travel site) like this, please indicate how strongly you disagree or agree with the following statements: 1. I intend to purchase products or services from the website. 2. I predict I would purchase products or services from the website.	7 point scale	$\alpha=0.84$
Zaichkowsky (1985)	1. Important / unimportant 2. Of no concern / of concern to me 3. Irrelevant / relevant 4. Means a lot to me / means nothing to me 5. Useless / useful 6. Valuable / worthless 7. Trivial / fundamental 8. Beneficial / not beneficial 9. Matters to me / doesn't matter 10. Uninterested / interested 11. Significant / insignificant 12. Vital / superfluous 13. Boring / interesting 14. Unexciting / exciting 15. Appealing / unappealing 16. Mundane / fascinating 17. Essential / nonessential 18. Undesirable / desirable 19. Wanted / unwanted 20. Not needed / needed	7 point scale	$\alpha=0.95$ to 0.97

(1) Chronologic Order

Source: Developed for this research

Having described how three potential antecedents were measured with surveys we shall now describe how online comparative behaviour variables were measured. Data proceeded from users' navigation behaviour on a data acquisition Web site.

5.6.3. Antecedents of engagement measured with a data acquisition Web site

The third group of variables that are considered to be antecedents of Web site engagement is comprised by four variables that serve to capture the online comparative behaviour of the respondents. Comparative behaviour of consumers on Web sites can take place within a particular Web page within an e-commerce Web site, and also throughout the various Web pages comprised within the overall site. In order to capture how consumers navigate within a Web page and within a Web site, we shall utilise EIP variables in order to trace within-page behaviour and clickstream variables in order to trace within-site behaviour. Following the recommendations of Kennedy et al. (1989) the most suitable EIPs and clickstreams have been selected for the purpose of our research. In total we have utilised sixteen EIP and clickstream variables. They are composed with both static and dynamic elementary information processes and clickstreams. As will be subsequently described, the sixteen variables were subject to an exploratory factor analysis resulting into four factors which assess comparative and memory behaviour, and will serve to formulate four hypotheses regarding their influence to Web site engagement. Table 54 illustrates these four factors.

Table 54. Online comparative behaviour variables

COMPARISON FACTORS		
FACTOR	DESCRIPTION OF FACTOR	THEORETICAL FOUNDATION
F1. Cell comparisons	Measures comparisons users have made within the Web product menu	Developed for this research based on Bettman et al. (1985); Bojko (2006); Card et al. (1985); Kennedy (1998); Lohse and Johnson (1996); Russo (1978); Senecal et al. (2005)
F3. Product comparisons	Measures comparisons users have made within detailed product pages	Developed for this research based on Bucklin and Sismeiro (2003); Kennedy (1998); Lohse and Johnson (1996); Senecal et al. (2005)
MEMORY AND NAVIGATION FACTORS		
FACTOR	DESCRIPTION OF FACTOR	THEORETICAL FOUNDATION
F2. Cell reacquisitions	Measures reacquisition and memorisation of information	Based on Lohse and Johnson (1996)
F4. Web site depth of navigation	Measures depth demonstrated by users whilst navigating on the site	Based on Bucklin and Sismeiro (2003); Kennedy (1998); Lohse and Johnson (1996); Pitkow (1997); O'Brien (2008)

Source: Developed for this research

In order to describe these factors and their indicators with clarity, we shall first describe each factor as a result of an exploratory factor analysis of EIPs and clickstreams depicted in tables 55 and 56. After that, each EIP and clickstream will be described. In the interest of clarity, instead of using the term *fixations* (Lohse and Johnson, 1996) we shall use the term *cells*, in order to refer to the cells viewed by respondents on the Web product menu page of the data acquisition Web site.

Factor 1. Cell comparisons

As previously discussed, comparisons are one type of elementary information process that are used to measure the effort users have made when comparing different values (Bettman et al., 1990; Kennedy, et al., 1998). They are used in decisions tasks, along with other EIPS such as *scan*, *move* and *compute*. This first factor refers to a group of variables that pertain to the number of fixations or *cells views*, the time spent viewing the cells, and the comparative behaviour users made on the cells within the Web product menu. This factor is comprised by the following indicators: total fixations, total fixation time, cell repeats, revisited cell ratio, repeated cell ratio and repeated unique cell ratio.

Factor 2. Cell reacquisitions

Following Lohse and Johnson (1996), the second factor refers to a group of two items, unique cells and cell reacquisition ratio, that serve to measure reacquisition and memorisation of information contained within the cells.

Factor 3. Product comparisons

The third factor refers to the comparisons respondents have made between different product pages. The factor is measured with four items: product repeats, repeated product ratio, revisited page ratio and repeated unique product ratio.

Factor 4. Web site depth of navigation

Following Bucklin and Sismeiro (2003), the third factor refers to a group of variables that pertain to the depth of navigation users have made on the Web site, that is, the number of clicks made on cells made leading to product pages, as well as

the time spent inspecting the product pages. It is measured with: total product views, unique product views, total product view time and total task time.

Having described the four comparative variables which will be proposed and potential antecedents to Web site engagement, in what follows we shall describe the underlying EIP and clickstream variables.

5.6.4. Elementary information process and clickstream variables

EIP variables have been previously utilised in research, in order to capture consumer behaviour on pages. Clickstreams are similar to EIPs although differ in that they are used for tracing the path users take within Web sites and the Web pages they comprise. Researchers have previously utilised these types of measures when wanting to capture online navigation behaviour. For instance, Senecal et al. (2005) measured the complexity of the online decision making processes with both dynamic and static clickstreams

Whilst some authors have utilised general measures to capture task behaviour, the use of more detailed information provides greater predictive power (van den Poel and Buckinx, 2005). According to Bucklin et al. (2002) ‘the detailed nature of the information tracked about Internet usage and ecommerce transactions presents an enormous opportunity for empirical modellers to enhance the understanding and prediction of choice behaviour’. Following Kennedy et al. (1998), we have thoroughly selected the following EIPs and clickstreams to capture respondent behaviour within Web page and within Web site behaviour on the data acquisition Web especially developed for this thesis. The combined deployment of both literature based clickstream variables and EIPS utilised from literature, some adapted as well as new ones proposed in this research, permits us to conduct our research. In detail, these variables include both static and dynamic. Within the new proposed variables we have suggested some new ratios. These ratios have been specifically developed to capture comparative online consumer behaviour both within page and within site. They are organised in two groups: static measures and dynamic measures.

5.6.4.1. Static measures

In what follows we shall describe the seven static EIP and clickstream variables, utilised in this research.

X1. Total fixations (Lohse and Johnson, 1999)

A fixation occurs when, using a mouse, a user points to a cell which then reveals the information behind the cell. When the user moves the mouse pointer out of the cell, then the content is no longer visible to the user (Lohse and Johnson, 1999). As in mouselab based experiments, in our data acquisition system it is impossible to open two cells simultaneously. This modus operandi serves to track eye movement (Lohse and Johnson, 1996) and the acquired data can be stored on a computer.

Eye-movement times, including eye travel and fixation time, can vary depending on the task and the skill of the respondent. Russo (1978) suggested eye-movement times take a minimum of 70 milliseconds, where the typical time is 230 milliseconds (Card et al., 1983). Lohse et al. (1996) affirmed that eye fixations usually require between 200 and 400 milliseconds. The average of these two numbers, 300 milliseconds is what Bojko (2006) utilised when using eye tracking to assess how people compare Web page designs. Therefore in this research we have utilised 300 milliseconds as the minimum time needed by a consumer to be able to visually capture information. Accordingly the research the data acquisition system was programmed so cell views are computed only when a cell has been viewed for times superior than 0.3 seconds. Researchers have also called these fixations ‘Read EIPs’, that is, the elementary information process involved in reading a cell’s value into a consumer’s working memory (Lohse and Johnson, 1996). Cells revealed for a time of 299 milliseconds or less have been discarded as we have assumed that our respondents did not have sufficient time to read the data in a cell.

X2. Unique cells (based on Lohse and Johnson, 1999; Pitkow, 1997).

Unique cells represent the first time a user requests to see a cell within a task (Pitkow, 1997). When a respondent pointed to a cell for the first time, one unique cell was computed. If the same cell was subsequently pointed at, no further

computations were made. The same procedure occurred with the twelve cells included in the main Web page menu.

X4. Total product views (adapted Bucklin and Sismeiro, 2003)

This measure is calculated as the sum of product pages viewed by respondents. Once one of the twelve cells was revealed with the mouse pointer and clicked, the data acquisition system was given the instruction to load a Web page containing detailed product information of the corresponding travel package. As clicks are instructions given by users in order to load Web pages, we could have also utilised *page views* as a measurement. However the data acquisition site just had one menu page, and therefore the number of page views would have been perfectly statistically correlated to the product views measurement. Product views very similar to what Bucklin and Sismeiro (2003) referred to as *page requests*.

X5. Total fixation time (adapted from Lohse and Johnson, 1999)

Time is a measure of cognitive effort (Hong et al., 2005). Total fixation time is the sum of the time spent by respondents making fixations. Therefore this measure is a function of the number of fixations and the time spent making the fixations whilst navigating on the menu, or what is the same, reading cell content into working memory.

X10. Unique product views (adapted from Bucklin and Sismeiro, 2003 and Pitkow, 1997)

This is the total number of unique product views that respondents have seen during the task, where unique product views represent the first time a user requests a product during the task (Pitkow, 1997).

X13. Total product view time (adapted from Bucklin and Sismeiro, 2003).

This measure computes the total time spent by respondents whilst seeing product pages during the task. Time is a measure of cognitive effort.

X16. Total task time (Bucklin and Sismeiro, 2003; Lohse and Johnson, 1996).

This measure indicated the total time required to complete the navigation task. The data acquisition system starting timing when the Web product menu page was loaded

and presented to respondents on the computer screen, and it stopped timing once respondents had made a decision and confirmed their choice pressing a button marked ‘select this holiday’. Total task time is a measure of cognitive effort, and it could also be referred to as *total session time*.

Having described the seven static EIPs and clickstreams used in this research, table 55 illustrates a summary in the interest of clarity.

Table 55: Static EIP and clickstream measures

VARIABLE	DESCRIPTION
X1. Total fixations	Total number of eye fixations made on cells, excluding fixations inferior to 0.3 seconds
X2. Unique cells	Number of unique cells revealed
X4. Total product views	Sum of product pages loaded after having given the instruction to load, by clicking on a cell
X5. Total fixation time	Sum of cell fixation times
X10. Unique product views	Sum of unique products viewed during the task
X13. Total product view time	Sum of the product view durations
X16. Total task time	Total time required to make a decision during the task

Source: Developed for this research

5.6.4.2. Dynamic measures

This section describes nine dynamic measures selected for capturing user comparative behaviour within cells and within products during the decision task, up to the moment of choosing one of the twelve travel packages offered on the Web site.

With regards to the comparative behaviour of respondents, one of the oldest notions in memory literature is that when people are repeatedly exposed to a stimulus, repetition enhances recall of the stimulus, helping to ‘stamp in’ the item into the memory of the person therefore increasing the strength of recall (Bettman, 1979). In this direction, Sawyer (1974) had found that recall and recognition increased as a function of presentation frequency, and as repetition increases, there are decreasing increments in memory performance. It is also known that recall performance is stronger when the number of repetitions is spaced in time, rather than massed (Postman, 1975).

As occurs when navigating on Web sites, and also when respondents navigated in the data acquisition task utilised in this research, users were in control of their interaction with the Web site, and therefore they are in command of the comparisons they made when viewing cells and product pages. If a user has made comparisons amongst the set of twelve cells used in our Web site, this might have occurred because the respondent did not remember the content of a cell, or simply wanted to see the content again. Furthermore, if respondents saw content repeatedly, this might have occurred because respondents might have been interested or curious about the content. The outstanding graphical content utilised in data acquisition system has been selected in order to present respondents with pictures perhaps unknown to them, with the intention of triggering their the curiosity (Huang, 2003).

Undertaking repetitive actions leads to increased cognitive effort (Lohse and Johnson, 1996). Based on this notion, we propose the following series of dynamic measurements, designed in order to capture the repetitive efforts undertaken by respondents during the navigation task.

X3. Cell repeats (based on Lohse and Johnson, 1999)

This measurement is calculated with the sum of revisits cells received, not counting the first time each unique cell has been seen, therefore when any previously revealed cell is once again opened, this measurement increases by one.

X6. Revisited cell ratio (based on Senecal et al., 2005)

This measure is calculated as the total number of fixations divided by the total number of unique cells visited. This is measurement is equivalent to the revisited page ratio for pages suggested by Senecal et al. (2005) but instead applied to cells. It represents the repeated effort respondents have undertaken within a subset of cells.

X7. Repeated cell ratio (based on Lohse and Johnson, 1999)

Based on Lohse and Johnson's (1996) measures of reacquisition of information, we suggest this new measure grounded on the notion that repetitive actions leads to increased cognitive effort (Lohse and Johnson, 1996). It is calculated as the number

of cells revisited divided by the total number of cells viewed, and represents the degree of concentration on the subset of cells visited by a respondent

X12. Product repeats (based on Bucklin and Sismeiro, 2003; Lohse and Johnson, 1999). This measurement is calculated as the sum of product revisits, not counting the first time each unique product has been visited. Hence when any previously visited product is revisited, this measurement increases by one. It is equivalent to the cells repeats measurement, although applied to product pages. It is adapted from what Bucklin and Sismeiro (2003) called *repeat visitation*, that is, the cumulative number of sessions made by a Web user.

X14. Repeated product ratio (based on Lohse and Johnson, 1996)

This measure is equivalent to cell repeated ratio, although adapted to products, and is therefore calculated as the number of revisited products divided by the total number of products viewed. It represents the degree of concentration on the subset of products visited by respondents.

X15. Revisited page ratio (Senecal et al., 2005). It is calculated as the total number of pages viewed divided by the total number of unique pages visited. It represents the repeated effort respondents have undertaken within a subset of pages.

X8. Cell reacquisition ratio (Lohse and Johnson, 1996)

This measure is computed as the number of viewed at least twice divided by the total number of cells viewed and refers to the memorisation effort undertaken by respondents (Lohse and Johnson, 1996). Respondents adopt strategies, such as memorisation, to cope with increase effort per information acquisition, as memorisation eliminates the need for information reacquisition.

X19. Repeated unique cell ratio (based on Lohse and Johnson, 1996)

We suggest this new measure based on the notion that repetitive actions leads to increased effort. It is calculated as the number of cells revisited divided by the number of unique cells. It is similar to repeated cell ratio although calculated over the number of unique cells.

X20. Repeated unique product ratio (based on Lohse and Johnson, 1996)

This new measure is the equivalent to repeated unique cell ratio although for products, and it is calculated as the number of products revisited divided by the number of unique products visited.

Having described the nine calculated measures utilised in this research, in the interest of clarity, table 56 illustrates these measures together. In total sixteen static and dynamic EIPs and clickstreams have been utilised in this research from which seven are static and nine are dynamic, that is, they capture the comparative behaviour of respondents within Web pages and within a Web site.

Table 56. Comparative EIPs and clickstreams

VARIABLE	DESCRIPTION
X3. Cell repeats	Sum of revisits cells have received, not counting the first time each unique cell has already been seen
X7. Repeated cell ratio	Number of cells revisited divided by the total number of cells viewed
X6. Revisited cell ratio	Total number of fixations divided by the total number of unique cells visited
X12. Product repeats	Sum of revisits products have received, not counting the first time each unique product has been visited
X14. Repeated product ratio	Number of products revisited divided by the total number of products viewed
X15. Revisited page ratio	Total number of pages viewed divided by the total number of unique pages visited
X8. Cell reacquisition ratio	Number of cells viewed at least twice divided by the total number of cells viewed
X19. Repeated unique cell ratio	Number of cells revisited divided by the number of unique cells
X20. Repeated unique product ratio	Number of products revisited divided by the number of unique products visited

Source: Developed for this research

5.6.4.3. Exploratory factor analysis of EIPs and clickstreams

The sixteen static and dynamic EIP and clickstream measures were subject to an exploratory factor analysis in order to ensure that the measures would serve for their intended purpose. The analysis assembled the sixteen measures into four groups, as illustrated in table 57. A label was assigned to each factor in order to identify to their purpose. These labels are: cell comparisons, cell reacquisitions, Web site depth of navigation, and product comparison.

Table 57. Result of factor analysis of EIPs and clickstreams

FACTORS	DIMENSIONS
F1. Cell Comparisons Purpose: Measures the comparative behaviour of respondents within the Web product menu containing 12 cells	X1. Total fixations X5. Total fixation time X3. Cell repeats X6. Revisited cell ratio X7. Repeated cell ratio X19. Repeated unique cell ratio
F2. Memory or Cell Reacquisition Purpose: Measures memorisation effort of cell content undertaken by respondents	X2. Unique cells X8. Cell reacquisition ratio
F3. Product comparisons Purpose: Measures the comparative behaviour of respondents within 12 product pages on the Web site	X12. Product repeats X14. Repeated product ratio X15. Revisited page ratio X20. Repeated unique product ratio
F4. Web site depth of navigation Depth of user navigation on the Web site: cell clicks leading to product pages and time spent on the product pages	X4. Total product views X10. Unique product views X13. Total product view time X16. Total task time

Source: Developed for this research

5.6.5. Summary of the proposed antecedent variables of Web site engagement

Once we have described the group of the seven independent variables that we proposed as antecedents of the construct of Web site engagement, we shall now describe how the seven consequences with relevant managerial interest of this construct were measured.

5.7. Consequences of Web site engagement

This section describes how seven dependent variables, proposed as consequences of Web site engagement, were measured. Table 58 illustrates a summary of these measures along the research on which they are based.

Table 58. Variables proposed as potential consequences of Web site engagement

VARIABLE	THEORETICAL FOUNDATION
Web perceived value	Babin et al. (1994); Guay et al. (2000); Mathwick et al. (2001); O'Brien (2008), Steenkamp and Geyskens, 2006
Purchase intention	Hans van der Heijden et al. (2003); Lee and Kozar (2009); Ranaweera et al. (2008)
Switching intention	Bansal et al. (2005); Li et al. (2006)
Return intention	Koufaris (2002); Lin (2007); Demangeot and Broderick (2007)
Virtual branding potential	Simeon (2001)
Unaided brand recall	Dreze and Hussherr (2003); Kim and Kim (2005)
Unaided URL recall	Dreze and Hussherr (2003); Kim and Kim (2005)

Source: Developed for this research

In what follows we shall describe how each of these seven variables was measured.

Web perceived value

Perceived value is the 'interactive, relativistic and preference experience that results from visiting a Web site' (Steenkamp and Geyskens, 2006). This measure is equally called motivation by other researchers (Guay et al., 2000; O'Brien, 2008). Table 59 presents some of the instruments utilised in marketing literature for the measurement of different types of value. The different scales that measure value focus on the hedonic and utilitarian values, economic values and usefulness of using a Web site. For the purpose of our research, the scale we have utilised in this research was adapted from O'Brien (2008) as it was a short scale that best suited our purpose.

Table 59. Measurement of value

RESEARCHERS (1)	ITEMS	SCALE	RELIABILITY
Babin and Attaway, 2000 (Hedonic value)	<ol style="list-style-type: none"> 1. I only shop at [store X] when I need to buy something 2. A shopping trip to [store X] is truly a joy 3. I enjoy the shopping trip for its own sake, not just for items I may have purchased 4. While shopping at [store X], I was able to forget my problems 5. Compared to other things I could have done, the time spent at [store X] was truly enjoyable 	5 point scale	$\alpha=0.83$
Babin and Attaway, 2000 (Utilitarian value)	<ol style="list-style-type: none"> 1. While shopping at [store X], I found just the items I was looking for 2. I couldn't buy what I really needed in [store X] 3. I was disappointed because I had to go to another store to complete my shopping 4. It was a good shopping trip because it was over very quickly 	5 point scale	$\alpha=0.74$
Guay, Vallerand, and Blanchard (2000)	<ol style="list-style-type: none"> 1. I think that this activity is interesting 2. I think that this activity is pleasant 3. This activity is fun 4. I feel good when doing this activity 	7 point scale	$\alpha=0.95$
Mathwick, Maholtra and Rigdon (2001) (Economic value)	<ol style="list-style-type: none"> 1. XYZ products are a good economic value 2. Overall, I am happy with XYZ's prices 3. The prices of the product(s) I purchased from XYZ's website (catalogue) are too high, given the quality of the merchandise 	7 point scale	$\alpha=0.80$
Steenkamp and Geyskens (2006)	<ol style="list-style-type: none"> 1. Taken everything together, I consider this Web site useful 2. This Web site fell short of my expectations 3. I do not intend to bookmark this Web site (add to favourites) 4. I intend to visit this Web site again 5. Visiting this Web site was a poor experience 	5 point scale	$\alpha=0.75$
O'Brien (2008)	<ol style="list-style-type: none"> 1. I felt interested in my shopping task 2. Shopping on this website was worthwhile 	5 point scale with	$\alpha=0.837$

	3. My shopping experience was rewarding 4. I consider my shopping experience a success	a sixth option for 'not applicable'	
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(1) Chronologic Order

Source: Developed for this research

The scale was translated into Spanish language, resulting into:

1. *La tarea de compra me ha parecido interesante*
2. *Comprar en esta web merece la pena*
3. *Mi experiencia de compra ha sido gratificante*
4. *Considero mi experiencia de compra muy exitosa*

Purchase intention

This construct refers to the intentional likeliness of a respondent to purchase products or services sold on Web sites. Table 60 offers a representation of the instruments utilised in marketing literature for the measurement of purchase intention. These scales focus on respondents' likeliness and intentions towards online purchase.

Table 60. Measurement of purchase intention

RESEARCHERS (1)	ITEMS	SCALE	RELIABILITY
Baker and Churchill (1977)	1. Would you like to try this X? 2. Would you buy this X if you happened to see it in a store? 3. Would you actively seek out this X (in a store in order to purchase it)? 4. I would patronize this X.	7 point scale	$\alpha=0.81$
Cronin and Taylor (1992)	1. In the next year, my use of XYZ will be	7 point scale 'not at all' to 'very frequent'	n.a.
Pavlou (2003)	1. I intend to use X's web site to conduct product purchases 2. I expect to purchase through X's web site in the future 3. It is likely that I will transact with X's web site in the near future	7 point Likert scale	$\alpha=0.88$

van der Heijden et al. (2003)	1. How likely is it that you would return to this store's website? 2. How likely is it that you would consider purchasing from this website in the short term? 3. How likely is it that you would consider purchasing from this website in the longer term? 4. For this purchase, how likely is it that you would buy from this store?	7 point Likert scale	$\alpha=0.91$
Wang et al. (2006)	1. I plan to do online shopping very soon 2. I think online shopping is worth a try 3. I intend to use the Internet as an alternative channel of purchase	7 point Likert scale	$\alpha=0.78$
Celuch et al. (2007)	1. To what extent do you intend to use the Internet to purchase equipment?	7 point Likert scale	$\alpha=0.87$
Ranaweera et al. (2008)	1. It is very likely that I would book this hotel for my vacation through this web site 2. I am very certain that I would book this hotel for my vacation through this web site 3. When I am booking my vacation, it is very probable that I would book this hotel through this web site	7 point Likert scale	$\alpha=0.95$
Lee and Kozar (2009)	1. I intend to purchase products or services from the website 2. I predict I would purchase products or services from the website	7 point Likert scale	$\alpha=0.84$

(1) Chronologic Order

Source: Developed for this research

The scale we have used in this research was adapted from Lee and Kozar (2009) as the items that made up the scale were the ones that better suited our purpose and was also short, therefore would contribute to a reduction of the total items that would compose our survey. The scale was translated into Spanish language, resulting into:

1. Si tuviera que hacer la compra tendría la intención de hacerlo en esta web
2. Si tuviera que hacer la compra lo haría en esta Web

Switching intention

Switching is one of various constructs utilised to retention in Web site research literature. Other similar constructs are lock-in and stickiness. Table 61 presents some of the instruments utilised in marketing literature for the measurement of switching intention.

The different scales that measure this construct are mainly Likert scales, and the majority of scales are measured with three items. However Jones (2003) utilised a

one item scale. The scale we have utilised in this research was adapted from Bansal et al. (2005) as the questions best suited our purpose. In order to keep consistency with the rest of the survey it was adapted into a 7 point Likert scale and translated into Spanish language, resulting into:

1. *Si tuviera que hacer la compra es posible que cambiara a otra web*
2. *Si tuviera que hacer la compra es probable que cambiara a otra web*
3. *Si tuviera que hacer la compra seguro que cambiara a otra web*

Table 61. Measurement of switching intention

RESEARCHERS (1)	ITEMS	SCALE	RELIABILITY
Mittal et al. (1998)	Do you have the intention to change to another company as soon as you have the chance? 1. Yes 2. No	n.a.	n.a.
Mittal and Lassar (1998)	If there was another company you could go to, would you change? 1. No 2. Maybe 3. Definitely	n.a.	n.a.
Jones (2003)	1. Do you intend to switch to another company the next time you can?	n.a.	n.a.
Bansal, Taylor and James (2005)	Rate the probability that you switch 'my hair stylist' to a new hair stylist within the next 2 months 1. Unlikely / likely 2. Improbable / probable 3. No chance / certain	7 point Likert scale	$\alpha=0.89$
Chakravarty et al. (2004)	How probable is it that you would change bank is another bank did these things better than yours? 1. If the physical installations of the bank were extremely attractive 2. If the bank did exactly what they had promised 3. If the bank had a faster service 4. If the bank did not have hidden costs 5. If the bank gave you a very personal service	5 point scale	$\alpha=0.80$
McKee et al. (2006)	1 I plan to choose X next time the I have to purchase this service 2 The next time I have to choose I will definitely change supplier 3 The next time I have to choose, I will consider changing supplier	5 point Likert scale	$\alpha=0.90$
Anton et al. (2007)	1 I have considered changing to another company 2 I do not have the intention to renew my contract with this company 3 I intend to insure my car with another company in the future	5 point Likert scale	n.a.

(1) Chronologic Order

Source: Developed for this research

Return intention

Return intention to a Web site a common measure of success (Mu and Galleta, 2007). It refers to the likelihood of returning to a known Web site (Palmer, 2002) and is also referred to as continuance (Premkumar and Bhattacharjee, 2008) and endurance (O'Brien, 2008). Table 62 illustrates two instruments utilised in marketing literature for the measurement of return intention. The scale we have utilised in this research was adapted from Koufaris (2002) that in turn was adapted from Ghani et al. (1991). The items utilised suited our purpose and was also the shortest, therefore would contribute to a reduction of the total items in our survey. The scale was translated into Spanish language, resulting into:

1. *Si en un futuro tuviera que comprar este tipo de viajes regresaría a esta web*

TABLE 62. Measurement of return intention

RESEARCHERS (1)	ITEMS	SCALE	RELIABILITY
Koufaris (2002)	1. How likely is it that you will visit Booksamillion.com again in the Future?	7 point scale	n.a.
Intention to revisit the site (Demangeot and Broderick, 2007)	1. I intend to continue using this web site in the future 2. I plan to use this web site in the future 3. I expect my use of this web site to continue in the future 4. I will visit this site first when I want to buy books 5. I am unlikely to use this web site again	n/a	$\alpha=0,94$

(1) Chronologic Order

Source: Developed for this research

Virtual branding potential

Virtual branding potential is the ability of Web site to gain recognition and establish its existence in the minds of consumers and public. Virtual brand equity provides provide the most sustainable competitive advantage to Internet driven firms. Simeon (2001) felt that is the creation of brand equity which will provide the most sustainable competitive advantage to Internet driven firms. The most successful companies on the Internet seem to have clear brand policies.

We therefore utilised the scale proposed by Simeon (2001). Whilst the original scale was measured with a 5 point disagree-agree scale, we utilised a 7 point Likert scale

in order to maintain consistency with the overall survey. The adapted scale resulted in Spanish language:

1. *La estética de la web es atractiva*
2. *El diseño general de la web es de buena calidad*
3. *Recomendaría esta web a otros usuarios*

Table 63. Measurement of virtual branding potential

RESEARCHERS (1)	ITEMS	SCALE	RELIABILITY
Simeon (2001)	1. The aesthetic design of this Web site is attractive 2. The general design of the Web has a good quality 3. I would recommend this Web site to other users	5 point scale	n.a.

(1) Chronologic Order

Source: Developed for this research

Unaided brand recall and unaided URL recall

Recall is a dependent variable frequently used in information systems and marketing research that serves as an indication of the effectiveness of communication of different formats of information (Hong et al., 2005). We utilised recall as a performance measure with the objective of capturing if respondents could remember the brand name and URL address of the data acquisition Web after navigating on it.

Kim and Kim (2005) utilised three different types of measures for brand awareness in the hospitality industry: top-of-mind brand, unaided brand recall and brand recognition aid recall. Unaided brand recall refers to the extent respondents can remember from their memory the brand name of the Web site. This type of measure is suitable for the assessment of user's memorisation of Web site brands and their internet URL addresses. Table 64 illustrates how two authors had measured unaided brand recall.

Table 64. Measurement of unaided brand recall

RESEARCHERS (1)	ITEMS	SCALE	RELIABILITY
Dreze and Hussherr (2003)	1. While completing the task yesterday, do you recall seeing one or more banner ad?	Dichotomous yes / no	n.a.
Dreze and Hussherr (2003)	2. If yes please enter the brands advertised	Free flow multi-line text box	n.a.

Kim and Kim, (2005) (top-of-mind brand)	3. Write down the name of a chain of restaurant in Seoul that first comes to your mind	Free flow multi-line text box	n.a.
Kim and Kim, (2005) (unaided brand recall)	4. List three other names of chain restaurants in Seoul that come to your mind at this moment (unaided brand recall)	Free flow multi-line text box	n.a.
Kim and Kim, (2005) (recognised and unrecognised brand in the aided recall)	5. Of the following 13 chain restaurants, please circle the name of the restaurant name(s) you do not know	Researchers converted replies to a one-scale measure	n.a.

(1) Chronologic Order

Source: Developed for this research

We utilised the two stage approach suggested by Dreze and Hussherr (2003). Firstly, respondents we enquired whether they remembered the Web site brand. If their reply was positive, then they were asked to type the brand name into the open field that appeared the survey. The same procedure was utilised for URL recall. Table 65 illustrates how unaided brand recall has been previously measured.

Table 65. Measurement of unaided URL recall

RESEARCHERS (1)	ITEMS	SCALE	RELIABILITY
Dreze and Hussherr (2003)	1. While completing the task yesterday, do you recall seeing one or more banner ad?	Dichotomous yes / no	n.a.
Dreze and Hussherr (2003)	2. If <i>yes</i> please enter the brands advertised	Free flow multi-line text box	n.a.
Kim and Kim, (2005) (top-of-mind brand)	3. Write down the name of a chain of restaurant in Seoul that first comes to your mind	Free flow multi-line text box	n.a.
Kim and Kim, (2005) (unaided brand recall)	4. List three other names of chain restaurants in Seoul that come to your mind at this moment (unaided brand recall)	Free flow multi-line text box	n.a.
Kim and Kim, (2005) (recognised and unrecognised brand in the aided recall)	5. Of the following 13 chain restaurants, please circle the name of the restaurant name(s) you do not know	Researchers converted replies to a one-scale measure	n.a.

(1) Chronologic Order

Source: Developed for this research

The scale for brand recall was adapted into Spanish language, resulting:

1. *¿Recuerda haber visto el nombre de la Web? (yes / no)*
2. *En caso afirmativo, por favor escriba el nombre: (free flow text)*

Likewise, the scale for URL recall resulted in Spanish language:

1. *¿Recuerda haber visto la dirección de la Web? (yes/no)*
2. *En caso afirmativo, por favor escriba la dirección: (free flow text)*

5.8. Demographic variables and experience with the Internet variables

Beside the variables utilised for contrasting our research model, we also enquired respondents' regarding their demographic profile and experience with the Internet medium. Besides behavioural data, customer demographic data has been used to classify respondents in online consumer behaviour contexts (Bigné, 2006; Lin, 2007; Van den Poel and Buckinx, 2005). Padmanabhan et al. (2001) used of several demographic variables when predicting online purchase probabilities, including gender, age, customers' income, education level, the size and the presence of children. Besides, Li et al. (2002) utilised customers age, gender and race. Accordingly we asked respondents to enter their demographic data. The variables measured are summarised in table 66.

Table 66. Demographic and experience with the Internet variables

VARIABLE	SCALE	THEORETICAL FOUNDATION
Age	Item scale	Lin (2007); O'Brien (2008)
Province	Pull Down	Aimc (2009)
Gender	Dichotomous	Lin (2007)
Level of education	Item scale	Lin (2007)
Net monthly income	Item scale	Bigné (2006); Lin (2007)
Type of employment	Item scale	O'Brien (2008)
Profession	Open field	O'Brien, (2008)
Skill with the Internet	Item scale	Mathwick, Maholtra and Rigdon (2004)
Frequency of use of Internet	Item scale	Bigné (2006)
Seniority with the Internet	Item scale	Bigné (2006)

Source: Developed for this research

5.9. Conclusion of the section on variables

Overall we have described the eight variables that we propose are the dimensions of Web site engagement, eight variables which measure the proposed antecedents of this construct as well the variables used to measure its eight potential consequences. We also described the variables utilised to measure the demographic profile and experience with the Internet of the respondents. Table 67 presents a summary of the 31 variables measured in this dissertation, along with their theoretical foundation.

Table 67. Summary of variables utilised in this research

VARIABLES	THEORETICAL FOUNDATION
1. DIMENSIONS OF WEB SITE ENGAGEMENT	
Positive affect	Babin and Attaway (2000); Jennings (2000); Lee and Kozar (2009); Novak et al. (2000)
Focused attention	Chapman (1997); Chapman et al. (1999); Csikszentmihalyi, (1990); Ghani et al. (1991); Guo and Poole (2008); Jacques et al. (1995); Jennings (2000); Novak et al. (2000); Koufaris, (2002); Matlin (1994); Novak and Hoffman (2000); Novak et al. (2000); O'Brien (2008); Trevino and Webster (1992); Webster and Ho (1997); Wells and Matthews (1994)
Challenge	Chen (2006); Hoffman and Novak (2000); Koufaris (2002); Novak et al. (1998); O'Brien (2008); Pace (2004); Webster and Ahuja (2004)
Control	Ghani et al. (1991); Guo and Poole (2008); Hoffman and Novak (1996; Huang (2003); Koufaris (2002; Novak and Hoffman (1999); Novak, et al. (2000); O'Brien (2008); Scheiderman and Plaisant (2005); Siekpe (2005); Trevino and Webster (1992); Venkatesh (2000); Webster et al. (1993); Webster and Ho (1997)
Curiosity	Aboulafia and Bannon (2004); Huang (2003); O'Brien (2008); Toms (2000)
Involvement	Chapman (1997); Laurel (1993); Jacques et al. (1995); Hull and Reid (2003); Kappelman (1995); Mokkonen (1997); O'Brien (2008); Said (2004); Webster and Ahuja (2004); Webster and Ho (1997)
Transformation of time	Agarwal and Karahanna (2000); (Chan and Ahern (1999); (Chan and Repman (1999); Chen and Nilan (1999); Chen (2006); Csikszentmihalyi (1988, 1990); Davis and Wiedenbeck, (2001); Guo and Poole (2008); (Li and Browne, 2004); Moon and Kim (2001); Novak et al. (2000); O'Brien, (2008); Shin, (2006); Skadberg and Kimmel (2004)
Up-to-dateness of information	Chaffey et al., (2000); Klopping and McKinney (2004)
2. ANTEDECENTS OF WEB SITE ENGAGEMENT	
Web site aesthetics	Beardsley (1982); Chapman (1997); Jennings (2000); Laurel (1993); Lavie and Tractinsky (2004); Mathwick et al. (2001); O'Brien (2008); Skelly et al. (1994)
Feedback	Brown and Cairns (2004); Guo and Poole (2008); Novak et al. (2000); O'Brien (2008); Stone et al. (2005); Webster and Ho (1997)
Purchase involvement	Balabanis and Reynolds (2001); Demangeot and Broderick (2007); Huang (2006); Koufaris (2002); Laurent and Kapferer (1985); Mittal (1995); McQuarrie and Munson (1992); Novak et al. (2000)
Cell comparisons	Bettman et al. (1985); Bojko, (2006); Card et al. (1985), Kennedy, (1998); Lohse and Johnson, (1996); O'Brien, (2008); Russo, (1978); Senecal et al. (2005)
Cell reacquisitions	Lohse and Johnson (1996); Pitkow (1997); O'Brien (2008)
Product comparisons	Bucklin and Sismeiro, (2003); Lohse and Johnson, (1996); O'Brien, (2008); Senecal et al. (2005)
Web site depth of navigation	Bucklin and Sismeiro, (2003); Kennedy, (1998); Lohse and Johnson, (1996); Pitkow, (1997); O'Brien, (2008)
3. CONSEQUENCES OF WEB SITE ENGAGEMENT	
Web perceived value	Babin et al. (1994); Guay et al. (2000); Mathwick et al. (2001); O'Brien (2008); Steenkamp and Geyskens (2006)
Purchase intention	Hans van der Heijden et al. (2003); Lee and Kozar (2009); Ranaweera et al. (2008)
Switching intention	Anton et al. (2007); Bansal et al. (2005); Chakravarty et al. (2004); Jones (2003); McKee et al. (2006); Mittal and Lassar (1998); Mittal et al. (1998);
Return intention	Koufaris (2002); Lin (2007); Demangeot and Broderick (2007)
Virtual branding potential	Simeon (2001)
Unaided brand recall	Dreze and Hussherr (2003); Kim and Kim (2005)

Unaided URL recall	Dreze and Hussherr (2003); Kim and Kim (2005)
4. DEMOGRAPHIC DATA AND CONSUMER EXPERIENCE WITH THE INTERNET	
Age	Lin (2007); (O'Brien, 2008)
Province	Aimc (2009)
Gender	Lin (2007)
Level of education	Lin (2007)
Net monthly income	Bigné 2006; Lin (2007)
Type of employment	O'Brien (2008)
Profession	O'Brien (2008)
Skill with the Internet	Mathwick, Maholtra and Rigdon (2004)
Frequency of use of Internet	Bigné (2006)
Seniority with the Internet	Bigné (2006)

Source: Developed for this research

5.10. Structure of the survey

As it has been previously described, data has been collected with a combined methodology, utilising a two-part survey that was utilised to assess the perceptions of respondents, and a data acquisition Web site that traced and recorded their online behaviour of navigation.

Table 68 presents the structure of the two-part survey including how the questions were coded. The complete version of the survey in Spanish language is illustrated in Appendix 1. Table 69 illustrates the composition of the navigation variables.

Table 68. Structure of the two-part survey

CATEGORY	FACTOR	DESCRIPTION	CODING	THEORETICAL FOUNDATION
Respondent Profile		Categorical	SX, AG, ED, WK1, WK2, SA, PV	Bigné (2006)
Internet Use / Skills		5 items, 7 point Likert scale	SK1-SK3 FU, AC	Bigné (2006); Mathwick et al., 2004)
Antecedents of Web site engagement	Aesthetics	3 items, 7 point Likert scale	AE1-AE3	Mathwick et al. (2002)
	Feedback	4 items, 7 point Likert scale	FD1-FD4	O'Brien (2008) adapted
	Purchase involvement	3 items, 7 point Likert scale	PD1-PD3	Laurent and Kapferer (1985) Adapted
Web site engagement	Positive Affect	5 items, 7 point Likert scale	PA1-PA5	Babin and Attaway (2000) adapted
	Focused Attention	3 items, 7 point Likert scale	FA1-FA3	Huang (2003) adapted
	Challenge	4 items, 7 point Likert scale	CH1-CH4	O'Brien (2008) adapted

	Control	3 items, 7 point Likert scale	CO1-CO3	Huang (2003) adapted
	Curiosity	3 items, 7 point Likert scale	NO1-NO3	O'Brien (2008)
	Involvement	4 items, 7 point Likert scale	EN1, EN3-EN5	O'Brien (2008) adapted
	Transformation of time	3 items, 7 point Likert scale	TT1-TT3	Guo and Poole (2008)
	Up-to-dateness of information	1 item, 7 point Likert scale	NO4	Klopping and McKinney (2004)
Global indicators 1-4		4 items, 7 point Likert scale	G1-G4	Developed for this research
Consequences of Web site engagement	Purchase intention	2 items, 7 point Likert scale	PI1-PI2	Lee and Kozar (2009)
	Web perceived value	4 items, 7 point Likert scale	MO1-MO4	O'Brien (2008)
	Switching intention	3 items, 7 point Likert scale	SW1-SW3	Bansal, Taylor and James (2005) adapted
	Return intention	1 item, 7 point Likert scale	RI	Koufaris (2002) adapted
	Virtual branding potential	3 items, 7 point Likert scale	VB1, VB2, AE2	Simeon (2001)
	Unaided brand recall	2 items: 1 dichotomous and 1 open field	BR1-BR2	Dreze and Hussherr (2003) adapted
	Unaided URL recall	2 items: 1 dichotomous and 1 open field	UR1-UR2	Dreze and Hussherr (2003) adapted

Source: Developed for this research

TABLE 69. Composition of navigation Variables

FACTORS	INDICATOR	TYPE OF VARIABLE
F1. Cell comparisons	X1. Total fixations	Ordinal
	X3. Cell repeats	Ordinal
	X5. Total fixation time	Seconds
	X6. Revisited cell ratio	Ratio
	X7. Repeated cell ratio	Ratio
	X19. Repeated unique cell ratio	Ratio
F2. Cell reacquisitions	X2. Unique cells	Ordinal
	X8. Cell reacquisition ratio	Ratio
F3. Web site depth of navigation	X4. Total product views	Ordinal
	X10. Unique product views	Ordinal
	X13. Total product view time	Seconds
	X16. Total task time	Seconds
F4. Product comparisons	X12. Product repeats	Ordinal
	X14. Repeated product ratio	Ratio
	X15. Revisited page ratio	Ratio
	X20. Repeated unique product ratio	Ratio

Source: Developed for this research

5.11. Ethical considerations

When conducting social science research, research ethics is a concern which needs to be complied with and researchers must inform potential respondents of the steps taken to protect their anonymity and confidentiality (Lyons et al., 2005). Following the suggestions of Lyons et al. (2005) respondents were given information regarding the purpose of the research. An invitation to participate email was sent to all respondents who granted their consent to receive the instructions of participation. All respondents were informed that their information would be kept confidential. The data being entered was being entered, downloaded and stores on a secure server which was password protected. The data base with response data is only accessible by the researcher, by his supervisor and by an assistant professor specialised in data analysis.

Finally, research obtained approval to conduct their study from the review board of the University that protects human subjects.

5.12. CONCLUSION OF THIS CHAPTER

The chapter was dedicated to the suggestion of a Web site engagement scale as well as a Web site engagement model based on this construct. After the chapter introduction, we immediately described the research objectives and research issues of this thesis. This was followed by a justification of the suitable paradigm and research method. We then proposed a Web site engagement construct and developed a model of relationships based on this construct. The construct was based on a previous scale of engagement with technology (O'Brien, 2008). After conceptualising the term *Web site engagement* we described the eight potential dimension of this construct, in particular positive affect, focused attention, challenge, control, curiosity, involvement, transformation of time and up-to-dateness of information. We then suggested a model of Web site engagement which comprises twenty relationships. From these twenty, seven are potential antecedents to Web site engagement, seven are potential consequences and a further six further hypotheses are formulated both within the antecedents and consequences sections of the model.

In order to reach the objectives of this research utilised a combined consumer-technology methodological approach. As the context of this research is online travel, we provided an insight into research regarding the Internet, e-commerce and the travel sector. Regarding the collection of data, mainly Likert 1-7 online surveys have been utilised to obtain consumer perceptual data and a data acquisition Web site was developed to capture the online comparative behaviour of our respondents. EIPs and clickstream variables were used for this purpose. We then described the research design, including the combined method of data collection, the design of instruments and the data collection process. This was followed by a description of how the variables used in this research were measured and we justified the election of each instrument based on previous research. Due to the objectives and context of this research, some of the scales had been adapted in order to best suit their purpose. Finally, we described the ethical considerations of this research.

The next chapter is dedicated to the analysis of the collection of data with which it will be possible to provide the conclusions of this research that will be portrayed in chapter seven.

CHAPTER 6

DATA ANALYSIS AND DISCUSSION

6.1. INTRODUCTION

In the previous chapter we suggested the dimensions of a Web site construct, we formulated twenty hypotheses to be contrasted in our research model and described the methodology that has been followed during the empirical research. The objective of this chapter is to detail the results obtained the empirical analysis. The analysis will be elaborated with a data base which has been developed following the criteria described in the methodology section. The data base contained 336 cases from respondents who completed a two-part survey and an online navigation experiment.

The data analysis process will be developed in five stages. First we shall describe our respondents' profiles based on their socio-demographic characteristics and familiarity with the Internet medium (section 6.2). Second, we shall describe the validation instruments and the measurements which shall be subsequently utilised during the analysis. In this section we shall also confirm that the instruments comply with the psychometric properties recommended by previous researchers (section 6.3). Based on these scales, in third place we shall undertake the main analysis of results (section 6.4).

This includes the analysis of the dimensions of Web site engagement and the contrast of the formulated hypotheses including the suggested antecedents, consequences and mediator variables utilised in the research model. Fourth and finally we shall make some conclusions on this chapter (section 6.5).

6.2. Socio-demographic profiles of the respondent sample

The characteristics of the respondents' profile include their gender, age, income, level of education, occupation, region of Spain where they live and their familiarity with the Internet medium. Table 70 illustrates the socio-demographic profiles of our respondent sample. Of the total of 336 respondents the online questionnaire 174 were males (51.8%) and 162 were females (48.2%). Respondents ranged in age: under 18 (n=4, 1.2%); 18-25 (n=27, 8%); 26-35 (n=129, 38.4%); 36-45 (98, 29.1%); 46-55 (n=57, 17.0%); 56-65 (n=16, 4.8%); and more than 65 (n=5, 1.5%). A large proportion had attended university (n=247; 73.5%) or high school (n=84; 25.0%). In terms of their professional profile, 60.4% were employed, 28.3% were self-

employed, 10.1% were retired and 1.2% was unemployed. 85.5% of respondents lived in Spain and 14.5% lived abroad. The complete sample was Spanish-speaking and was subscribed to the newsletter of a shopping Web site operating in the country of Spain. Their city of residence was not utilised as a research variable.

Table 70. Socio-demographic profiles of the respondent sample

CARACTERISTICS	CATEGORIES	No OF RESPONSES	PERCENTAGE
Gender	Male	174	51,8%
	Female	162	48,2%
Age	Under 18 years of age	4	1,2%
	Age 18-25	27	8,0%
	Age 26-35	129	38,4%
	Age 36-45	98	29,1%
	Age 46-55	57	17,0%
	Age 56-65	16	4,8%
	Age above 65	5	1,5%
Level of education	No studies	0	0,0%
	Primary	5	1,5%
	Secondary	84	25,0%
	University	247	73,5%
Occupation	Employed	203	60,4%
	Self-employed	95	28,3%
	Retired	34	10,1%
	Unemployed	4	1,2%
Level of income (net monthly income)	Under 600€	14	4,1%
	600 to 1200€	62	18,5%
	1200 to 1800€	64	19,1%
	1800 to 2400€	32	9,5%
	Above 2400€	164	48,8%
Region of Spain where the respondents reside	Andalucía	14	4,2%
	Aragón	7	2,1%
	Asturias	4	1,2%
	Baleares	4	1,2%
	Canarias	7	2,1%
	Cantabria	1	0,3%
	Castilla y León	16	4,80%
	Castilla-La Mancha	10	3,0%
	Cataluña	19	5,7%
	Comunidad Valenciana	137	40,7%
	Extremadura	2	0,6%
	Galicia	5	1,5%
	Madrid	51	15,1%
	Murcia	2	0,6%
	Navarra	2	0,6%
	País Vasco	4	1,2%
	Rioja, La	2	0,6%
Living abroad	49	14,5%	
		N=336	N=336

Source: Developed for this research

Participants stated that they were habitual users of the internet: 86.9% used it every day, 10.4% three to six a week and 2.1% less than two days a week. A large proportion had a home connection to Internet for more than 4 years (n= 232, 70.4%). Table 71 illustrates the frequency of use of Internet and availability of access to the Internet at home of the respondents.

Table 71. Frequency of use of internet and availability of access to the Internet at home

CHARACTERISTICS	CATEGORIES	No OF RESPONSES	PERCENTAGE
How often do you use the Internet ?	I do not usually use it	2	0,6%
	Every month	0	0,0%
	Every 15 days	0	0,0%
	1-2 days / week	7	2,1%
	3-6 days / week	35	10,4%
	Every day of the week	292	86,9%
For how long do you have an Internet connection at home ?	I don't have access from home	30	8,9%
	For less than 6 months	4	1,2%
	Between 6 months and 1 year	5	1,5%
	Between 1 and 2 years	26	7,7%
	Between 3 and 4 years	39	11,0%
	For more than 4 years	232	70,4%
		N=336	N=336

Source: Developed for this research

Having made a general description of the respondent profiles, in the following section we shall evaluate the measurement scales.

6.3. Criteria for judging the quality of the research

In this section we will discuss the criteria that were taken into consideration in order to establish the reliability and validity of the measurement scales utilised in this research. Within the context of marketing research, constructs are increasingly being used in order to gather the particularities of a particular phenomenon. Also measurement scales allow researchers to adequately quantify the different variables comprised within a study. As a consequence, the development, refinement and validation of the scales utilised in this research constitute an essential aspect in order to guarantee adequate results (Casaló, 2008). In chapter 5 we justified the selection of the different measurement scales which have been utilised in this research based on the literature review. Tables 72 and 73 presents scales utilised. We then undertook an evaluation of the measurement scales in order to adapt them to our

Table 72. Construct scales utilised in the surveys, item coding and descriptions

CONSTRUCT	ITEM CODE	ITEM DESCRIPTION
Aesthetics	AE1	The way the website displays its products is attractive
	AE2	The website is aesthetically appealing
	AE3	I like the way the website looks
Positive affect		Whilst I navigated on the Web site I felt ...
	PA1	... excited
	PA2	... energetic
	PA3	... happy
	PA4	... satisfied
	PA5	... bold
Control	CO1	When navigating this website, I felt in control
	CO2	I felt that I had no control over my interaction with the Web (R)
	CO3	This website allowed me to control the computer interaction
Focused attention	FA1	When navigating this website, I thought about other things
	FA2	When navigating this website, I was aware of distractions
	FA3	When navigating this website, I was totally absorbed in what I was doing
Transformation of time	TT1	Time appeared to go by very quickly
	TT2	I lost track of time
	TT3	Time flew
Feedback	F1	The organization of information on this Web site made sense to me
	F2	I found the organization of information on this shopping Web site confusing (R)
	F3	I found this shopping Web site confusing to use (R)
	F4	It took too many clicks to get to the product information I was looking for on this Web site (R)
Challenge	CH1	This shopping website was easy to use
	CH2	This shopping experience was demanding (R)
	CH3	Using this shopping website was mentally taxing (R)
	CH4	Shopping on this website was too much trouble (R)
Involvement	EN1	I felt involved in this shopping task
	EN3	It was easy to get wrapped up in this shopping experience
	EN4	I was really drawn into my shopping task

Table 72. Construct scales utilised in the surveys, item coding and descriptions (continuation)

Global engagement indicator 1	G1	The Web site captivated my attention
Global engagement indicator 2	G2	The Web site maintained my attention
Global engagement indicator 3	G3	Whilst I navigated I wanted to remain on the Web site
Global engagement indicator 4	G4	Whilst I navigated I was concentrated
Virtual branding (VB1+VB2+AE2)	VB1	The general design of the Web has a good quality
	VB2	I would recommend this Web site to other users
Web perceived value	MO1	I felt interested in my shopping task
	MO2	Shopping on this website was worthwhile
	MO3	My shopping experience was rewarding
	MO4	I consider my shopping experience a success
Curiosity	NO1	I continued to shop on this Web site out of curiosity
	NO2	This shopping experience satisfied my sense of curiosity
	NO3	The content of the shopping Web site incited my curiosity
Purchase Involvement	PD1	I choose my holiday packages very carefully
	PD2	Which holiday package I buy matters to me a lot
	PD3	Choosing my holiday package is an important decision for me
Up-to-dateness of information	NO4	The online product information is sufficiently up-to-date for my purposes
Purchase intention	PI1	I intend to purchase products or services from the website
	PI2	I predict I would purchase products or services from the website
Switching intention		If I would have to purchase the holiday package ...
	SW1	... it is <i>possible</i> that I would switch to another Web site
	SW2	... it is <i>probable</i> that I would switch to another Web site
	SW3	... <i>certainly</i> I would switch to another Web site
Return Intention	RI	If I need to purchase this type of holidays in the future it is likely that I will visit this Web site again
Unaided brand recall	BR1	While completing the task, do you recall seeing the brand of the Web site ? YES / NO
	BR2	If <i>yes</i> please enter the brand of the Web site:
Unaided URL Recall	UR1	While completing the task, do you recall seeing the brand of the Web site ? YES / NO
	UR2	If <i>yes</i> please enter the URL of the Web site:

Source: Developed for this research

(R) indicates reverse coding

All items were measured with a 7 point scale except for BR1 and UR1 which were dichotomous and BR2 and UR2 which were open field text

Table 73. Construct scales built with EIP and clickstream variables, item coding and descriptions

CONSTRUCT	ITEM CODE	ITEM DESCRIPTION
F1. Cell comparisons	X1	Total fixations
	X5	Total fixation time
	X3	Cell repeats
	X6	Revisited cell ratio
	X7	Repeated cell ratio
	X19	Repeated unique cell ratio
F2. Cell reacquisitions	X2	Unique cells
	X8	Cell reacquisition ratio
F3. Product comparisons	X12	Product repeats
	X14	Repeated product ratio
	X15	Revisited page ratio
	X20	Repeated unique product ratio
F4. Web site depth of navigation	X4	Total product views
	X10	Unique product views
	X13	Total product view time
	X16	Total task time

Source: Developed for this research

context of study and purify the scales that shall be utilised in the analysis of results. For this we followed the indications of Churchill (1979) regarding the evaluation of the psychometric properties of reliability and validity. All the scales we have utilised are unidimensional.

6.3.1. Model estimation

For the estimation of the research model illustrated in figure 43 we opted for partial least squares path modelling (PLSPM). This choice is grounded on the fact that Web site engagement is phenomenon which is relatively new in research and theoretical models based on this construct are not yet grounded. Likewise, the suggested model is relatively complex with a substantial number of latent variables. These are some of the reasons why previous research suggests choosing PLSPM versus traditional approaches of estimation of structural models based on co-variances (Chin, 1998a; Chin, 1998b; Chin y Newsted, 1999; Haenlein y Kaplan, 2004; Fornell y Bookstein, 1982; Fornell y Cha, 1994). This approach is obtaining greater attention over time in business management and marketing research on an international level (Birkinshaw, Morrison y Hulland, 1995; Hulland, 1999; Staples, Hulland y Higgins, 1999; Johansson y Yip, 1994; Tsang, 2002; Grey y Meister, 2004) as well as on a Spanish level (Sánchez y Roldán, 2005; Sánchez y Villarejo, 2004). A detailed discussion of the algorithm can be followed in Lohmöller (1989) or Fornell, Barclay y Rhee (1988), as well as Cepeda y Roldán (2004) for an overall scope of the characteristics of this technique. The model was estimated with SmartPLS 2.0 (Ringle, Wende and Will, 2005) and the parameter significance was based on a *bootstrapping* resampling method with 500 subsamples of the same size of the original sample.

The following two sections describe the validity and reliability criteria taken into account in this research.

6.3.2. Validity of the measurement instrument

Validity determines whether a research instrument truly measures that which it is intended to measure and how truthful the results of the research are (Golafshani, 2003; Joppe, 2000). Construct validity is ‘the ability of a measurement instrument to

measure a construct or concept' (Aaker and Day, 1990). Emory and Cooper (1991) affirmed that construct validity can be achieved by developing correct operational measures for the concepts. For the validation of our measurement instrument we applied the following criteria: in order to ensure convergent validity, we eliminated those items with factorial weights that were not significant or lower than 0.60 (Bagozzi and Baumgartner, 1994; Bagozzi and Yi, 1988). Items would also be eliminated if their indicators had a greater loading on a latent variable different to the one to which it was assigned (i.e. cross weights). However, in this stage it was not necessary to eliminate any indicator (table 74).

In order to analyse the discriminant validity, we followed the only possible method that can be used when a model is estimated with PLS-PM, that is, to verify that the average variance extracted for each factor is not greater than the square of the correlation between each pair of factors (Fornell y Larcker, 1981). No factor presented problems regarding the discriminant validity of the model (Table 75).

**Table 74. Validation of the measurement model.
Reliability and convergent validity**

Variable	Indicator	Factor loading	t-value (bootstrapping)	CA	CR	AVE
Aesthetics	AE1	0.93**	106.51	0.95	0.97	0.92
	AE2	0.97**	242.82			
	AE3	0.97**	253.07			
Focused attention	FA1	0.78**	16.91	0.71	0.83	0.62
	FA2	0.72**	12.26			
	FA3	0.85**	23.41			
Challenge	CH1	0.90**	61.16	0.90	0.93	0.76
	CH2	0.87**	29.21			
	CH3	0.89**	35.82			
	CH4	0.83**	28.49			
Control	CO1	0.95**	118.17	0.95	0.97	0.90
	CO2	0.95**	100.72			
	CO3	0.94**	116.38			
Involvement	EN1	0.87**	44.39	0.88	0.93	0.81
	EN3	0.91**	62.96			
	EN4	0.91**	67.48			
Feedback	FD1	0.83**	41.03	0.82	0.88	0.66
	FD2	0.91**	61.92			
	FD3	0.88**	48.40			
	FD4	0.58**	9.44			
Curiosity	NO1	0.93**	113.05	0.92	0.95	0.87
	NO2	0.94**	82.01			
	NO3	0.93**	74.95			

Transformation of time	TT1	0,83**	26.16	0.85	0.91	0.77
	TT2	0,87**	38.52			
	TT3	0,93**	101.42			
Purchase involvement	PD1	0.78**	9.41	0.89	0.94	0.83
	PD2	0.97**	34.31			
	PD3	0.97**	34.31			
Up-to-dateness of information	NO4	--	--	--	--	--
Cell comparisons	X1	0.96**	6.02	0.96	0.97	0.84
	X19	0.96**	5.96			
	X3	0.97**	5.99			
	X5	0.77**	4.51			
	X6	0.95**	5.97			
Cell reacquisitions	X7	0.87**	5.68	0.70	0.70	0.57
	X2	0.70**	4.96			
	X8	0.94**	3.20			
Product comparisons	X12	0.92**	5.83	0.96	0.97	0.89
	X14	0.94**	5.12			
	X15	0.98**	5.49			
	X20	0.91**	5.14			
Web site depth of navigation	X10	0.89**	9.00	0.91	0.94	0.80
	X13	0.87**	7.12			
	X16	0.89**	8.86			
Web perceived value	X4	0.92**	8.31	0.95	0.96	0.87
	MO1	0.92**	70.84			
	MO2	0.93**	82.59			
	MO3	0.96**	140.93			
	MO4	0.92**	76.56			
Positive affect	PA1	0.89**	39.39	0.94	0.95	0.81
	PA2	0.92**	74.38			
	PA3	0.93**	88.23			
	PA4	0.93**	96.59			
	PA5	0.82**	27.16			
Purchase intention	PI1	0.98**	264.01	0.95	0.98	0.95
	PI2	0.98**	215.43			
Switching intention	SW1	0.91**	52.89	0.92	0.95	0.85
	SW2	0.96**	135.65			
	SW3	0.91**	88.54			
Return intention	RI	--	--	--	--	--
Virtual branding potential	VB1	0.91**	78.09	0.81	0.91	0.84
	VB2	0.92**	118.92			
Unaided brand recall	BR1	--	--	--	--	--
Unaided URL recall	UR1	--	--	--	--	--
Engagement	G1	0.93**	110.59	0.91	0.94	0.79
	G2	0.94**	138.26			
	G3	0.91**	74.59			
	G4	0.75**	22.67			

Note: CA=Cronbach's alpha; CR=Composite reliability; AVE=Average Variance Extracted; **p<.01

6.3.3. Reliability of the instrument

Reliability tests are conducted to ensure that ‘the findings and conclusions of a research study will be replicated by a subsequent study following the same procedures’ (Yin, 2002. p37), in other words, they ensure that if the same study is replicated, using the same methods, it will generate the same results (Gabriel 1990; Gummesson 1991). We first assessed the reliability with Cronbach’s alpha coefficient (Cronbach, 1951). Nunnally (1967) and Churchill (1979) suggested that this coefficient should be greater than the recommended value of 0.7 for a scale to be considered reliable. This coefficient assumes that the items have been measured without errors, fact which is not reasonable, as it tends to underestimate the reliability (Bollen, 1989). Therefore we also calculated the composite reliability index, which resulted to be greater than the recommended value of 0.7 for all factors (Fornell y Larcker, 1981). We also utilised average variance extracted (AVE), which is an indicator of the variance captured by a factor relative to the variance due to a measurement error (Fornell y Larcker, 1981). In this stage it was also not necessary to eliminate any indicator (table 74).

Table 75. Measurement model discriminant validity

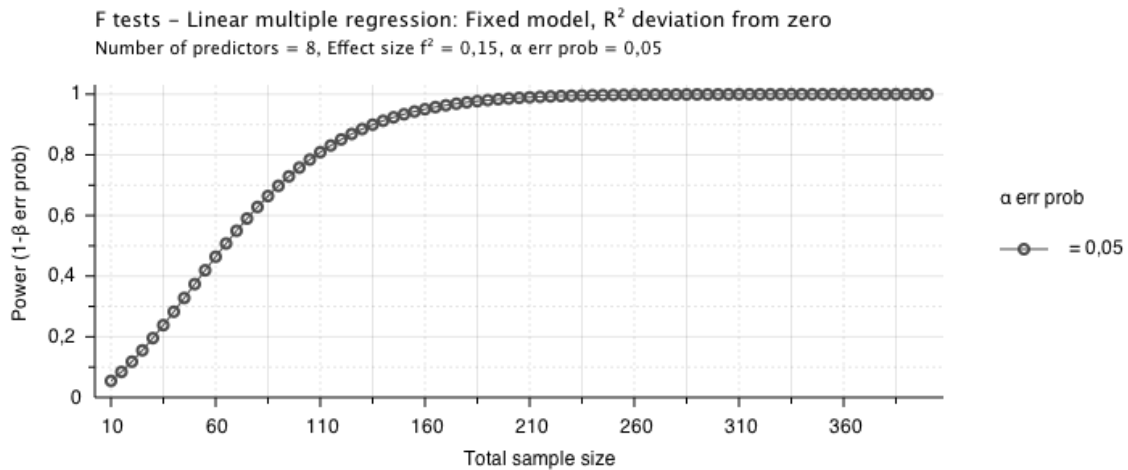
	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17	F18	F19	F20	F21	F22	F23
F1	0,96																						
F2	0,04	--																					
F3	-0,03	-0,13	0,92																				
F4	-0,01	0,11	-0,03	0,75																			
F5	0,48	-0,02	0,08	0,00	0,87																		
F6	0,41	0,01	0,07	0,02	0,57	0,95																	
F7	0,62	-0,03	0,03	-0,03	0,49	0,44	0,93																
F8	-0,01	-0,06	0,60	-0,10	0,10	0,09	0,11	0,89															
F9	0,67	-0,07	0,04	-0,04	0,49	0,49	0,76	0,10	0,89														
F10	0,50	-0,07	0,08	-0,05	0,57	0,49	0,73	0,13	0,78	0,90													
F11	0,16	0,03	0,09	0,08	0,22	0,21	0,35	0,10	0,43	0,47	0,79												
F12	0,70	-0,02	-0,02	-0,04	0,72	0,55	0,60	0,05	0,64	0,59	0,22	0,81											
F13	0,69	0,00	-0,02	-0,04	0,44	0,42	0,69	-0,01	0,63	0,55	0,22	0,60	0,97										
F14	0,59	-0,11	0,10	-0,03	0,48	0,49	0,70	0,14	0,71	0,67	0,30	0,61	0,69	0,90									
F15	-0,05	-0,05	0,58	-0,17	0,08	0,08	0,04	0,77	0,06	0,10	0,13	0,00	-0,07	0,05	0,94								
F16	0,12	0,07	0,03	0,03	0,21	0,18	0,15	0,05	0,11	0,15	0,14	0,17	0,10	0,09	0,01	0,91							
F17	0,75	-0,03	-0,01	-0,03	0,54	0,49	0,85	0,06	0,80	0,76	0,32	0,70	0,77	0,73	-0,02	0,13	0,93						
F18	0,64	-0,04	0,05	0,03	0,42	0,38	0,69	0,09	0,64	0,56	0,26	0,56	0,80	0,69	0,01	0,09	0,73	--					
F19	-0,53	-0,01	0,04	-0,02	-0,30	-0,26	-0,41	0,07	-0,43	-0,33	-0,18	-0,42	-0,60	-0,44	0,09	0,05	-0,51	-0,51	0,92				
F20	0,41	0,03	-0,03	0,02	0,36	0,30	0,52	-0,02	0,49	0,51	0,28	0,39	0,40	0,48	0,00	0,11	0,51	0,41	-0,32	0,88			
F21	0,59	-0,03	-0,07	-0,08	0,38	0,34	0,71	-0,05	0,61	0,56	0,20	0,56	0,74	0,59	-0,09	0,08	0,73	0,63	-0,46	0,37	--		
F22	0,08	0,57	-0,07	-0,04	-0,03	0,00	0,00	-0,09	0,00	-0,01	0,01	-0,01	0,08	-0,03	-0,10	0,04	0,05	0,03	-0,10	0,01	0,06	--	
F23	0,84	-0,01	-0,02	-0,02	0,48	0,40	0,73	0,00	0,70	0,57	0,20	0,68	0,82	0,71	-0,09	0,10	0,83	0,84	-0,62	0,46	0,70	0,06	0,92

Note: Values in diagonal are square root of AVE. Below the diagonal: latent variable correlations. F1= Aesthetics. F2=Unaided brand recall. F3=Cell comparisons. F4=Cell reacquisitions. F5=Challenge. F6=Control. F7=Curiosity. F8=Web site depth of navigation. F9=Engagement. F10=Involvement. F11=Focused attention. F12=Feedback. F13=Purchase intention; F14=Positive affect. F15=Product comparisons. F16=Purchase involvement. F17=Perceived value. F18=Return intention. F19=Switching intention. F20=Transformation of time. F21=Up-to-dateness of information; F22=Unaided URL recall; F23=Virtual branding.

6.4. RESULTS OF THE ANALYSIS

Once the measurement instrument was validated, we estimated the dimensions of Web site engagement and the research model. This will also be the order that will be followed when presenting the results. Once again, both estimations were undertaken with partial least squares path modeling. Parameter significance was obtained with bootstrapping with a total of 500 subsamples of a same size of the original sample. The predictive validity of the structural model was evaluated with power tests for the R^2 of the dependent latent variable, which, as illustrated in figure 55, surpassed in every case the 80% recommended powers (Cohen, 1988).

Figure 55. Power analysis



Source: Developed for this research

As illustrated in table 75, for the sample size of this research, even the smallest R^2 obtained has permitted to reject with security the null hypothesis that the R^2 is null when the hypothesis is false. We have utilised 8 regressors, as this is the most complex regression that can be made by PLSPM when estimating models. The Q^2 statistic of Stone-Geisser (Stone, 1974; Geisser, 1975) obtained through *blindfolding*, also confirms the predictive validity of the model. This statistic, as seen in table 76 is always positive, criterion demanded in order to confirm the predictive validity (Tenenhaus et al. 2005).

Table 76. Inner model assessment indicators

FACTOR	R ²	Q ²
Purchase involvement	0.01	0.01
Web perceived value	0.63	0.53
Purchase intention	0.59	0.56
Switching intention	0.26	0.22
Return intention	0.54	0.50
Virtual branding potential	0.70	0.58
Unaided brand recall	0.01	0.01
Unaided URL recall	0.01	0.01
Engagement	0.76	0.59

Source: Developed for this research

The following section focuses on describing the results obtained which confirm the five dimensions of a Web site engagement scale.

6.4.1. Confirmed dimensions of Web site engagement

The first research of this thesis was to suggest a *Web site engagement scale* and identify its dimensions. We initially expected that Web site engagement would have eight dimensions. The results of the analysis reveal how of these eight, just five result to be the dimensions of this construct. These are: positive affect ($\beta=0.120$; $p<0.01$), focused attention ($\beta=0.120$; $p<0.01$), challenge ($\beta=-0,109$; $p<0.01$), curiosity ($\beta=0.182$; $p<0.01$) and involvement ($\beta=0.351$; $p<0.01$). The other three variables not found to be dimensions of Web site engagement are control ($\beta=0.058$), transformation of time ($\beta=0.013$) and up-to-dateness of information ($\beta=0.01$). These findings are summarised in table 77.

Tabla 77. Dimensions of Web site engagement

PATH	Standardised path coefficients	t-value (bootstrap)	Dimension of Web site engagement ?
Positive affect → Web site engagement	0,120**	2,31	Yes
Focused attention → Web site engagement	0,120**	3,3	Yes
Challenge → Web site engagement	-0,109**	2,06	Yes
Control → Web site engagement	0,058	1,52	No
Curiosity → Web site engagement	0,182**	2,7	Yes
Involvement → Web site engagement	0,351**	6,41	Yes
Transformation of time → Web site engagement	0,013	0,52	No
Up-to-dateness of information → Web site engagement	0,01	0,32	No

Source: Developed for this research

The following sections are dedicated to a discussion of these findings.

Positive affect

As expected, positive affect is a dimension of Web site engagement ($\beta=0.120$; $p<0.01$). Researchers have equally used the term affect to refer to what psychology research considers *feelings* or *emotions* (Feldman-Barrett and Russell, 1999; Peterson, Hoyer and Wilson, 1986; Russell and Feldman-Barrett, 1999). In contrast Fredrickson (2001) rooted the meaning of affect on the assessment of a personal meaning and described it as a broader term that also includes *moods* and *feelings* (Aaker and Myers, 1987; Batra and Ray, 1986; Holbrook and Batra, 1987). For Jennings (2000) affect as ‘the emotional investment users make in order to be immersed in an environment, and sustain their involvement in the environment’ (Jennings, 2000).

McCarthy and Wright (2004) categorised affect as positive and negative. In particular positive affect is related to hedonic qualities such as enjoyment, fun, feelings of success, accomplishment, and physiological arousal. Bloch et al. (1986) related pleasure and recreation to experiencing positive affect and having fun. They affirmed that these hedonic aspects could be sufficient motive for consumers to continuously search for information, without necessarily having any specific purchase need or decision to make. Affect has an influence on users’ current and future use of information systems (Rozell and Gardner, 2000) and affective cues can be incorporated into interface designs through the use of intrigue (Jennings, 2000). Webster and Ahuja (2004) suggested that engagement in the context of online shopping could be not only purposeful but pleasurable, and that affect could make people return to a specific product or company Web site. O’Brien (2008) considered positive affect as a component of engagement with technology, where positive affect relates to feelings of success and accomplishment. Likewise in the results of this research have evidenced that positive affect is also a dimension of Web site engagement.

Focused attention

Focused attention is also confirmed as the second expected dimension of Web site engagement ($\beta=0.120$; $p<0.01$). It is defined as ‘the degree to which a user’s attention is focused on Web site interaction’ (Huang, 2003) and is equally called *concentration* by other researchers (Guo and Poole, 2008; Lu et al., 2009; Jiang and Benbasat, 2004). Focused attention has been considered as one of the dimensions of flow as applicable to Web sites (Hausman and Siekpe, 2009; Hoffman and Novak, 1996; Li and Browne, 2004, 2006; Nel et al., 1999). Likewise, focused attention has also been taken into account in engagement-related literature (Chapman, 1997; Chapman et al., 1999; O’Brien, 2008). For Web sites users to be in ‘flow state’ they must first concentrate on their activities (Koufaris, 2002; Novak et al., 2000). Concentration was also considered by Lu et al. (2009) when developing a model regarding how users focus their attention when chatting or playing games when using Internet messaging (IM).

O’Brien (2008) considered attention as a subscale component of engagement with technology included within a factor called focused attention. She referred to focused attention as the ‘degree of awareness about what was taking place outside of user interaction, concentration and perception of time’. Our results support the finding of O’Brien are also in line with research who considered focused attention a dimension of flow applicable to online environments.

Challenge

The third confirmed dimension of Web site engagement is challenge ($\beta=-0.109$; $p<0.01$). Challenge is the activity of applying one's knowledge of the functional capabilities of a tool such as a Web site, thus the challenge derives from the difficulty of the task relative to one's skill (Ghani, 1995). Hong et al. (2005) related challenge to effort, affirming that challenge represents a cognitive decision effort and should be therefore measured with the effort exerted by Web users. Pace (2004) suggested that Web sites have the capability to provide immediate challenge to a user's level of skill, as Web users can rapidly adjust their mode of navigation to suit their level of ability. His research acknowledged that Web users have different levels

of skill and also different interests, therefore in search and browsing activities, the level of challenge differs. Chen (2006) affirmed that it is difficult to conceptually measuring Web users' perceived challenge and Guo and Poole (2008) referred to the difficulty of integrating 'challenge' when designing a Web site.

Due to Web context where this research is undertaken, we considered challenge from two viewpoints: the effort exerted by users when navigating on a Web site, and the usability of the site. From an effort perspective, Hong et al. (2005) affirmed that Web users would prefer to undertake a shopping task investing as little cognitive effort as possible. From a usability perspective, Huang (2003) related challenge to system variables, including complexity or information richness, interactivity and navigability and found that complex information can detract users from utilising Web sites, as an overload of information can interfere with users' concentration and navigability.

Our findings support those of other researchers who found challenge to be a dimension of flow as applicable to Web site and also the findings of O'Brien (2008) who considered challenge as a component of engagement with technology, and defined this construct as 'the cognitive and physical effort users perceive they are expending when interacting with technology'. Following O'Brien (2008) we have evidenced that challenge as a component of Web site engagement. At this it is important to remark that the perceived challenge of a Web site will depend on both the effort undertaken by the user of a Web site (e.g. Bettman et al., 1985; Hong et al., 2005; Lohse and Johnson, 1996) and also the usability of a Web site (e.g. Huang, 2003, Teo et al. 2003). This finding evidences that Web site engagement is a perception that depends on the design features of the Web site being used. We should also take into account that challenge loads on Web site engagement with a negative sign ($\beta=-0,109$). This suggests that for the user of a Web site to feel engaged he should not need to make efforts. This evidences that when a Web site is perceived as usable, this can lead to engaging its users.

Curiosity

Curiosity is the fourth confirmed dimension of Web site engagement ($\beta=0.182$; $p<0.01$). Curiosity means tapping into the extent an experience arouses an individual's sensory and cognitive curiosity (Agarwal and Karahanna, 2000; Malone, 1981). Curiosity is one of the components of flow utilised in online consumer behaviour research (Agarwal and Karahanna, 2000; Huang, 2003, Nel et al., 1999). Webster et al. (1993) suggested that heightened curiosity excites users regarding the available possibilities when using a Web site. Excitement, in turn, serves to reduce perceived cognitive burden that occurs during interaction (Agarwal and Karahanna, 2000).

Instead of curiosity, O'Brien (2008) considered novelty as a component of engagement with technology, referring to the extent a technology was perceived as novel. However, the Internet has surpassed the early adopter stage and is utilised by users of every age group, socioeconomic class and level of technical experience (Hoffman et al., 2004; Taylor and Strutton, 2009), therefore Web sites from a technological point of view are not a novelty anymore. As one of the advantages of interactive media such as Web sites are their capability to instantly present and up-to-date information (Chaffey et al., 2000) and content (Sádaba, 2000), it was reasonable that it is the content of Web sites that incites curiosity instead of the novelty of using them and therefore we postulated that instead of novelty, it should be curiosity that would be a dimension of Web site engagement. Our results have demonstrated that that curiosity is a dimension of Web site engagement.

Involvement

Involvement is the fifth and final confirmed dimension of Web site engagement ($\beta=0.351$; $p<0.01$). It is a needs-based cognitive state of psychological identification with an object or activity. It depends on the needs of the individual and his perception about the need-satisfying potential of the object or situation, and is sometimes considered phenomena synonymous to motivation (Kappelman, 1995). Involvement determines attitude, strength and the probability of consistent behaviour, and can influence both the direction and intensity of an individual's attention (Foxall and Bhate, 1993). Involvement can be a process, a quality and a

state (Sánchez and Bigné, 2001), and there are different types of involvement, such as purchase decision involvement (Mittal, 1989) and product involvement (Zaichkowsky, 1985). This researcher affirmed that the inherent involvement with an item creates differences in the amount of effort a consumer is willing to exert when purchasing a product. Involvement can occur in different online-related contexts such as information contexts (MacInnis and Jaworski, 1989) and online purchase settings (Park and Lee, 2008). McMillan et al. (2003) suggested that Web sites have the capability to involve and engage customers and Chen (2008) affirmed that online consumers highly involved with a product that are motivated and able to seek product information, become immersed in the activity of searching information, and can ultimately experience feelings for pleasure and escapism.

Mollen and Wilson (2010) affirmed that involvement was an important dimension of engagement. Also Elliot and Speck (2005) affirmed that online retailers should prioritise Web factors that best suit the involvement profile of their primary users. O'Brien (2008) considered involvement as factor part of engagement with technology. She described involvement as having the 'feelings of being drawn in, interested and having fun'. Whilst O'Brien (2008) considered a factor comprised with three subscales, in this research we suggested that involvement would be one of the central dimensions of Web site engagement and considered it as a subscale on its own. Our results support those of O'Brien (2008) whilst in this research we have considered involvement as a dimension on its own.

We have described the results regarding the five confirmed dimensions of Web site engagement, positive affect, focused attention, challenge, curiosity and involvement, and therefore we have answered the first research issue of this thesis. In what follows we shall describe the results regarding the three variables which did not confirm to be dimensions of Web site engagement. These three variables are control, transformation of time and up-to-dateness of information.

Control

The first dimension not confirmed to be a dimension of Web site engagement is control ($\beta=0.058$). In flow theory, Csikszentmihalyi (1988, 1990) referred to control as ‘the sense of exercising control in difficulty situations’. Within online consumer behaviour research based on flow theory, this construct refers to ‘the control a user exercises over interaction with a Web site’ (Huang, 2003). This researcher suggested that ‘control is a facilitator of Web performance’ and such statement suggests a possible relationship between control and interactivity, and also between control and usability. In research by Schneiderman and Plaisant (2005), participants also expressed their desire to perceive they were in control of the interaction. Also Net et al. (1999) affirmed that the placement and structure of options within a Web site can be done in order to make users feel more in control. This also suggests a relationship between control and Web design, including the information structure and the content within the site. Guo and Poole (2008) in their research grounded on flow theory and applied to Web sites stated that ‘there is a sense that the outcomes of the activity are, in principle, under the person’s own control’. O’Brien (2008) considered control as a component of engagement with technology, referring to control as the ‘users’ sense of control’ over their interaction with the technology.

Our findings have revealed that for a user does not need to experience control of a Web site in order to feel engaged with the site. As occurs in the case of video graphic content being shown on a Web site such as *youtube*, the content of the video can be highly engaging whilst there is no need for the user to feel in control of the interaction with the site.

Transformation of time

The second variable not confirmed to be a dimension of Web site engagement is transformation of time ($\beta=0.013$). It is a perception that time appears to pass very slowly or very rapidly compared to ordinary experience (Guo and Poole, 2008). Whilst some researchers considered transformation of time as a dimension flow (e.g. Chen, 2006; Ghani and Deshpande, 1994; Guo and Poole, 2008; Novak et al., 2000) others did not (e.g. Koufaris, 2002; Lu et al., 2009; Senecal et al., 2009; Siekpe,

2005). This ongoing discrepancy was recently acknowledged by Hoffman and Novak (2009). McMillan and Hwang (2002) had previously suggested that experiencing intense engagement on a Web site could in turn lead to spending increased time on it. O'Brien (2008) suggested 'perceived time' as a component of engagement with technology. Our findings have revealed that engaged users with a Web site do not experience transformation of time and therefore our results are in line with the researchers previously mentioned who did not find that this construct was a dimension of flow.

Up-to-dateness of information

The third and final dimension not confirmed to be part of Web site engagement is up-to-dateness of information ($\beta=0.01$), which refers to the freshness of information presented on a Web site (Huang, 2003; Klopping and McKinney, 2004). Our results have demonstrated how novel content on a Web site does not lead to wanting to engage with a Web site.

Chaffey et al. (2000) affirmed that frequent updating of content was a determinant of customers' intentions to revisit Web sites. In contrast, Öörni (2003) highlighted that obsolescence of information results problematic in Web sites shopping environments. Bigné et al. (2008) had revealed that future shopping intentions were influenced by consumer dependency on online shopping information, as well as the innovativeness of the consumer, and therefore it seemed to make sense that Web sites should offer their visitors up-to-date information and not fall into out datedness. On Web sites, novelty can be created with the freshness of information contained within them (Huang, 2003) and Supphelen and Nysveen (2001) had affirmed that Web site revisits could be encouraged by changing information content frequently so that sites always have something new to offer.

O'Brien (2008) considered novelty as a component of engagement with technology, whilst referring to the extent that a technology was perceived as novel. We suspected that up-to-dateness of information could be dimension of Web site engagement, our argument being that one of the reasons why users would engage with Web sites, could be because of the freshness of content (Huang, 2003) that might serve to

attract and maintain the attention of users whilst keep them on the site. However our results have evidenced that Web sites do not have to be up-to-date for a user to be engaged. The user of a Web could be seeing a highly engaging picture however it is not necessary for the picture to be recent, as the picture could be vintage and still result highly engaging.

Overall we have described the five variables found to be dimensions of Web site engagement as well as the three variables not found to be dimensions of this construct. In what follows we shall present the results regarding the contrast of the research model suggested in this thesis.

6.4.2. Contrast of the research model

In the previous section we described the results of the analysis regarding the dimensions of Web site engagement. This construct serves as the core of a Web site engagement model which comprises twenty hypotheses and in this section the results of this analysis will be described. Table 78 anticipates the results analysis.

In the following five sections we will describe the results of the analysis of the twenty research hypotheses. From these twenty, three are hypotheses in relation to antecedents of Web site engagement, four are hypotheses in relation to the influence of user comparative behaviour on Web site engagement, two are hypotheses in relation to the influence of aesthetics and up-to-dateness of information on purchase

Table 78. Complete hypotheses contrast of the research model

Hypothesis	PATH	Standardised path coefficients	t-value (bootstrap)
H1a	Aesthetics → Web site engagement	0,246**	4,23
H1b	Feedback → Web site engagement	0,095	1,67
H2a	Purchase involvement → Web site engagement	-0,029	1,33
H3a	Cell comparisons → Web site engagement	-0,006	0,24
H3b	Cell reacquisitions → Web site engagement	-0,018	0,94
H3c	Product comparisons → Web site engagement	0,007	0,17
H3d	Web site depth of navigation → Web site engagement	0,011	0,34
H4a	Aesthetics → Purchase involvement	0,117	1,88

H4b	Up-to-dateness of information → Purchase involvement	0,007	0,16
H5a	Web site engagement → Web perceived value	0,796**	35,41
H5b	Web site engagement → Purchase intention	0,038	0,81
H5c	Web site engagement → Switching intention	-0,061	0,98
H5d	Web site engagement → Return intention	0,160**	2,14
H5e	Web site engagement → Virtual branding potential	0,088	1,54
H5f	Web site engagement → Unaided brand recall	-0,072	1,57
H5g	Web site engagement → Unaided URL recall	0,003	0,09
H6a	Web perceived value → Purchase intention	0,740**	12,09
H6b	Web perceived value → Switching intention	-0,463**	5,79
H6c	Web perceived value → Return intention	0,604**	8,65
H6d	Web perceived value → Virtual branding potential	0,764**	13,52

**p<.01

Source: Developed for this research

involvement, seven refer to the influence of Web site engagement on seven managerially relevant consequences and finally four hypotheses are in relation to the influence of Web perceived value and relevant managerial consequences. These results will allow us to answer the four research issues of this thesis as well as its main research question.

6.4.2.1. Hypothesis regarding the antecedents of Web site engagement

The results of this section allow us to answer the second research issue of this thesis: which are the antecedents of Web site engagement in an online shopping context ? Table 79 illustrates a summary of three hypotheses formulated relating potential antecedents of Web site engagement with this construct. The results demonstrate that just the aesthetics of a Web site (H1a, $\beta=0.246$; $p<0.01$) significantly influences Web site engagement and therefore allow us to confirm this hypothesis.

Table 79. Hypotheses in relation to the influence of the antecedents of Web site engagement

Hypothesis	Sign	PATH	Standardised path coefficients	t-value (bootstrap)
H1a	(+)	Aesthetics → Web site engagement	0,246**	4,23
H1b	(+)	Feedback → Web site engagement	0,095	1,67
H2a	(+)	Purchase involvement → Web site engagement	-0,029	1,33

**p<.01

This finding corroborates previous research on engagement which suggested that engaging systems are able to ‘catch and captivate user interests’ ‘draw people in’ and ‘encourage interactions’. Jacques et al. (1995) suggested that visual and sensory features can attract users’ attention, and that multimedia users demonstrated strong preferences for visually-based devices. O'Brien (2008) revealed that visual presentation was an aspect of experience that predicted engagement with technology, based on an active discovery component proposed by Beardsley (1982).

With regards to the hypothesis of the influence of feedback on Web site engagement (H1b, $\beta=0,095$) we did not obtain support of evidence and therefore we reject this hypothesis. Feedback refers to the information communicated to users about actions that have occurred and results that have been achieved (O'Brien, 2008). In the domains of Web sites, feedback has been used in order to assess how well are organised the contents of a Web site (O'Brien, 2008). This finding reveals that how well the contents of a Web site are organised, does not influence if a visitor becomes engaged with the site. This affirmation is consistent with the previous finding that a highly engaging picture can be sufficient to engage a user on a Web site, as also our finding regarding the dimensions of Web site engagement that users do not need to experience control over a Web site interface in order to be engaged. If the visitor of a Web site finds the aesthetic content of a Web site appealing, this is would lead to engaging a user on the Web site irrespectively of the organisation of the content.

Overall, these two hypotheses demonstrate the visual aspects of the beauty can lead to engaging with the site and irrespectively of organisation of contents.

With regards to hypothesis H2a, it was not confirmed that purchase involvement determines Web site engagement (H2a, $\beta=-0.029$) and therefore this hypothesis is rejected. Involvement is ‘a needs-based cognitive state of psychological identification with an object or activity that depends upon the salient needs of the individual and his perception about the need-satisfying potentialities of the object or situation’ (Kappelman, 1995). Likewise, purchase decision involvement is ‘the extent of interest and concern that a customer rings to bear on a purchase decision task’ (Mittal, 1989). Our results did not obtain support for this hypothesis H2a, a

possible explanation being that willingness to make a purchase does not necessarily lead to engaging with a Web site due to design features of the Web site or personal circumstances of the user. Likewise, this result evidences that is possible for a user to engage with a Web site without the intention to make any purchase on it.

Overall, with the results of the contrast of these three hypotheses we have revealed one antecedent to Web site engagement, in particular the aesthetics of a Web site. Our results did not allow us to confirm that feedback and up-to-dateness of the information contained within the site could be also antecedents. Accordingly, the second research issue of this thesis has been answered.

The next section focused on the results of four hypotheses regarding the comparative behaviour of users on a Web site. The results of this section allow us to answer the second research issue: does online comparative choice behaviour influence Web site engagement ?

6.4.2.2. Hypotheses in relation to the influence of user comparative behaviour on Web site engagement

As explained in the previous chapter, we have formulated four hypotheses concerned with the contrast the comparative behaviour of consumers whilst they are navigating on a Web site in order to make a purchase. All four hypotheses H3a-H3d were rejected as the analysis revealed that neither cell comparisons (H3a, $\beta=-0,006$), cell reacquisitions (H3b, $\beta=-0,018$), product comparisons (H3c, $\beta=0,007$) and Web site depth of navigation (H3d, $\beta=0,011$) do not determine Web site engagement and therefore we reject these four hypotheses. The findings are summarised in table 80.

Table 80. Hypotheses in relation to the influence of user comparative behaviour on Web site engagement

Hypothesis	Sign	PATH	Standardised path coefficients	t-value (bootstrap)
H3a	(+)	Cell comparisons → Web site engagement	-0,006	0,24
H3b	(+)	Cell reacquisitions → Web site engagement	-0,018	0,94
H3c	(+)	Product comparisons → Web site engagement	0,007	0,17
H3d	(+)	Web site depth of navigation → Web site engagement	0,011	0,34

These results demonstrate that efforts made by users when navigating on a Web site, their comparisons and repetitive behaviour on it whilst comparing product and service information in order to make a choice does not mean that users will deepen in the content of a Web site and therefore become engaged with it due to the discovery of information which perhaps was previously unknown to them.

Whilst our assumptions were made based on the fact that at present consumers are subject to an overload of Web sites and that many of these are not well designed for their purpose, we hypothesised that the more a consumer became acquainted with a Web site and deepened in the discovery of its contents, the greater would the chance to become engaged with it. Our analysis has revealed that this is not the case. A possible explanation to this can be that there might be other factors that have a greater influence on engaging users as has been revealed before with the finding that the aesthetical content leads to engaging with a Web site. Overall with our finding we can affirm that despite one of the advantages for consumers who use shopping Web sites is that they can undertake online comparisons, their comparative choice behaviour does not lead to engaging with a Web site and therefore the third research issue of this thesis has been answered.

The next section is concerned with the results of two hypotheses regarding the influence of aesthetics and up-to-dateness of information on purchase involvement positioned in the model in the section of antecedents.

6.4.2.3. Hypotheses in relation to the influence of aesthetics and up-to-dateness of information on purchase involvement

Apart from the hypotheses concerned with the potential antecedents to Web site engagement, we also formulated two hypotheses regarding two potential antecedents of purchase intention, in particular aesthetics and up-to-dateness of information.

In relation to the influence of the aesthetics of a Web site on purchase involvement, the results demonstrate that this hypothesis is not confirmed and therefore we reject it (H4a, $\beta=0.117$). Whilst the aesthetic appeal of a Web site is increasingly being recognised as an important determinant of consumer behaviour (Shun et al., 2008), it

determines shopping experience (Junaini and Sidi, 2007; Man et al., 2005) and can also lead to experimentation and problem solving (Beardsely, 1982), it is not sufficient in order to involve a consumer in a purchase process. Similarly, it was also found that up-to-dateness of information does not determine purchase involvement (H4b, $\beta=0.007$) and therefore this hypothesis was also rejected.

Overall these findings demonstrate that whilst online consumers can visit Web sites for hedonic or utilitarian reasons (Bigné et al., 2008), can benefit from the information contained in site reducing their search efforts in comparison to other mediums (Ariely, 2000; Jepsen, 2007) we have revealed that these are not sufficient to want to involve in a purchase process. Pitta and Fowler (2005) had warned that buying decisions are typified by high-involvement and complex decision making and Ranaweera et al. (2008) suggested that purchase involvement within the online world was an area of research that should be further investigated. With our findings it is now known that these two suggested antecedents do not lead to involving in a purchase process. Table 81 illustrates the overall findings of these two hypotheses.

Table 81. Hypotheses in relation to the influence of aesthetics and up-to-dateness of information on purchase involvement

Hypothesis	Sign	PATH	Standardised path coefficients	t-value (bootstrap)
H4a	(+)	Aesthetics → Purchase involvement	0.117	1.88
H4b	(+)	Up-to-dateness of information → Purchase involvement	0.007	0.16

Overall in the prior 3 sections we have discussed the results of nine hypotheses which formulated within the antecedents section of the model. From these nine, three referred to potential antecedents of Web site engagement, a further four hypotheses were formulated in relation to the influence of user comparative behaviour on Web site engagement and the final two dealt with the influence of aesthetics and up-to-dateness of information on purchase involvement

The next section deals with the results of seven hypotheses concerned with the influence of Web site engagement on seven managerially relevant consequences.

The results allow us to provide an answer to the fourth research issues of this thesis: what managerially relevant outcomes are consequences of Web site engagement.

6.4.2.4. Influence of Web site engagement on seven managerially relevant consequences

We formulated a group of seven hypotheses concerned with studying the relationship between Web site engagement and seven consequences highly relevant for managers of online businesses. From these seven hypotheses we found support for two of them. However, as it will be discussed in the following section, we had also formulated four further hypotheses utilising Web perceived value as a mediator variable and in this situation we found support for all four hypotheses. Table 82 illustrates a summary of the findings regarding the direct relationship between Web site engagement and seven consequences relevant for online businesses.

Table 82. Hypotheses in relation to the influence of Web site engagement on seven managerially relevant consequences

Hypothesis	Sign	PATH	Standardised path coefficients	t-value (bootstrap)
H5a	(+)	Web site engagement → Web perceived value	0.796**	35,41
H5b	(+)	Web site engagement → Purchase intention	0.038	0.81
H5c	(-)	Web site engagement → Switching intention	-0.061	0.98
H5d	(+)	Web site engagement → Return intention	0.160**	2.14
H5e	(+)	Web site engagement → Virtual branding potential	0.088	1.54
H5f	(+)	Web site engagement → Unaided brand recall	-0,072	1.57
H5g	(+)	Web site engagement → Unaided URL recall	0,003	0.09

**p<.01

Regarding the influence of Web site engagement on Web perceived value, we found significant support for this hypothesis (H5a, $\beta=0.796$; $p<0.01$) which allowed us to confirm it. Engaged users with a Web site will have enjoyed positive experiences which could lead to having favourable attitudes towards a Web site, as well as utilitarian and hedonic experiences related to the perceived value of Web site. Perceived value depends on both the characteristics of a Web site and on personal aspects of its users (Steenkamp and Geyskens, 2006).

In relation to whether Web site engagement leads to return intention this was also found to be significant (H5d, $\beta=0.160$; $p<0.01$) allowing us to confirm this hypothesis. We assumed that if a user has engaged with a Web site, that is because the site will have captivated and held their attention, whilst keeping them interacting on it in a concentrated fashion and accordingly might have felt attracted to that site, and therefore will have the intention to return to it in the future as the more attractive the content of a Web site, the more likely the visitor is to return to it (Raney et al., 2003).

Whilst we found support for two of the seven hypotheses concerned with the direct consequences of Web site engagement, we did not obtain support for five of the hypotheses directly relating Web site engagement to consequences highly regarded by management, in particular purchase intention, switching intention, virtual branding potential, unaided brand recall and unaided URL recall. However, as will subsequently be described in the next section, utilising perceived value as a mediator variable we will confirm relationships between Web site engagement and four consequences, specifically purchase intention, non-switching intention, return intention and virtual branding potential. No support for a direct or indirect relationship between Web site engagement and brand recall and URL recall was found in any circumstance.

With regards to our hypothesis regarding whether Web site engagement leads directly to purchase intention, whilst we did not find support for this hypothesis (H5b, $\beta=0.038$), as will be described later, this relationship is confirmed when mediated by Web perceived value. An interpretation for this finding is that even engaged users with a Web site have invested sufficient effort in the site, they will have the intention to make a purchase to do so if they find value with their potential purchase, as occurs in any medium.

The same occurred with the proposed relationship between Web site engagement and switching intention (H5c, $\beta=-0.061$). We did not find support for this direction relationship although it is confirmed when mediated by Web perceived value. As we

have just explained in the previous case, users will not have the willingness to switch to another Web site if they find value with what they have just experienced.

With regards to the hypothesis relating Web site engagement with virtual branding potential, this direction relationship is rejected (H5e, $\beta=0.088$) although it is confirmed when mediated by Web perceived value as will be described in the next section. Virtual branding potential is the ability of a Web site to gain recognition and establish its existence in the minds of consumers and public, and is assessed with the content richness of a Web site, its overall attractiveness and worthiness of recommendation to other people (Simeon, 2001). If a visitor has engaged with a Web site, this might have occurred because the site had features that were considered of his interest. If the Web site was not of his interest, the visitor would have not devoted the required effort to remain engaged on the Web site. These reasons could be either hedonic or utilitarian. As explained in the previous two cases, users will perceive that a Web site has a virtual branding potential if they consider that the contents of the Web site have a certain value.

Regarding the relationship between Web site engagement and unaided brand recall (H5f, $\beta=-0.072$) and unaided URL recall (H5g, $\beta=0.003$), we did not obtain support for any of these and therefore these two hypotheses were not confirmed. Hypothesis H5f positively linked Web site engagement to the unaided brand recall of the online travel Web site, and it might not have been supported for the following reasons: despite the brand of the online travel agency was located at the respondents eye level printed with large 36 point arial font letters, the brand was unknown to the respondents as they had not visited the site before and were only presented with the brand during their one and only visit to the Web site. Whilst the brand was selected to exactly describe the travel services which were sold on Web site, we acknowledge that the name was long and complex (*viajes a seychelles.com*). 26% of the respondents were capable of recalling the brand exactly or similarly. From this 26%, 55% of respondents stated that brand name was 'viajes seychelles' instead of 'viajes a seychelles'. This finding could be interpreted as that the brand name was unfamiliar or could be better incorrectly designed. Also previous research had already warned that recall can be achieved with repeated stimulus (Postman, 1975;

Sawyer, 1974) and our respondents were only exposed to the brand once during the navigation stage, during which their navigation behaviour was being acquired and recorded.

With regards to the h5g positively linking Web site engagement to the unaided URL recall of the Web site, the results of the data analysis did not show support for our suggested relationship. Only 9.2% were capable of remembering the exact or similar URL address. Perhaps it was even more difficult to remember the URL than the brand due to the small 10 point font size that usually appears on Internet browsers, and also because respondents did not have to make the effort to type the URL address in order to access the Web site. As the measure we were testing was URL recall in an unaided situation, we did not provide to the respondents a list of URLs from where they could choose a predefined answer to the recall question. Whilst aided recall is sometimes used in recall tests, this situation does not normally occur in real life situations when a user wants to access a Web site.

Overall we can conclude that Web site engagement directly leads to the perceived value of a Web site and the intention to return to it. These are aspects highly relevant for the managers of Web sites. Despite we found no support for the hypotheses concerned with a direct relationship between Web site engagement and purchase intention, non-switching intention and virtual branding potential, we did find support for these relationships mediated by Web perceived value as described in the next section.

6.4.2.5. Hypotheses in relation to the influence of Web perceived value and relevant managerial consequences

This section focuses on the relationship of Web perceived value, utilised as a mediator variable of Web site engagement, on four consequences highly valued by online marketing managers, in particular purchase intention, non-switching intention, return intention and virtual branding potential. As previously described in the section dedicated to the consequences of Web site engagement, despite we found no support for four hypotheses concerned with a direct relationship between Web site

engagement and these constructs, we did find support for these relationships when mediated by Web perceived value.

The results demonstrate that the perceived value of a Web site significantly leads to purchase intention (H6a, $\beta=0.740$; $p<0.01$) allowing us to confirm this hypothesis. In offline research it has already been proven that the greater the perceived value of a product, the greater will be its purchase intention (Dodds et al., 1991). Also in online research Liu (2007) revealed a positive relationship between perceived value and purchase intention. However, the context utilised by this researcher combined four online interactive activities, including email, online shopping, online communities and online chat and discussion, and therefore did not focus on one specific online activity. In this research we have focused solely on a Web site shopping context and have therefore revalidated the finding of Liu (2007) specifically for the context of online shopping, our argument being that perceived value of a Web site leads to intentions to undertake activities, such as a purchase intention, based on the evaluations of the products sold on the site (Steenkamp and Geyskens, 2006).

Regarding the negative relationship between Web perceived value and switching intention, we found significant support for our hypothesis allowing us to confirm the hypothesis (H6b, $\beta=-0.463$; $p<0.01$). Switching costs refers to the effort and expenses involved in switching from one product to another (Demirhan et al., 2007; Klemperer 1987a, b) and it is known that when consumers have exerted cognitive costs, there is an increased chance that they will continue to choose products they are already using over competing alternatives (Johnson et al., 2003). Lin (2007) had previously revealed that the perceived value of a Web site discourages switching behaviour. However, this researcher had only found partial support for this affirmation, and accordingly we have revalidated this finding, our argument being that if a consumer perceives that the value of the offerings of an e-commerce Web site is high, the effort involved in switching to another Web site with a potentially similar offering will discourage switching behaviour.

Regarding the relationship between Web perceived value and return intention, it was also found to be significant allowing us to confirm it (H6c, $\beta=0.604$; $p<0.01$). Whilst

value has been considered as a trade-off between quality and price (Wathne et al., 2001) Steenkamp and Geyskens (2006) to measure perceived value with items referring to how useful is a Web site, is up to expectations, provides a good experience and a willingness to return. Also Mohammed et al. (2001) affirmed that potential consumers may not make a purchase during one visit to a site but may consider doing so when returning to the site at a later time.

Finally, we also obtained significant support for the relationship between Web perceived value and virtual branding potential (H6d, $\beta=0.764$; $p<0.01$). Virtual branding provides an accurate measure of a Web site's strategic potential (Simeon, 2001, 1999) compared to current methods of measuring the success of a Web site with clickstream data and Whelan and Wohfeil (2006) had affirmed that the most successful Internet companies are those that have clear brand policies. As virtual branding is assessed with the content richness of a Web site, its overall attractiveness and worthiness of recommendation to other people (Simeon, 2001), which could evidence an interest towards a Web site on behalf of a visitor. Likewise, if a visitor considers that the perceived value of a Web site is high, this might have occurred because the site had features that were considered of his interest.

Having described the findings regarding for consequence of Web perceived value, the results of the analysis are described in table 83.

Table 83. Hypotheses in relation to the influence of Web perceived value on four managerially relevant consequences

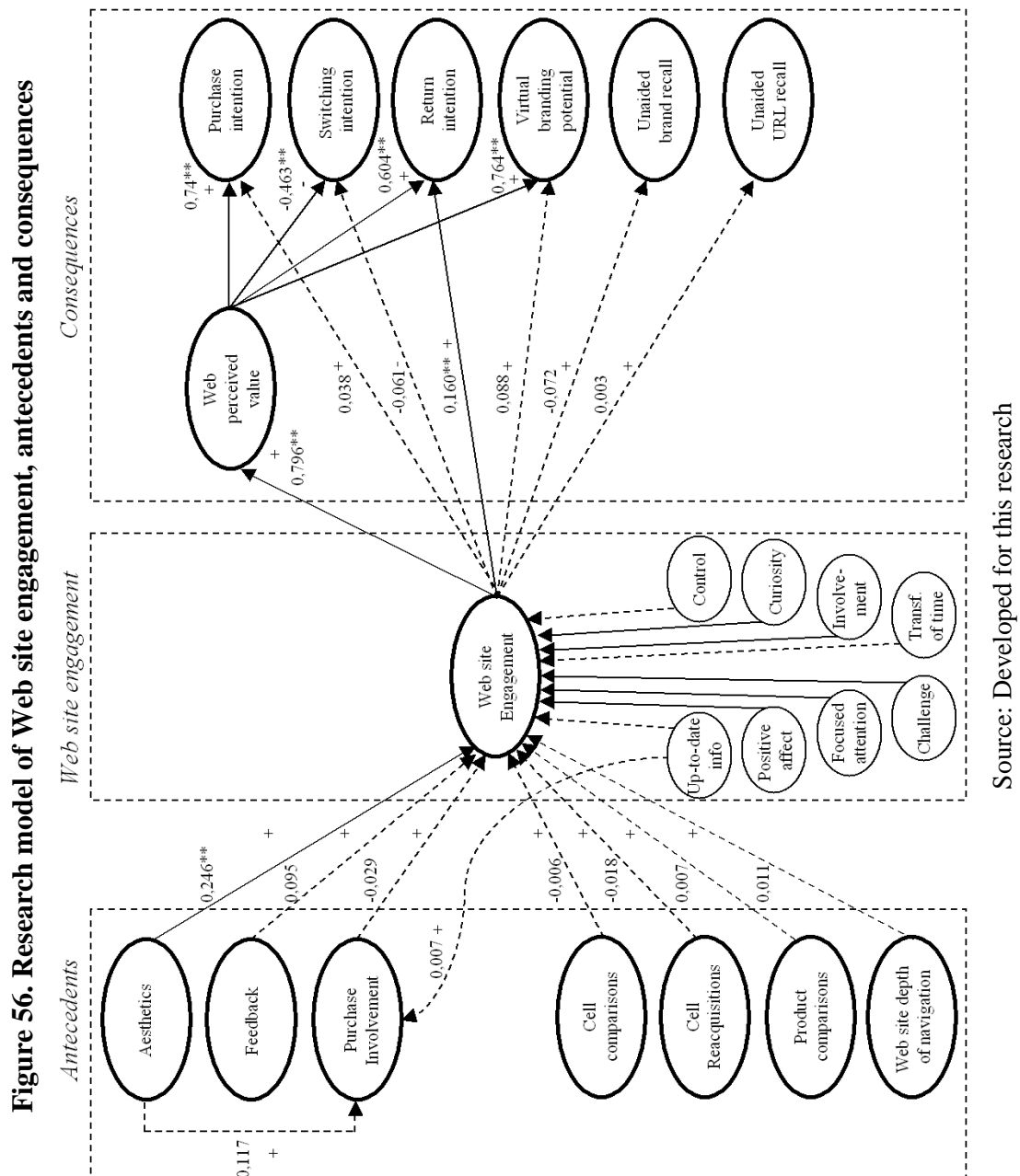
Hypothesis	Sign	PATH	Standardised path coefficients	t-value (bootstrap)
H6a	(+)	Web perceived value →Purchase intention	0.740**	12.09
H6b	(-)	Web perceived value →Switching intention	-0.463**	5.79
H6c	(+)	Web perceived value →Return intention	0.604**	8.65
H6d	(+)	Web perceived value →Virtual branding potential	0.764**	13.52

** $p<.01$

Overall it can be concluded that whilst Web site engagement might not directly lead to consequences highly valued by online managers, when utilising Web perceived value as a mediator variable, all relationships, that is the relationship between Web site engagement and Web perceived value, as well as the influence of this construct

and consequences high regarded by online managers prove to be highly significant. These findings therefore allow us to reply to the fourth and final research issue of this doctoral thesis.

Having described the analysis of results of the twenty research hypotheses contrasted in this research, in order to provide a graphical overview of our findings, figure 56 illustrates our suggested Web site engagement model together with its path coefficients.



6.5. FINAL CONSIDERATIONS

In this chapter we have analysed the hypothesis of this research. The combination of these hypotheses resulted in an explicative model of Web site engagement, which considered antecedents to a Web site engagement construct and its consequences. For the construct and model estimation we have utilised partial least squares path modelling (PLSPM) and software SmartPLS 2.0.

This chapter will be finalised with an overall assessment regarding the results obtained. First, regarding the evaluation of the measurement scales utilised in this research, these have achieved adequate results in terms of their psychometric properties. With regards to the dimensions of the Web site engagement construct the obtained results have evidenced an acceptable adjustment, which can be interpreted as an adequacy of the suggested dimensions. Due the substantial number of relationships contrasted in our research model, we have first presented the relationships of the antecedents, comparative behaviour, consequences and mediator variables. This was followed by a discussion of the overall relationships. In all cases we sufficiently justified the acceptance or rejection of the twenty hypotheses formulated.

Whilst many of the hypotheses were not confirmed, this is the first time a Web site engagement construct and a Web site engagement model have been suggested. As will be outlined in the section of recommendations for future research, we should progress in the improvement of this new and necessary area of research for both academia and industry. Overall we have defined the dimensions of Web site engagement which we found to be positive affect, focused attention, challenge, curiosity and involvement. We have revealed one antecedent of Web site engagement in particular aesthetics, which refers to the the visual content and beauty of a Web site. We did not find support for our hypotheses regarding the influence of comparative choice behaviour on Web site engagement, which reflects that the more consumers navigate more on an online shopping Web site does not lead to engaging with the site. Finally we did find that Web site engagement leads to consequences highly regarded by business managers. In some cases the relationships could be

demonstrated directly and in other cases we had to use a mediator variable, Web perceived value.

CHAPTER 7
CONCLUSIONS, IMPLICATIONS AND
RECOMMENDATIONS FOR
FUTURE RESEARCH

7.1. INTRODUCTION

The objective of this final chapter is to detail the most significant theoretical, methodological and practical contributions of this thesis, and to undertake a discussion of the research question and research issues portrayed in chapter 4. With these objectives in mind, first we shall introduce the conclusions obtained from the theoretical review undertaken in chapters 2 and 3 (section 7.2), where we examined research regarding how online consumer behaviour and Web site related research should be taken into account for the development of a Web site engagement construct, for understanding how it is influenced by the online comparative behaviour of consumers and for comprehending if it influences consequences of high relevance for business managers. Second, we will describe the methodological aspects of this research (section 7.3) that will lead to a discussion of the most relevant academic, methodological and managerial contributions and implications resulting from the empirical analysis (section 7.4). The collection of data was undertaken with a data acquisition Web site resembling an online travel agency that obtained online consumer navigation behaviour data as well as survey data.

As we utilised a combined consumer-technology approach, we will make a call to the research community in order to progress in the development of combined consumer-technology models for their application on e-commerce Web sites. Finally we shall refer to the limitations of this research (section 7.5) and shall suggest some direction for future investigations (section 7.6).

7.2. CONCLUSIONS OF THE THEORETICAL REVIEW

In this section we shall describe the conclusions of the theoretical review maintaining the same order utilised throughout the overall structure of this thesis. Accordingly, the most general issues shall be described first, and, as the theoretical discussion advances, we shall progressively focus on the central issues of this research.

The objective of chapter 2 was to undertake a theoretical review of online consumer behaviour models and to set the theoretical boundaries for the rest of this research. As previous marketing scientists have claimed that combined consumer-technology

approaches would improve the development of online consumer behaviour models, this chapter commenced justifying why a combined technology-consumer approach was adequate for this research. This was followed by a description of previous online consumer behaviour models. Focusing on scarce online consumer behaviour and human-computer theoretical frameworks, we revealed how the existing frameworks overlap as they both take into account research issues from the other. This allowed us to depict that, to the best of our knowledge there is an absence of a combined framework that takes into account both OCB and HCI research issues simultaneously. A step forward was therefore made by categorising research issues common to OCB and HCI research orientations in an overlapping OCB-HCI table illustrated in table 4. This table could be utilised in the future for the development of a new combined consumer-technology framework that could contribute to the improvement of the research discipline of online consumer behaviour.

It is understandable that researchers from both OCB and HCI have focused on their own individual research fields. These two research areas might have not yet been brought together, as perhaps researchers from both areas might not have been aware of research proceeding from the other field. Furthermore, online consumer behaviour researchers have already affirmed that existing research within their own discipline is still fragmented, although some progress is being made. In this direction, table 4 shows overlaps that could serve as a means to bring researchers from the fields of online consumer behaviour and human computer interaction into a common space.

Once we justified the need for a combined consumer-technology approach for this thesis, we dedicated a section to the review of previous consumer-technology behavioural models. The majority of these are based on the well-accepted classic technology acceptance models TRA, TAM and TPB which became popular in the 1980's and 1990's. Grounded on these three models, we described nine OCB-specific models which have been developed mostly in the second half of 2000. Whilst they include well-referenced consumer behaviour concepts such as *attitude*, *ease of use* and *purchase intention*, the majority of the models do not take into account technological aspects. The second part of the section was dedicated to the revision of flow theory as applied to the study of online consumer behaviour, where

the ongoing controversy for the measurement and definition of the flow construct as applied to the online world was acknowledged. Researchers have differently measured this construct and even the pioneers of the application of flow to the Web (Hoffman and Novak, 1996) recently recognised that flow is still ill-defined, it is measured in numerous ways, and therefore the concept should be clarified so that it can be adequately applied to the online world (Hoffman and Novak, 2009). Chapter 2 finalised describing how hedonic and utilitarian approaches have been utilised in the study of consumer online performance.

Chapter 3 was dedicated to undertaking a theoretical revision that consequently allowed us to answer to the research questions and issues of this thesis. The first section of this chapter was dedicated to reviewing literature focused on how Web interface-related issues impact the online behaviour of consumers. This section served to understand how these issues can influence both how consumers engage with shopping Web sites and how consumers can make decisions on them. Specifically we described how computer interface design and Web design, from both structural and content viewpoints influence the online behaviour of consumers. Web design influences consumer effectiveness, decision making and choice, can contribute to the competitive advantage of Web sites, and to improved relationships between online companies and their clients. Web sites should be perceived as heuristically coherent, varied, simple to operate, but at the same time rich in content. Online sales made on Web sites can also affect offline sales, and behaviour within offline stores can affect online sales. Researchers have acknowledged that there are still no general guidelines which can be followed in order to adequately design Web sites for their intended target groups of customers. Most of the existing theoretical approaches currently employed resolve specific Web design issues and do not address the whole process in which an entire Web site should be developed (Stibel, 2005). We then described two computer-human fit theories: cognitive fit theory and technology task fit theory. We explained how an adequate fit between the presentation of information on a computer screen and the decision task of consumers can influence their cognitive processes and their problem solving performance, and in consequence their overall performance when undertaking tasks with computers. This section finalised describing literature regarding the demographic profiling of

online consumers and how Web designs and messages should be developed based on the profiles of their target groups of customers.

The second part of chapter 3 described the role of interactivity and usability in online consumer behavioural research. It is accepted that interactivity is a central driver of online consumer behaviour although, it is yet not clear where interactivity actually takes place, and in consequence researchers have argued that further research is necessary in order to better understand its role in online environments. However, it is known that interactivity has a positive influence on users' satisfaction, perception of value and attitude towards a Web site, and that the quantity and quality of interactive features of Web sites should be considered when designing a site. *Control* has been closely linked to Web interaction, as the perceived entertainment experiences of users are influenced by their perceived control. Researchers have also suggested that interactivity, as a Web design feature, improves usability (Teo et al., 2003). Accordingly, we illustrated a classification of Web site usability factors which showed how usability is affected by the research fields of marketing, HCI and IT adoption. This could serve to evidence that, for the satisfactory development of Web sites, multidisciplinary consumer-technology teams are necessary as the combination of their knowledge and skills can help to create usable online experiences for consumers.

In the third part of this chapter we reviewed literature on how computers can acquire and analyse data of how consumers navigate online, as well as how consumers can obtain information from computers. With clickstream data and elementary information processes it is possible to measure consumers' navigation within a Web site, and within one unique Web page contained in a Web site. These two types of metrics can in turn be used to better understand how consumers make online choices and decisions. It was also highlighted that online metrics should be specific and sufficiently detailed for the nature of each individual Web site. An understanding of online consumer behaviour can lead to improved segmentation of online customers and personalisation of Web site content for the specific customer profiles. This in turn could improve online sales conversion. This third part of the chapter finalised

with a body of research regarding the complexity of online consumer navigation behaviour.

The fourth part was dedicated to undertaking a state-of-the-art literature review on the concept of *engagement* as it pertains to the context of Web sites. Whilst there is a trend towards researching online retention constructs, there is a scarcity of research regarding online engagement and up to now, there was an absence of a Web site engagement scale. It was also revealed how the Internet industry is demanding this highly necessary scale. After explaining what engagement actually means, we focused on describing the existing research on online engagement and engagement with technology. The most prominent research on technology-related engagement was recently developed by O'Brien (2008). Her research took place in three stages and resulted in the proposal of an *engagement with technology* construct that was used as a basis for our proposal of a Web site engagement scale, one of the main research issues of this thesis. After a description of the potential dimensions of a Web site engagement construct, we undertook a theoretical review of potential consequences of Web site engagement with a particular managerial interest. After describing how behavioural intentions and attitude are used in science to predict the behaviour of consumers, we reviewed research on the concepts of purchase intention and Web perceived value, followed by a description of different approaches for the study of online consumer retention, focusing on cognitive lock-in, learning, power law of practice, stickiness and switching behaviour. In the final section of this fifth part of the chapter we described research concerning online return intention, virtual branding potential, brand recall and URL recall.

The fifth and final part of chapter 3 was dedicated to reviewing research regarding how consumers can make comparisons of products within online environments. Previous researchers have argued that there is lack of understanding of how consumers evaluate and choose within interactive environments. Likewise, Internet marketing researchers have argued that specific research should be developed for the Internet as offline theories are not directly applicable to this medium. This is highly relevant for online research pertaining how consumers make online comparisons and choices, as it is known that choice behaviour is context-dependent and the majority

of existing choice behaviour research has been developed for offline environments. Accordingly, researchers have argued there is a need for better understanding how online consumer evaluations are influenced by the design of online interfaces. We then revised consolidated offline research concerning consumer evaluation and choice, keeping in mind that both the interactive nature of the Internet and the design of information structures affect consumer behaviour when undertaking tasks online. In this section we focused our theoretical review on how information and product assortments, also called *choice sets*, as well as products attributes and the variety and size of assortments, affects online decision tasks. We also described how consumers, when presented with a choice set, tend to make decisions within a subset of products and subsequently are likely to make pair wise combinations. Finally we studied the impact of holistic and analytic processing of product assortments and heuristics when evaluating product assortments.

7.3. DISCUSSION OF RESEARCH ISSUES AND METHODOLOGY

Chapter 4 commenced with the definition of the objectives of this research. The main research question to which we pursued an answer was:

When a consumer is searching for information on an e-commerce Web site, where he can make comparisons of products or services organised within an information structure, does this comparative behaviour influence his engagement with that Web site, and does Web site engagement have an influence on consequences with relevant managerial interest?

This main objective has led us to establish four research issues. The first issue was focused on identifying the variables that determine a Web site engagement construct. Based on a previous scale of engagement with technology, we specifically developed a Web site engagement scale applicable to the context of online shopping. The second research issue was concerned with identifying potential antecedents of Web site engagement and we tested if two flow-related variables, *aesthetics* and *feedback*, as well as *purchase decision involvement* would be antecedents to this construct. The third research issue was concerned with understanding if the comparative behaviour of online consumers influenced Web site engagement. Accordingly we designed a group of four *online comparative behaviour* variables. With this total of seven variables we formulated seven hypotheses that studied the relationship between the seven potential antecedents of Web site engagement and this construct. The seven hypotheses served to address research issues 2 and 3. The fourth research issue was focused on understanding if Web site engagement could be related outcomes with relevant managerial interest. Accordingly, we established a group of seven potential consequence variables and formulated seven hypotheses that related Web site engagement with seven potential consequences. We also formulated six additional hypotheses regarding one further potential consequence of *aesthetics*, one further potential consequence of *up-to-dateness* of information and four potential consequences of Web perceived value.

Overall, research issues 2, 3 and 4 were translated into twenty research hypotheses which allowed us to propose a model of relationships where Web site engagement was the core construct.

The empirical data utilised in this research proceeded from a Web site simulating an online travel agency that sold twelve holiday packages to the Seychelles islands. Travel services are suitable for their commercialisation on Web sites for the various reasons previously described. The Web site collected respondents' data with both a two-part questionnaire and with a data acquisition Web site resembling the online travel agency that traced respondent within-Web page and within-Web site navigation behaviour. Due to the newness of our combined consumer-technology research, it was necessary to develop the entire data acquisition Web site including its underlying technology, so that we could remotely trace and store respondents' behavioural and perceptual data. The hypotheses were contrasted with a quantitative study undertaken amongst the subscribers of the newsletter of Spanish online shopping directory Citylogo.com. The final sample comprises data obtained from 336 Spanish-speaking respondents.

Due to the combined consumer-technology approach of this research, in our proposed model of relationships we have utilised two types of variables. The first type of variables assessed users' perception of Web site engagement, potential consequences and three potential antecedent variables. Likert 1-7 scales were used in all cases except for two measures, brand and URL recall, which utilised dichotomous variables and open-field text. The second type of variables comprised four information systems variables designed with clickstreams and elementary information processes from previous research. These were adapted so they could be used to trace and record the online within-page and within-site comparative behaviour of our respondents, on both the travel agency's main Web menu page that included a choice set with twelve holiday packages, and within the Web site, that included twelve product Web pages with a complete description of the twelve holiday packages. A description of the variables used to measure this comparative behaviour was detailed in the final section of chapter 5. The evaluation of the scales

was detailed in chapter 6 which was dedicated to the analysis of data and discussion of results.

7.4. CONCLUSIONS OF THE EMPIRICAL ANALYSIS AND IMPLICATIONS

The outcomes of this research have extended the existing body of knowledge on engagement by proposing a new Web site engagement construct, and by revealing antecedents and consequences of Web site engagement. From the eight expected dimensions of the Web site engagement construct, we found that it has five dimensions, which are positive affect, focused attention, challenge, curiosity and involvement. Three dimensions, control, transformation of time and up-to-dateness of information were not found to form part of this construct. We also suggested a model of relationships where the Web site engagement was the core construct. We formulated twenty hypotheses and obtained statistical support for seven of these. The overall findings have allowed having a greater understanding of what Web site engagement is and have led to numerous theoretical and practical implications which are detailed in the following sections. At this point we can anticipate the following findings: the aesthetics of a Web site leads to engaging with it, however the organisation of contents in a Web site do not influence Web site engagement. Nor does the comparative efforts users might make within the content of a Web site in order to make a purchase decision as well as the intention to make a purchase. It was also found that Web site engagement is a construct highly relevant for business as it influences variables highly regarded by managers, in particular purchase intention, non-switching behaviour, return intention and virtual branding potential. We found that some of these relationships are direct and others are supported when mediated by Web perceived value.

In the follows we shall portray the implications for theory and for practice of the results of this research.

7.4.1. Implications for theory

Several theoretical implications for theory arise from this research. These are anticipated in table 84 and described in the following five sections.

Table 84 Implications for theory

IMPLICATION	DESCRIPTION
1. A proposal of a Web site engagement scale	We suggest that Web site engagement can be assessed with a 1-7 Likert survey measuring variables: positive affect, focused attention, challenge, curiosity and involvement
2. Antecedents to Web site engagement	We have tested seven potential antecedents of Web site engagement, finding that only aesthetics predicts this construct
3. Antecedent aesthetics	We have proved that aesthetics leads to consumers engaging with a Web site
4. Antecedent feedback	Our findings reveal that the organisation of the content of a Web site not lead to consumers engaging with the site
5. Purchase decision involvement	A consumer's intention to involve in a purchase decision on a shopping Web site does not lead him to engage with the site
6. Consumer comparative variables	We did not find support of evidence that when consumers compare shopping information online this leads them to engaging with the Web site they are utilising
7. Influence of aesthetics on purchase involvement	We did not find support of evidence that the aesthetic content of a Web site leads to wanting to involve in a purchase
8. Influence of up-to-dateness of information on purchase involvement	We did not find support of evidence that the up-to-dateness of the information content of a Web site leads to wanting to involve in a purchase
9. Consequences of Web site engagement	We have found that Web site engagement leads simultaneously to five consequences highly relevant for online marketers
10. Web perceived value	We revealed that Web site engagement leads the consumer perceived value of a shopping Web site
11. Purchase intention	When a consumer becomes engaged with a Web site this leads him to want to make a purchase on the site
12. Switching intention	When a consumer becomes engaged with a shopping Web site, he does not wish to switch to a competing Web site which sells a similar product or service
13. Return intention	Consumers that become engaged with a Web site wish to the return to that Web site in the future
14. Virtual branding potential	When a consumer is engaged with a Web site this leads to an increased online branding potential of the site
15. Unaided brand recall and unaided URL recall	Consumers who become engaged with a Web site cannot recall the brand or URL address of the site on their first visit
16. An integrated model of Web site engagement	We have suggested a model of relationships where Web site engagement is the core construct
17. Evidence of need for multidisciplinary online consumer – human computer interaction approaches	We contribute table 4 which illustrates a significant overlap between OCB and HCI theoretical frameworks. This evidences the need for combined OCB-HCI research

Source: Developed for this research

1. A proposal of a Web site engagement scale

A thorough literature review on engagement related to technology and to the Internet has enabled us to have a further understanding of the research field of engagement related to Web sites which led to the proposal of the first Web site engagement scale. Based on flow theory and on a previous scale of engagement with technology, we adapted this scale for the online context of Web sites. Previous research from both these two fields of theory have allowed to understand the theoretical underpinnings of Web site engagement, and to reveal that it is a construct with five dimensions: positive affect, focused attention, challenge, curiosity and involvement. When a user becomes engaged with a Web site they experience these five qualities simultaneously. Table 85 provides a definition of the five dimensions of the Web site engagement construct.

Table 85. Dimensions of the Web site engagement construct

DIMENSIONS OF WEB SITE ENGAGEMENT	
Positive affect	The emotional investment a user makes in order to be immersed in an environment and sustain their involvement in the environment (Jennings, 2000)
Focused attention	The concentration of mental activity. Concentrating on one stimulus only and ignoring all others (Matlin, 1994)
Challenge	The amount of effort users perceive they are expending when using a Web site (Chen, 2006)
Curiosity	Tendency to seek out elements that are new, interesting, or unusual in one's environment (Huang, 2003)
Involvement	The inherent interests, values, or needs that motivate a user towards using a Web site (Based on Chen 2008; Zaichkowsky, 1985)

Source: Developed for this research

Positive affect was found to be the first of the dimensions of Web site engagement. In particular positive affect is related to hedonic qualities such as enjoyment, fun, feelings of success, accomplishment and physiological arousal. Visitors who are engaged with a Web site experience positive affect and therefore these types of feelings.

Focused attention is the degree to which a user's attention is focused on a Web site (Huang, 2003) and is equally called *concentration* by other researchers (Guo and Poole, 2008; Lu et al., 2009; Jiang and Benbasat, 2004). When a Web user is engaged he is focusing his attention on the activity being undertaken.

Challenge is the amount of effort users perceive they are expending when using a Web site (Chen, 2006). Challenge is a dimension of Web site engagement but with a negative sign, hence for a visitor to be engaged with a Web site, he should not feel challenged by the site. The more usable a Web site is, the less challenging it will be for its users.

Curiosity means tapping into the extent an experience arouses an individual's sensory and cognitive curiosity (Agarwal and Karahanna, 2000; Malone, 1981) and refers to the tendency to seek out elements that are new, interesting, or unusual in one's environment. When a Web user is engaged with a site he feels an element of curiosity towards the content of the site.

Finally *involvement*, a needs-based cognitive state of psychological identification with an object or activity, is also a dimension of Web site engagement. It depends on the needs of the individual and his perception about the need-satisfying potential of the object or situation (Kappelman, 1995). Visitors who are engaged with a Web site experience involvement with the activity they are undertaking on the site.

Overall visitors who are engaged with a Web site are experiencing these five qualities simultaneously.

Whilst we originally argued that Web site engagement would have eight dimensions, the results of our data analysis revealed that three of the proposed variables were not found to form part of Web site engagement. These three variables are control, transformation of time and up-to-dateness of information.

The first construct not found to be a dimension of Web engagement is *control*, a user's perception that he exercises control over the interaction with a Web site (Ghani and Deshpande, 1994; Huang, 2003; Siekpe, 2005). When proposing the engagement with technology construct, O'Brien (2008) defined control as 'how in charge' users feel over their experience with a technology. Venkatesh (2000) and Huang (2006) had suggested that control is related to an individual's perception of the availability of the knowledge, resources, and opportunities that are required to

perform a specific behaviour. Net et al. (1999) affirmed that the placement and structure of options within a Web site can be done in order to make users feel more in control, suggesting a relationship between control and Web design, including the information structure and the content within the site. The results of our analysis have confirmed that control is not a dimension of Web site engagement accordingly, for a user to feel engagement with a Web site, the control he has over the Web site is irrelevant.

The second construct which has resulted not to be a dimension of Web site engagement is *transformation of time*. In flow theory, this dimension refers to the perception that time passes slowly or rapidly compared to ordinary experiences (Csikszentmihalyi, 1988). Our results are consistent with those of other researchers who did not find transformation of time to be a component of flow in online environments (Ghani et al., 1991; Ghani and Deshpande, 1994; Hoffman and Novak, 1996; Huang, 2003; Ilsever et al., 2007; Koufaris, 2002; Lu et al., 2009; Nel et al., 1999; Sanchez-Franco, 2006; Siekpe, 2005; Smith and Sivakumar, 2004; Webster et al., 1993). This finding reveals that when a user is experiencing Web site engagement, they do not perceive that they lose the track of time.

The third and final construct not found to be a dimension of Web site engagement is *up-to-dateness of information*, which refers to the freshness of information presented on a Web site. Supphelen and Nysveen (2001) had affirmed that Web site revisits can be encouraged by changing information content frequently and Chaffey et al., (2000) affirmed that frequent updating of content was a determinant of customers' intentions to revisit Web sites. O'Brien (2008) had considered novelty as a component of engagement with technology, and we suspected that up-to-dateness of information would be a dimension of Web site engagement, our argument being that users would engage with Web sites based on the freshness of their content. However we could not find support of evidence for our proposal and therefore this dimension is excluded as a dimension of Web site engagement.

Within reason, our overall results regarding our dimensions of Web site engagement are consistent with the findings of O'Brien (2008) regarding the dimensions of the *engagement with technology* construct upon which we based our research. Back in chapter 5 where we proposed the dimensions of a engagement construct applicable to Web sites, we purposely excluded five of the dimensions from the engagement with technology scale: aesthetics, negative affect, feedback, motivation and intention to return. In this research we have considered aesthetics and feedback to be antecedents, negative affect was excluded as it refers to disengaging with technology and intention to return and motivation have been considered to be consequences. The latter construct in this research has been relabeled as perceived value. The remaining dimensions were rearranged in the technology scale into four factors: focused attention, novelty, involvement and perceived usability. Our findings are consistent with these factors. Focusing on factor perceived usability, it included subscales *challenge* and *control*. The only subscale not consistent with our findings is therefore control as we did not find it to be a dimension of Web site engagement. As we did find that challenge is a dimension of Web site engagement, and challenge refers to how usable a Web site is perceived, our results are therefore aligned with the perceived usability factor of O'Brien (2008). Overall it could be concluded that although both engagement scales have been developed for different technological contexts, users should perceived that a technology is usable, and this should be carefully taken into account by Web designers.

Likewise, our results are in line with the results of other researchers who have conceptually studied engagement in other contexts different to Web sites. For Chapman (1997) something that 'engages' us is something that draws us in, and attracts and holds our attention'. For Jacques (1995) an engaging experience is an active process, in which a system 'catches', 'captivates', 'holds' and 'retains' the 'interest' and 'attention' of the user. For Marci (2006) engagement is 'the combination of audience synchrony plus intensity', where synchrony is 'the degree to which an audience's physiological state uniformly changes when exposed to a media stimuli and intensity is 'the cumulative strength of physiological response to a media stimulus. For Heath (2007) engagement is a 'subconscious emotional construct' expressed as 'the amount of feeling going on when an advertisement is

processed'. For Mollen and Wilson (2010) 'online engagement is a cognitive and affective commitment to an active relationship with a brand as personified by the Web site or other computer-mediated entities designed to communicate brand value'. For Lin et al. (2008), engagement is an activity that occurs when a person's attention is focused on an activity. For Calder and Malthouse (2008) 'engagement is a sense of involvement, being connected with something'.

It can be concluded that Web site engagement takes place in the eyes of online consumers and it does not occur inside a Web site. It could also be argued that Web site engagement could take place in an intermediate position between a Web site and its users, as the negative loading sign of challenge indicates that if a user perceives a Web site to be challenging they will not engage with the Web site. This perception could be subject to personal issues of each user regarding their level of familiarity with a Web site and the degree of skill with Web sites and the Internet in general. If Web designers develop Web sites that are usable this will benefit their users as discussed in previous literature. A similar argument is currently taking place regarding where does *interactivity* takes place, as is it still not clear. Shrum et al., (2008) affirmed that interactivity is a multi-dimensional construct that can reside among different entities such a computer, within humans, and between humans and a computer. However Song and Zinkhan (2008) affirmed that interactivity is only related to the behaviour of consumers, as it fully resides in their eyes and not within an information system itself. Regarding where Web site engagement takes place, our results are consistent with the position of Song and Zinkhan (2008).

Comparing the Web site engagement resulting from our research with other similar online consumer cognitive and experiential constructs, we can affirm that Web site engagement is different to other previous constructs such as cognitive absorption (Agarwal and Karahanna, 2000), enduring involvement (Huang, 2006), online flow (Hausman and Siekpe, 2009) and engagement with technology (O'Brien, 2008). Table 86 illustrates a definition of these constructs and how their dimensions are different to Web site engagement.

Table 86. Dimensions of other constructs similar to Web site engagement

CONSTRUCT	DEFINITION	DIMENSIONS
Web site engagement (contributed in this research)	A consumer experience that occurs when a user's attention is captivated and held by a Web site, and the user wants to remain interacting with the Web site in a concentrated fashion during a period of time	Positive affect, focused attention, challenge, curiosity, involvement
Engagement with technology (O'Brien, 2008)	A holistic construct that fits within the context of experience and encapsulates users' perspectives of the human-computer interaction, as well as its system and user constituents	Aesthetics, attention, durability, involvement, novelty, usability
Cognitive absorption (Agarwal and Karahanna, 2000)	A state of deep involvement with software	Control, curiosity, focused immersion, heightened enjoyment, temporal dissociation
Enduring involvement (Huang, 2006)	Ongoing concern for a product when this concern is not influenced by a particular situation	Enjoyment, interest, personal relevance, self-relevance
Online flow (Hausman and Siekpe, 2009)	A cognitive state experienced during navigation involving machine interactivity, loss of self-consciousness and self-reinforcing	Control, challenge and arousal, focused attention, interactivity, telepresence

Source: Developed for this research

As an outcome to our findings, we are in the position to suggest the following definition of Web site engagement:

'Web site engagement' is a consumer experience that occurs when a user's attention is captivated and held by a Web site, and the user wants to remain interacting with the Web site in a concentrated fashion during a period of time. The five dimensions of Web site engagement are positive affect, focused attention, curiosity, challenge and involvement

Having detailed our proposal of a Web site engagement construct, we shall now refer to our findings regarding the antecedents of this construct.

2. Antecedents to Web site engagement

The second research issue was concerned with understanding the potential antecedents to Web site engagement within the context of online shopping. For this

purpose, we formulated seven hypotheses organised in three groups. Two of the antecedents, *aesthetics* and *feedback*, were variables previously utilised in flow research. A third antecedent was a variable concerned with consumers' online *purchase involvement*. The third research issue was concerned with understanding whether online consumer comparative behaviour influenced Web site engagement. Accordingly, four antecedent variables were designed into order to measure *within-Web page* and *within-Web site comparative behaviour*. Following this order, which corresponds to the order of formulation of seven research hypotheses, in what follows they shall be discussed in detail.

3. Antecedent aesthetics

Previous research had suggested that aesthetics is not an antecedent to engagement with technology, but a dimension of this construct (O'Brien, 2008). In contrast our findings suggest that aesthetics is an antecedent to Web site engagement. Other researchers had suggested that aesthetics are relevant to creating an engaging experience, and are also a driver of consumer actions and shopping experiences (Demangeot and Broderick, 2006; Jennings, 2000; Junaini and Sidi 2007). Our results are consistent with these affirmations.

4. Antecedent feedback

We found no support for our hypothesis concerning the relationship between feedback and Web site engagement. Feedback is a variable which refers to how well organised are the contents of a Web site so that users find it easy to access the Web pages contained within, therefore facilitating them to reach other sections with content. Online consumers can therefore become engaged irrelevantly of the information structures which frame the contents of a Web site.

5. Purchase involvement

This antecedent refers to the intention of potential buyers to involve or not in an online purchase decision. As a result of our analysis, we did not obtain evidence of support for our proposed relationship between purchase decision involvement and Web site engagement. This finding reveals that visitors can become engaged with a

Web site irrelevantly of their intention to involve in the purchase any of the products or services the site offers.

6. Consumer comparative variables

The third research issue was concerned with studying the influence of online comparative behaviour of users on Web site engagement. Accordingly we formulated four hypotheses which dealt with the relationship between consumers' online comparative behaviour, both within a Web page and within a Web site, with Web site engagement. The analysis of data did not provide support of evidence for any of these four hypotheses.

These results are consistent with the findings of Guo and Poole (2008) who suggested that too much complexity on a Web site can make information harder to process and inhibit the desirable state of flow. Also Huang (2003) warned that when users are subject to complex navigation, they might be overwhelmed by an abundance of information, may feel unable to absorb in and may easily get distracted and think about other things during their navigation. Whilst Guo and Poole (2008) measured Web navigation complexity utilising a questionnaire, we have approached our research tracing navigation behaviour utilising elementary information processes in order to assess within-page behaviour (Bettman et al., 1990) and with clickstreams to measure within-site behaviour (Bucklin and Sismeiro, 2003; Senecal et al., 2005).

The finding that navigating on Web sites does not lead to engaging with them is one of the major contributions of this research. This effect can be opposite to what occurs in offline environments such as supermarkets where it has already been proved that comparing items in a product assortment makes consumers invest cognitive effort. A further contribution of this research is the proposal of four factors which have designed in order to measure within-page and within-site online comparative behaviour.

Besides these seven hypotheses, we also formulated two further hypotheses within the antecedents group. The first of these hypotheses relates to the influence of

aesthetics on purchase involvement, and the second tested the influence of up-to-dateness of information on purchase involvement.

7. Influence of aesthetics on purchase involvement

Whilst consumer reaction to the aesthetic aspects of Web sites is increasingly recognised as a determinant of consumer behaviour including problem solving and shopping experience we did find support for our proposed relationships. This finding evidences that the visitors of a Web site can involve in a purchase process irrespectively of the aesthetic design of the site.

8. Influence of up-to-dateness of information on purchase involvement

The information presented on Web sites can attract consumers as for instance users can remotely obtain information and therefore reduce their search costs compared to the offline world, if they perceive benefit from doing so. Our results did not find support for a relationship between the level of up-to-dateness of information on a Web site and the purchase involvement of a visitor in the site. This finding suggests that visitors could involve in a shopping process without counting with the latest information possible on the items to be potentially purchased.

9. Consequences of engagement

In this research we also analysed the influence of Web site engagement on seven of the consequences most regarded by Web site managers, in particular: purchase intention, Web perceived value, switching intention, return intention, virtual branding potential, unaided brand recall and unaided URL recall. Our findings show a significant influence of Web site engagement on the majority of these constructs except for two: unaided brand recall and unaided URL recall. Accordingly, engaging users on Web sites simultaneously leads to five managerial benefits. Herewith a discussion the seven proposed consequences.

10. Purchase intention

The analysis revealed a positive relation between Web site engagement and purchase intention. Customer purchases directly affect both revenue and profitability of companies (Ranaweera et al., 2008). Previous researchers had called for further

research on online-buying behaviour (Brunelle and Lapierre, 2008; Van den Poel, 2007; Zhou et al., 2007). Our results further support those of Tucker (2008) who considered Web navigation experiences as drivers of online purchases and of Korzan (2003) who found that flow influenced attitude towards purchasing online. Engaging a user on a Web site therefore leads to the intention to make a purchase on that site.

11. Web perceived value

Web perceived value is the 'interactive, relativistic, preference experience that results from visiting the Web site'. Our results reveal a high relationship between Web site engagement and customer online Web perceived value. Related findings were those of Steenkamp and Geyskens (2007), who affirmed that whilst utilitarian and hedonic user experiences lead to perceive Web site value, Web perceived value is neither objective nor subjective and depends on personal aspects of the Web site user and on the characteristics of the Web site. As previously discussed, whilst one of the virtues of the Web is its high consumer segmentation potential, it is known that companies do not yet utilise this feature to their advantage (Precision marketing, 2009). In this research we have revealed that engaged users demonstrate a perception of value when using a Web site that can therefore result in the attainment of online sales. Dodds et al., (1991) had also previously demonstrated that a high Web perceived value leads to a high purchase intention.

12. Switching intention

It is relatively easy on the Internet to switch from one Web site to another one that provides similar products or services (Li et al., 2006). The results of our research shows a strong influence of Web site engagement on the intention to not to switch to other Web sites for the purchase of an equivalent product or service. In chapter 2 we reviewed an array of retention constructs, however we decided to test the relationship of Web site engagement with switching intention precisely due to the easiness of online switching to other sites. Web site managers have a high interest in retaining customers due to the elevated cost of acquiring online customers compared to conventional channels (Li et al., 2006).

Previous research by Senecal et al., (2005) had already revealed that when consumers use one particular Web site to search for shopping information and are not influenced by external recommendations, they demonstrate a higher tendency to use that Web site instead of looking for further alternatives. Even Öörni (2005) had affirmed that consumers use the Internet for the convenience it is supposed to provide to them, and are even willing to pay higher prices in order to avoid effort when searching for better deals. With our research, we have gone one step further and have proposed a new Web site engagement construct which directly influences the intention of consumers not to switch to competing Web sites.

13. Return intention

Visitor return to a Web site is a common measure of success utilised by web advertisers (Mu and Galleta, 2007). Repeat customers are five times more profitable than new customers (Gupta and Kim, 2007) and it is difficult and expensive to acquire Web customers but easy to lose them (Phippen et al., 2004). Our results show strong support for a positive relationship between Web site engagement and return intention. Whilst it has been previously demonstrated that well utilised construct *satisfaction* utilised in marketing literature does not ensure repeat behaviour (Li et al., 2006), we have demonstrated that Web site engagement does. Also Supphelen and Nysveen (2001) had noted how up-to-date content, a dimension of Web site engagement, leads to return intention. Return intention has also been considered as a measure of success by Palmer (2002). Our research has revealed a benefit of engaging Web users by positively relating it to return intention.

14. Virtual branding potential

Simeon (1999, 2001) suggested this measure in order to assess the ability of a Web site to gain recognition and establish its existence in the minds of consumers and public. Whilst it is possible to attract visitors to Web site perhaps with search engines, virtual branding is a more accurate measure of a Web site's strategic potential, as virtual brand equity provides the most sustainable competitive advantage to Internet driven firms. Whilst it is common that Web sites sell products and services from different categories, in our research we deliberately limited the content our simulated online travel agency to one unique product range, as we

wanted to contrast the relationship between Web site engagement and virtual branding potential. For this reason, and following the association strength theory of memory (Ellis and Hunt, 1983), we assigned to our online travel agency a brand name and Internet URL address that described exactly the sole travel package category it sold. Results of our analysis have demonstrated that when an e-commerce Web site is capable of engaging visitors, this in turns influences the virtual branding potential of the site.

15. Unaided brand and URL recall

Whilst we previously affirmed that Web site engagement influences the branding potential of a Web site, our results did provide evidence of support for two hypotheses concerned with the relation between Web site engagement and unaided brand recall, and the relation between Web site engagement and unaided URL recall. Users had only been subject to the experimental once and this might be the reason why they could not recall the brand and URL of the Web site. 26% of the respondents were capable of recalling the brand exactly or similarly and 9.2% were capable of remembering the exact or similar URL address.

16. An integrated model of Web site engagement

The proposed twenty hypotheses of this research allowed us to develop a new theoretical and integrated model of Web site engagement including antecedents and consequences of the core engagement construct. Seven antecedents and seven consequences to Web site engagement were suggested. Two of the antecedents were designed in order to measure the aesthetic and structural features of Web sites, in particular *aesthetics* and *feedback*, and a third antecedent referred to the intended *purchase involvement* of Web visitors. Four further antecedents referred to the online consumer comparative behaviour of our respondents, in particular: cell comparisons, cell reacquisitions, product comparisons and Web site depth of navigation. Also seven consequences of engagement were analysed, specifically: purchase intention, Web perceived value, switching intention, return intention, virtual branding potential, unaided brand recall and unaided URL recall. All in all, this is the first time an integrated theoretical framework of Web site engagement has ever been proposed.

17. Evidence of need for multidisciplinary online consumer – human computer interaction approaches

Based on scarce online consumer behaviour and human computer theoretical frameworks, we revealed how the existing frameworks overlap as they both take into account research issues from the other. These two research areas might have not yet been brought together, as perhaps researchers from both areas might not have been aware of the research proceeding from the other field. In this research we have contributed an overlapping OCB-HCI table, illustrated in table 4, that demonstrates how there are research issues common to both OCB and HCI research. This table could be utilised in the future for the development of a new combined consumer-technology framework that could contribute to the improvement of the research discipline of online consumer behaviour. Likewise it could serve as a basis for the development of new consumer-technology behavioural models. Whilst it is understandable that researchers from both OCB and HCI have focused on their own individual research fields, the table could serve as a means to bring researchers from the fields of online consumer behaviour and human computer interaction into a common space.

Having described the theoretical implications, in what follows we shall the methodological implication of this research.

7.4.2. Methodological implications

One of the contributions of this research is of methodological nature. Dennis et al. (2009) had suggested that for the progress of the research discipline of online consumer behaviour, combined methodological approaches are necessary. Previous research has usually been approached from either consumer-oriented perspectives or technology-oriented perspectives and do not take into account aspects from the other. With a combined consumer-technology perspective in mind we developed the first data acquisition Web site, as well as its underlying technology, capable of remotely tracing and recording highly-precise user online consumer navigation behavioural data. Whilst previous computer process tracing methods have separately used elementary information process data and clickstream data in order to trace the

within-Web page and within-Web site behaviour of consumers, for this thesis we have developed a Web site which combines both types of data. This was further complemented with the integration of a two-part survey which captured respondent's replies on Likert scales. The combination of online surveys and online data acquisition has not been studied together previously within one unique methodological framework. The statistical analysis techniques utilised is partial least squares path modelling (PLSPM).

Overall the Web site is capable of tracing respondents' online navigation behaviour which is translated into a computer numerical stream from which useful databases can be built. The data can then be completed with the replies respondents provide with an online survey. The combination of these two sources therefore combines both information systems and consumer perceptual data. As the data collected corresponds to the online navigation behaviour of respondents on a molar level, the acquired raw data can be subsequently utilised for further investigations.

For the particular objectives of this research, the data acquisition Web site resembled an online travel agency which was developed taking into account research theory from numerous consumer behaviour and information systems research fields including Web design, interactivity, usability, Web content, effort, hedonic and utilitarian aspects, choice sets, product attributes and consumer comparative behaviour. The Web site's content had been assembled for the specific purposes of this research. Based on the strategic guidelines of the Ministry of Tourism of the Seychelles we balanced the information and visual content of the Web site so that it resembled a real site to be used in a real life situation. Respondents were presented with twelve holiday packages presented on twelve cells arranged on one single Web page in a 4x3 matrix format. As respondents revealed the content of the cells, the data acquisition Web site was recording their navigation. This served to trace both their actions and their eye movement. When a cell was clicked, respondents were presented with a Web product page containing detailed information about the selected holiday along with 4 pictures of the destination. Users would have to make comparisons within these twelve holiday packages until they chose one.

Whilst eye tracking hardware can also be used to track respondent's eye movement, the advantage of this methodology is that we could acquire data from our respondent's remotely. This improvement is notorious as respondents do not have to be taken to a laboratory setting and could therefore navigate the site in a habitual setting for them such as their home or office utilising their own computer. Other researchers can utilise this methodology in order to research the navigation behaviour of respondents benefiting from the advantage of acquiring data online. Online fields experiments can be undertaken within the Internet with ease (Spann and Tellis, 2006) and result visually appealing which results in a high level of respondents' involvement (Verma et al., 2008).

Having described the methodological implications of this research, in what follows we shall describe the managerial implications.

7.4.3. Implications for managers and decision makers

Our findings suggest a substantial number of practical implications that could help Internet marketing companies to better understand their relationships with online consumers. Table 87 summarises the implications for practice which will be described immediately thereafter.

Table 87. Implications for practice

IMPLICATION	DESCRIPTION
1. Web site engagement scale	Web site engagement can be assessed with a 1-7 Likert survey measuring variables: positive affect, focused attention, challenge, curiosity and involvement
2. Positive affect is a dimension of Web site engagement	For users to be engaged with a Web site they should feel positive affect
3. Focused attention is a dimension of Web site engagement	For users to be engaged with a Web site they should feel concentrated and not aware of distractions whilst using a Web site
4. Challenge is a dimension of Web site engagement	The more visitors feel challenged by a Web site the less they will be engaged with the site
5. Curiosity is a dimension of Web site engagement	An individual's sensory and cognitive curiosity is aroused whilst being engaged with a Web site
6. Involvement is a dimension of Web site engagement	Users engaged with a Web site feel involved in the activity they undertake on the site
7. Web site engagement influences Web perceived value	Engaged users perceived a high value, which is the interactive, relativistic, preference experience that results from visiting a Web site

8. Web site engagement leads to return intention. This influence is even stronger when mediated by perceived value	Engaged users have the intention to return to the Web site in the future. If they experience perceived value, the intention to return is stronger
9 .Web site engagement influences Web purchase intention mediated by perceived value	Engaged users have a high purchase intention, that is, the willingness to buy a product. If they experience perceived value, the intention to purchase is stronger
10 .Web site engagement influences non-switch intention mediated by perceived value	Engaged users do not have the intention to switch to other Web sites that provide similar services or content. If they value the content of the site, the intention not to switch is stronger
11. Web site engagement influences virtual branding potential	Engagement influences virtual branding potential, the ability of a Web site to gain recognition and establish its existence in the minds of consumers and public
12. Web site aesthetics lead to Web site engagement	Online marketers can engage visitors on Web sites by utilising visually appealing pictures and graphics in their design
13. Control is not a dimension of Web site engagement	Visitors can get engaged with a Web site without feeling that they have control over interaction
14. Transformation of time is not a dimension of Web site engagement	Engaged users do not experience that they lose the track of time
15. Up-to-dateness of information is not a dimension of Web site engagement	It is not necessary for a Web site to present fresh information in order to engage visitors
16. Feedback does not lead to Web site engagement	How well are organised the contents of a Web site does not influence how engaged visitors become with the site
17. Purchase decision involvement does not influence Web site engagement	Visitors can get engaged without wanting to involve in a purchase task
18. Up-to-dateness of information does not lead to purchase involvement	Presentation of the latest information on a product or service does not lead to wanting to involve in a purchase process
19. Users can get engaged without wanting to involve in a purchase decision task	Visitors who did not originally have the intention to involve in a Web site for a purchase can become engaged with the site
20. Navigating on a Web site does not lead to engaging with it	The more a consumer navigates on a Web page or on a Web site does not lead to engaging with the site
21. It is possible to engage users on Web sites without overloading Web pages with content	Web site designs should be kept simple and should not have an overloading content
22. Contribution to the industry of interface designers	Web site designers should utilise strongly appealing pictures when designing interfaces
23. Measurement of site success should not only be measured by clickstream but by perceptual measures such as Web site engagement	The success of a Web site should not only be measured with clickstreams but also with surveys as Web site engagement can only be assessed with this type of instruments
24. Non-clicked sites can be engaging	As Web site engagement is a cognitive experience and it is not necessary for a consumer to make clicks in order to become engaged with a site
25. Offline theories cannot always be transferred online and can indeed produce an opposite effect	Cluttering product ranges on Web pages, resembling supermarkets merchandising techniques does not lead to engaging with a Web site
26. Avoid users having to invest effort	Web designers should design ease to navigate Web sites in order to avoid users having to exert unnecessary effort
27. Get to the product as soon as possible	As aesthetics leads to Web site engagement but effort does not, visitors should be directed to product pictures as early as possible
28. Avoid cluttering items in one screen, in order to avoid effort	Overloading information on a Web page does not lead to engaging with the Web site

29. Web shops should avoid creating many pages	Avoiding visitors to make effort browsing many pages when visiting a Web site can help to keep them engaged with the site
30. Online marketing companies can benefit from applying science research into their Web sites	Whilst online companies frequently learn through trial and error, science research can contribute to predict possible outcomes and minimise errors
31. Online commercial companies can benefit from incorporating a marketing scientist in the design team	Companies can integrate the results of online science research. Marketing scientists have the ability to locate online related research
32. Online brands can take time to remember	It is difficult for customers to remember the brand of a Web site on a first visit even if they became engaged with the site
33. Web site URLs take time to remember	It is difficult for customers to remember the URL address of a Web site on a first visit even if they became engaged with the site
34. Check list for online marketers	A survey instrument is provided that can be utilised by Web site managers in order to assess how engaged customers are with their Web sites

Source: Developed for this research

1. Web site engagement scale

In this research we have suggested the first Web site engagement measurement. Previous researchers have affirmed that engagement is almost an obligation when navigating on Web sites (Bakker and Sádaba, 2008), that being engaged with a Web site could be considered as being ‘biologically connected’ with it (Nahl and Bilal, 2007) and that successful Web sites are engaging (O’Brien, 2008). Likewise, the private sector has been demanding a Web site engagement scale in the recent years (McKinsey, 2008; Nielsen, 2005). Previous attempts to measure online engagement have been made with clickstreams (Google, 2010) and do not take into account the perception of users.

Web site engagement could be considered as a retention construct as its definition refers to the captivation and maintenance of the attention of a user who wishes to remain interacting with a site. Online customer loyalty and retention has been widely discussed over Web related literature although there have been calls for having a better and further understanding of these types of constructs. As previously affirmed by Hong et al. (2005), consumers utilise Web sites for saving time: whilst online retailers want to design their online shopping sites in order to facilitate shopping processes quickly, contrarily, they also want to retain their customers as possible in order to expose them to more product information. These researchers affirmed that ‘balancing these dual goals of online retailers is a major challenge for Web site

designers'. In our research we have demonstrated that users can become engaged in Web shopping experiences even without the intention to involve in a purchase decision, and that being engaged with a Web site is directly related to purchase intention, retention and Web perceived value. In our understanding, the implementation of mechanisms that lead to consumers engaging with Web sites leads to solving the challenge described by Hong et al. (2005) as it is up to the users will how long they stay on a site.

Despite the growing bodies of literature focused on engagement as related to technological or online experiences, there was still an absence of a Web site engagement scale. With our proposal of our Web site engagement scale we have made one step further in the progress of this new multidisciplinary field of research which combines research from the areas of both online consumer behaviour and human-computer interaction. The five dimensions of Web site engagement are positive affect, focused attention, challenge, curiosity and involvement. The survey which can be utilised to measure Web site engagement is illustrated in table 88. The following sections describe how Web site managers can make use of these findings.

2. Positive affect is a dimension of Web site engagement

Positive affect is related to hedonic qualities such are enjoyment and fun (McCarthy and Wright, 2004). Experiencing fun is a motive for information search independently of a specific purchase need or decision (Bloch et al., 1986). Online marketers should therefore design their Web sites so that visitors can experience fun and enjoyment, which can be measured with the scale illustrated in table 88.

3. Focused attention is a dimension of Web site engagement

Focused attention is the degree to which the visitor of a Web site is focused on the interaction with the site (Huang, 2003). It is equally called concentration by other researchers (e.g. Lu et al., 2009). Table 88 illustrates how to measure a Web visitor's degree of focused attention. The three items of this scale refer to how concentrated and immersed a visitor is, and how as well is he aware of external distractions. Attention is influenced by visitors' cognitive judgements of the relevance of stimuli to a visitor's task, needs and affective state (Wells and Matthews, 1994). Allocation

of attention depends on both the salience of objects in a visual field and on the distance from the area of focal attention. Taking into account these aspects and bearing in mind that online marketers will not be able to control how concentrated or distracted visitors are, we suggest that online marketers should emphasise content specifically segmented and targeted for the visitors' profile of each Web site, and utilise salient visual objects which emphasise the content provided by the site.

4. Challenge is a dimension of Web site engagement

Challenge refers to the effort users perceive they are expending when navigation on a Web site (Webster and Ahuja, 2004) and is related to how user-friendly is an interface design, that is, its usability (Venkatesh and Ramesh, 2006). In this research we have revealed that challenge is a dimension of Web site engagement with a negative sign, meaning that increased challenge leads to non-engagement. There are substantial bodies of research which deal with how to make Web sites more usable and Web managers can utilise this research to their advantage. Developed usable web sites will make their visitors invest less effort and as a consequence, make their Web sites engaging.

5. Curiosity is a dimension of Web site engagement

Visitors gain excitement and pleasure from seeking out new things (Bianchi, 1998) and Web sites have the capability of helping visitors to discover and generate demand for new products (Cooke et al., 2002). Consumer curiosity can be triggered by the content of a Web site even if they originally have little interest in it. Curiosity can also be an intrinsically motivated desire for information not motivated by utilitarian goal. Online marketers can therefore trigger curiosity by having fresh content to offer to their visitors (Huang, 2003). Curiosity can be measured with the items on table 88.

6. Involvement is a dimension of Web site engagement

Involvement can occur with a product, with a task and also with information and technology. Table 88 illustrates the four items we have used to measure involvement which refers to how to immersed, absorbed and overall involved is a Web site's visitor when undertaking a purchase task of a product using information contained

within the Web site. Whilst product involvement refers to the relevance of a product for a consumer's needs, interests and values (Clarke and Belk, 1978), Elliot and Speck (2005) suggested that online retailers should emphasise aspects that 'best suit the involvement/experience profile of their primary users. Following the recommendations made in previous dimensions, online marketers should carefully design their Web sites so that their content matches the intended profile group of visitors (Lu et al., 2009). In order to measure how involved visitors are with a Web site, marketers can use the instrument included in table 88.

Having described how online marketers can measure engagement and having made recommendations on how to make Web sites more engaging, we shall now focus on five managerial consequences which occur as a consequence of engaging visitors with e-commerce Web sites.

7. Web site engagement influences Web perceived value

Our results have shown that engaging visitors of Web sites directly influences the perceived value of a Web site which is an interactive, relativistic, preference experience that results from visiting a Web site. It depends on characteristics of a Web site and on personal aspects of its visitors (Steenkamp and Geyskens, 2006). In this research we have also demonstrated how Web perceived value leads to purchase intention, non-switch intention, return intention and virtual branding potential. Online marketers would benefit developing the Web perceived value of their Web site if they are first capable of engaging visitors. In order to assess the perceived value of a Web site, online marketers can use the survey instrument included in table 89.

8. Web site engagement leads to return intention. This influence is even stronger when mediated by perceived value

Repeat customers are five times more profitable than new customers (Gupta and Kim, 2007). Web advertisers consider return intention as an approximation to customer retention (Mu and Galleta, 2007). Whilst it is costly to attract customers to Web sites (Li et al., 2007) and easy to switch to other sites (Li et al., 2006), in this

research we have demonstrated how Web site engagement leads to their intention to return to a site. Web site marketers can utilise the instrument illustrated in table 89 in order to assess visitors' intention to return to a Web site.

9. Web site engagement influences Web purchase intention mediated by perceived value

In our research we have proven how Web site engagement directly determines Web purchase intention. Purchase intention towards a product means a high willingness to buy it (Dodds et al., 1991). Likewise purchase intention directly affects both revenue and profitability of a firm (Ranaweera et al., 2008). Accordingly, online marketers should try to develop engaging experiences in order to achieve sales and obtain economic profit. Online marketers can utilise the survey instrument included in table 88 in order to assess the purchase intention of the visitors of a Web site.

10. Web site engagement influences non-switch intention mediated by perceived value

Our results have shown that engaging visitors with Web sites directly determines their intention not to switch to another Web site for undertaking a similar purpose. Online marketers should manage the retention ability of their Web sites (Demirhan et al., 2007) due to the ease of switching from one Web site to another one (Li et al., 2006), and due to how expensive it is to acquire potential online customers compared to other channels (Li et al., 2007). Switching costs prevent customers changing to other Web sites so that they can recover the investment of acquiring customers. The presence of switching costs can have a substantial effect on long time profitability which is so difficult to achieve in B2C environments (Chen and Hitt, 2002). In order to assess non-switching intention, online marketers can utilise the instrument included in table 89.

11. Web site engagement influences virtual branding potential

Virtual branding potential is the ability of a Web site to gain recognition and establish its existence in the minds of consumers and public. There are many advantages to creating virtual brand equity as it provides the most sustainable competitive advantage to Internet driven firms (Simeon, 1999; 2001). In this

research we have demonstrated how engaging visitors with Web sites influences the virtual branding potential of a Web site. Online marketers can use the survey instrument included in table 89 in order to measure the virtual branding potential of an e-commerce Web site.

Having described five consequences of how Web site engagement directly determines five consequences highly relevant for business, we shall now describe how aesthetics can create engaging experiences on a Web site, as our results have proven that Web site aesthetics leads to Web site engagement.

12. Web site aesthetics lead to Web site engagement

Whilst users can engage with a Web site for various reasons, in this research we have proven that the aesthetics of a Web site leads to engaging with a site. A Web site's aesthetics refers to its visual appeal including its colours, images, graphics and fonts (Demangeot and Broderick, 2006). Customer reaction to the aesthetics of a Web site is increasingly being recognised as a determinant of consumer behaviour (Shun et al., 2008).

E-commerce Web sites such as travel agencies can therefore engage Web visitors by using aesthetic content. It might seem a paradox that offline businesses such as travel agencies have traditionally utilised beautiful pictures of tourism destinations in order to visually catch the attention of potential customers, however it is still uncommon to find online travel agencies which make full potential of their Web sites by utilising large or full screen beautiful pictures of travel destinations that show outstanding content of the products they have to sell. Instead, they still tend to replicate offline catalogues by cluttering as much content as possible into a Web page. Such offering is possible by reducing the size of the pictures, which therefore reduces the visual appeal of each picture. Whilst online travel agencies seem to replicate offline catalogues or product assortments found in supermarkets, it is known that offline theories are not directly transferable offline (Lurie, 2004; Steckel et al., 2005). Due to the various valuable managerial consequences of engaging consumers on Web sites, we suggest that online marketers should make better use of their Web sites by

utilising large, clear and visually appealing pictures. The scale included in table 89 can be used by marketers in order to assess how customers perceive the aesthetic content of their Web sites.

Having described the confirmed dimensions of Web site engagement, antecedents and consequences, we shall concentrate on describing the aspects which we expected to prove but could not find support of evidence. The findings are also valuable for online marketers in order to prevent them making mistakes when designing their Web sites and therefore avoid learning by trial and error as usually occurs in this business sector (Lee and Kozar, 2008).

13. Control is not a dimension of Web site engagement

Control is used to assess the control of users over their interaction with Web sites (Huang, 2003). Web sites are interactive by nature (Pace, 2004) and interactivity is the attribute that most distinguishes the Web from other media (Huang, 2003). However our findings have revealed that Web site engagement can occur without perceiving that a site is interactive. This indicates that engagement solely occurs within the eyes of consumers. Whilst Shrum et al., (2008) affirmed that interactivity is a multi-dimensional construct that can reside among different entities, Song and Zinkhan (2008) suggested that interactivity fully relates to the behaviour of consumers, as it resides in the consumers' eyes and not in an information system itself. In line with this researcher, our findings have therefore revealed that it not necessary for consumers to perceive that a Web site is interactive in order to experience engagement.

14. Transformation of time is not a dimension of Web site engagement

In our research we have demonstrated how transformation of time is not a dimension of Web site engagement. This construct refers to the perception that time appears to pass very slowly or very rapidly compared to ordinary experience (Guo and Poole, 2008). Whilst online marketers want to design their shopping sites to quickly facilitate shopping processes, in contrast, they want to retain customers as possible in

order to expose visitors to more product information (Hong et al., 2005). In this direction, our findings have demonstrated that the perception of how time passes is not necessary for experiencing engagement with a Web site.

15. Up-to-dateness of information is not a dimension of Web site engagement

One of the advantages of Web sites is their capability for instantly communicating with people (Sádaba, 2000). As information attracts customers (Su et al., 2008) the content of Web sites should be often refreshed (Johnson et al., 2004). Such content can be updated both by humans and by information systems that generate information (Hausman and Siekpe, 2009). Web sites also reduce the costs for searching for information (Ariely, 2000), although the information obtained by customers should be perceived as beneficial. Whilst in this research we have revealed that the up-to-dateness of information on a web site is not a dimension of Web site engagement how often online marketers frequently update the contents of their Web sites is irrelevant for our research.

16. Users can engaged without Web site design interface organisation or feedback mechanisms

Our findings have also revealed that a Web site's feedback does not lead to Web site engagement. Feedback refers to the information communicated to users about actions that have occurred and results that have been achieved (O'Brien, 2008) and relates to how well are organised the interfaces represented on computer screens in order to undertake a task (Mandel et al., 1997). However, information systems that deliver effective feedback and match users' expectations help consumers to accomplish their tasks, reduce their cognitive effort, and correspond to their actions and task visualisations (Te'eni., 2007).

17. Users can get engaged without wanting to involve in a purchase decision task

Purchase decision involvement is the extent of interest and concern that a customer rings to bear on a purchase decision tasks (Mittal, 1989). In purchase decision research, the main concern is that, if a decision is relevant to a consumer, he will be motivated to make a careful purchase decision. Our findings have revealed that

purchase decision involvement does not determine Web site engagement. In other words, it is not necessary for consumers to be involved in a purchase decision in order to be engaged with a Web site. Accordingly, if a Web site has the potential to attract a visitor, for instance, through beautiful pictures, this can be sufficient in order to engage a visitor, even if he did not have the intention to make a purchase. This finding does not contradict the view of other researchers that Web sites should be designed for their target profile of users (Junaini and Sidi, 2007).

18. Up-to-dateness of information does not lead to purchase involvement

Whilst online consumers can benefit from obtaining online information for a purchase process, and therefore reduce search effort costs compared to the offline world, it is now known that the presentation of the latest information on a product or service does not lead to wanting to involve in a purchase process. Buying decisions are typified by high-involvement and complex decision making and it was previously known that the availability of information can attract consumers to involve in online shopping. However with our finding we have evidenced that the freshness of information contained within a Web site is not sufficient in order to trigger the motivation to involve in a purchase.

19. Users can get engaged without wanting to involve in a purchase decision task

We have found that visitors who did not originally have the intention to involve in a Web site for a purchase can become engaged with the site. Whilst navigating on Web sites users can encounter commercial offers which perhaps they were not looking for in that particular moment. Online companies currently count with the technology to adjust their offer based on the specific profile of each visitor through customer-centric technologies. However, according to Forrester Research, only a third of online marketers have a systematic method of delivering the right message to the right person at the right time. If marketers utilise the technical capabilities of the Internet to their advantage, it should be possible to engage customers who initially were searching and browsing online for whatever purpose.

20. The more a consumer compares commercial products and services on an e-commerce Web page or on a Web site does not lead to engaging with the site

One of the most significant contributions of this research is the finding that online consumer comparative behaviour on a Web site does not lead to engaging with the site. Whilst one of the advantages for consumers who use e-commerce Web sites is that they can utilise these site for remotely comparing product and service information and can therefore make improved decisions based on the information they obtain, iterations and comparisons with this information does not make users engage more with a particular shopping Web site. In order to make this affirmation we have developed a Web site capable of tracing the navigational and comparative behaviour on consumers and contrasted this computer generated information with perceptual data of how consumers felt engaged with the content of the Web site.

With our finding we have demonstrated that the capability of using Web sites for obtaining information, deepening with wanted information or discovering new information during a search process does not lead to the state of engagement with a Web site. This effect seems to be the opposite to what occurs in the offline world. Stores such as *category killers* present large ranges of products within all the categories held within the store. In these stores consumers can compare and therefore invest an effort. Such effort can lead to the effects of lock-in or the avoidance of store switching. Consumers can become locked in a vendor, product or brand when the costs of switching to a competing alternative outweigh the benefits. Our results are can be compared to those of Senecal et al. (2005) who demonstrated that phenomena from offline consumer can produce the opposite effects when they happen in the online world.

Having described the managerial implications which directly arise from the theoretical revealing of this research, we also contribute the following thirteen further findings which can be used by online marketers.

21. It is possible to engage users on Web sites without overloading Web pages with content

Many e-commerce Web sites organise their products in information structures resembling offline catalogues or product facings from retail environments such as supermarkets. Previous researchers had already warned that offline theories are not directly applicable to online contexts. Research had also revealed that overloading a Web site can lead to a decrease in its perceived informativeness and create frustration and stress. Whilst Web sites have both utilitarian and hedonic features, in this research we have demonstrated how aesthetics do lead to creating an engaging experience with a Web site. Whilst it could be argued that Web users might not fully read the texts which are presented on Web sites or that they might heuristically scan the contents, or perhaps do not read at all, visual features such as pictures do lead to Web site engagement. Therefore it is not necessary to overload Web pages with content and designs should be kept as simple as possible and with a strong visual appeal.

22. Contribution to the industry of interface designers

With our research we have demonstrated that aesthetics leads to engaging with a Web site. As communication technologies have advanced, Internet download speeds have improved and current technologies permit the integration of pictures and graphics, Web designers can embed aesthetic contents on Web sites with the purpose of engaging users. With our research we have found that organisation of information on screens is not a factor that leads to Web site engagement.

23. Measurement of site success should not only be measured by clickstream but also with perceptual measures such as Web site engagement

Simply put, online companies are currently not measuring what they should. The enterprise culture of measuring the effectiveness of Web sites with clickstreams is widely extended in the Internet industry: many advertising companies utilise metrics such as clicks, click through rates, site visits and page views to measure success. 80% of European GDP is generated by small and medium enterprises (SMEs) and not all of these have the necessary knowledge to develop their own metrics. It could therefore be argued that many of these companies are adopting ‘success metrics’

enforced by large online companies or by the Internet industry in general. Researchers have argued that many online businesses learn by trial and error and don't count on the outcomes of science research. Still, in the past few months claims have been started to be made for combined consumer-technology approaches in order to have a better understanding of online consumer behaviour (Dennis et al., 2010). This could be interpreted that we are still at a stage where not enough is yet know about how to developed and manage online businesses. SMEs which might not have the technological development capabilities of specialised firms such as mobile phone interface design companies, and might not usually apply the results of science research to their Web designers. Researchers have affirmed that online companies are not achieving their financial targets.

This finding evidences that the practitioners who affirmed that engagement could be measured with online clickstream data were far from reality. Relying on science research methods and therefore not taking practitioner statements for granted which could have misled ourselves as researchers, we have demonstrated how the current methods utilised by the online marketing industry are not necessarily adequate for measuring success, or at least on their own.

Our overall interpretation is that companies in general are misled in terms of how to measure the success of their Web sites. In our research we have demonstrated how our Web site engagement scale can only be measured with a survey. Far from this reality, large online companies which profit from selling online adverts to other companies such as SMEs, also offer to them online analytical tools which exclusively utilise clickstreams and therefore further mislead SMEs by immersing them in a sea of complexity. For instance, a SME might advertise its Web site in a search engine. Consumers that that click on the advert and access the Web site might actually engage with the Web site. However, the manager of the Web site can be dismayed when assessing success exclusively with clickstreams metrics received from the site's server. However, as previously discussed, Web site engagement is highly relevant for industry as it leads to Web perceived value, purchase intention, non-switch intention, return intention and virtual brand potential.

The online marketing industry is measuring success solely with clickstreams and should also utilise questionnaires in order to have a picture of the online behaviour of consumers. Should we have taken this assumption for granted, we would have never been encouraged to undertake this research and made our contribution to both academia and industry. Accordingly, online marketing business should not be misled by current industry clickstream trends and should measure their success according to their own mission and goals. By positioning their brand in the market with product ranges which suit the nature of the Web sites, and fully intentionally tailoring each Web site according to the target group of customers (Junaini and Sidi, 2007), companies could better understand if a site's mission is achieved over the long term. Therefore, not only general clickstreams but detailed clickstreams (van den Poel and Buckinx, 2005) complemented with surveys could give businesses a clearer picture. As an overall conclusion, measurement strictly with clickstreams may be misleading and complemented these types of measurements with a perceptual construct such as Web site engagement, for which a survey is necessary might be more realistic. As well as customer loyalty is key to reducing the overall production costs of a product or service, online customer engagement can contribute to make online companies profitable.

24. Non-clicked sites can be engaging

A video included in a site such as www.youtube.com can be accessed from a search engine. The video will start to run with no clicks being involved, and viewers can see a full length video without clicking anywhere on the Web site. Whilst watching the video, if the visitor simultaneously experiences positive affect, focused attention, curiosity and involvement, and does not feel challenged by the Web site, he will become engaged. In situations like these, online businesses achieve engagement, which, as previously mentioned, barely involve clickstreams.

25. Offline theories cannot always be transferred online and can indeed produce an opposite effect

In their research, Senecal et al. (2005) had warned that when a consumer is looking for a product in the offline world and is recommended to visit a particular offline store which sells a sought product, the equivalent situation in an online scenario can

trigger the consumer to also start searching in other online stores. Whilst offline ‘category killer’ stores are characterised by holding many alternative products in one product range, where consumers can compare the different options available, in our research we have demonstrated how online comparison does not lead to engaging with a Web site. We have also demonstrated that how well organised is a Web site does not lead to engaging with it. However, we have demonstrated that the aesthetics of a Web site does lead to engaging with the site.

26. Avoid users having to invest effort

Whilst clickstreams and EIPs measure the amount of effort that users have made on a Web site, our findings have revealed that none of the four factors designed with these types of measure lead to engagement. We also revealed that challenge is a dimension of Web site engagement with a negative sign. As is it possible to engage users without having to make users invest effort, as for instance showing them pictures, Web designers should try to make their sites easy to navigate avoiding that users to invest unnecessary efforts. Our findings could be interpreted that as consumers that to the Internet in order to invest less effort than compared to searching in the offline world, the more directly content is presented to them, the better off they will be.

27. Get to the product as soon as possible

We recommend that online marketers should design their Web sites so that visitors are presented with pictures of the products they are selling as soon as possible. As neither the organisation of an interface nor the effort consumers make on a Web site lead to engaging with the site, but aesthetics do lead to engagement, we suggest that e-commerce sites should be designed so that consumers can view the pictures as soon as possible in the buying process and to maintain or have easy access to the product pictures during the buying process.

28. Web shops should avoid cluttering items in one screen, in order to avoid effort

Since the emergence offline product merchandising techniques, the traditional method of ‘selling over the counter’ in shops was overtaken by current

merchandising strategies of large supermarkets where consumers are visually faced with the diverse product ranges they sell. We strongly advise to online marketers to not fall into the replication of these product presentation strategies on Web sites as for instance, wanting to clutter many pictures on to a Web page can lead to reducing the size of the pictures and therefore an overall loss of visual presentation. Whilst customers value large and varied assortments in offline environments, in the offline world, overloading a Web page can lead to the opposite effect originally pursued. In this research we have demonstrated that pictures lead to Web site engagement but the organisation of content does not, and therefore online designers should avoid cluttering content into one Web page in order to expose visitors to as much information as possible.

29. Web shops should avoid creating lots of pages, in order to avoid effort

Following the previous point, our research has revealed that the depth of navigation of a user in a Web site does not lead to Web site engagement. Likewise, if a Web site contains many pages with lots of information, these can fall into a non-use situation. In this research we have demonstrated that aesthetics lead to engagement but organisation of content and depth of navigation within the Web pages that create a Web site do not. It is therefore not necessary to overload Web sites with content and make users invest unnecessary effort whilst navigating on them, as such effort does not lead to engaging with a Web site.

30. Online marketing companies can benefit from applying science research into their Web sites

The results of this research can be directly applicable to an online company. Whilst a substantial portion of the online businesses are SMEs, these can benefit from integrating the results of science research, and avoid learning through trial and error as occurs when designing Web sites (Lee and Kozar, 2008).

31. Consumer technology companies can benefit from incorporating a marketing scientist in the design team

Whilst this research belongs to the research of online consumer behaviour, we have reached to the results of this research with a combined consumer-technology

approach and demonstrated how Web site engagement should be measured with surveys and not with clickstreams. Due to the both the vast growth of consumer technological developments and the growing number of commercial failures (De Marez et al., 2004), technological designers could benefit from integrating a marketing scientist into their team in order to ensure that their devices make sense for the intended group of customers for which their device is designed.

32. Online brands can take time to remember

As our findings have revealed that a first visit to a does not lead to brand recall, online marketers cannot expect that an online consumer will be able to remember the brand name of a Web site even if they became engaged with the site. As has traditionally occurred, it might take time for a consumer to be able to remember the brand name of a Web site through repeated stimulus over time.

33. Web site URLs take time to remember

As well as it can take time to be able to remember the brand name of a Web site, engaging users on a Web site on a first visit does not mean that they are capable of remembering the URL of the site. It therefore might take time for a consumer to be able to remember the URL of a Web site through repeated stimulus over time.

34. Check list for online marketers

In this section we provide online marketers with a tool for understanding if the visitors to Web sites have become engaged with them. Tables 88 and 89 provide a check list of aspects which can be carefully considered by Web site managers before commencing the design of e-commerce Web sites and can be used to assess user's perceptions after a Web site has been launched online.

Table 88 is a survey with 18 items which can be used to directly assess online consumers' perception of engagement with a Web site. All items should be measured with Likert 1-7 scales.

Table 88. Survey for measuring Web site engagement

ITEM No.	FACTOR	ITEMS
		<u>Whilst I navigated on the Web site I felt...</u>
1 - PA1	Positive affect	... excited
2 - PA2		... energetic
3 - PA3		... happy
4 - PA4		... satisfied
5 - PA5		... bold
6 - FA1	Focused attention	When navigating this website, I didn't think about other things (R)
7 - FA2		When navigating this website, I wasn't aware of distractions (R)
8 - FA3		When navigating this website, I was totally absorbed in what I was doing
9 - CH1	Challenge	This Web site was easy to use
10 - CH2		Using this shopping website was not mentally taxing
11 - CH3		This shopping experience was not demanding
12 - CH4		Shopping on this website was not too much trouble
13 - NO1	Curiosity	I continued to shop on this Web site out of curiosity
14 - NO2		This shopping experience satisfied my sense of curiosity
15 - NO3		The content of the shopping Web site incited my curiosity
16 - EN1	Involvement	I felt involved in this shopping task
17 - EN3		It was easy to get wrapped up in this shopping experience
18 - EN4		I was really drawn into my shopping task

(R) Reverse coded

Source: Developed for this research

Table 89 contains a survey with 16 items which can be used to directly assess online consumers' perception of the aesthetic beauty of a Web site, the intention to make a purchase on a Web site, the switching intention, return intention, Web perceived value and virtual branding potential of a Web site. All items should be measured with Likert 1-7 scales. Note that aesthetics is a factor that influences engagement and the rest of the factors derive from being engaged with a Web site.

Table 89. Survey for measuring antecedents and consequences of Web site engagement

ITEM No.	FACTOR	ITEMS
ANTECEDENTS		
1 - AE1	Aesthetics	The way the Web site displays its products is attractive
2 - AE2		The Web site is aesthetically appealing
3 - AE3		I like the way the Web site looks
CONSEQUENCES		
		If I wanted to purchase the holiday package ...
4 - PI1	Purchase Intention	... I would have the intention to make the purchase on this Web site
5 - PI2		... I would make the purchase on this Web site
6 - SW1	Switching intention	... it is likely that I would switch to another Web site
7 - SW2		... it is probable that I would switch to another Web site
8 - SW3		... I would certainly switch to another Web site

9 - RI	Return intention	If I wanted to purchase these types of holidays in the future I would return to this Web site
10 - MO1	Web perceived value	I felt interested in my shopping task
11 - MO2		Shopping on this website was worthwhile
12 - MO3		My shopping experience was rewarding
13 - MO4		I consider my shopping experience a success
14 - VB1	Virtual branding potential	The general design of the Web has a good quality
15 - VB2		I would recommend this Web site to other users
16 - AE2		The aesthetic design of this Web site is attractive

Source: Developed for this research

7.5. LIMITATIONS OF THIS RESEARCH

This thesis is not free of limitations, and they will be accordingly described. The main limitation of this research is that both the Web site engagement construct and the research model have been contrasted with data proceeding from only one Web site simulating an online travel agency. Similarly, we have only studied the effects of one product range from the travel industry. This could limit the overall applicability of the findings to other industries, as the dimensions of Web site engagement could be different in different contexts, in different ranges of travel products, or in a different nature of products all together such as could occur with tangible products. With regards to the scales utilised in the questionnaires of this research, whilst we have used widely accepted scales where it was possible, in some cases the scales had to be adapted to best suit our purposes. Similarly, whilst the four variables utilised to measure online consumer comparative behaviour have been designed to the best of our ability based on prior research, perhaps other variables or scales could be more suitable for capturing online comparative behaviour. In this direction, it could be argued that it was difficult to compare the twelve holiday packages as these were never presented simultaneously on the Web menu. The data acquisition Web design was designed based on mouselab and only one holiday package was presented at the time when the mouse pointer was rolled over each of the twelve cells. Whilst this was the only method that could remotely trace the eye movement and behaviour of the respondents, this limitation could be surpassed utilising an eye tracking device.

Another limitation of this research is that the online travel Web site developed for this research was not real e-commerce site where visitors could make purchases but

an experiment, therefore results could vary if the overall research was undertaken in a real travel agency with a real purchase situation. Whilst it was possible to remotely acquire user behaviour with our travel Web site, perhaps the utilisation of eye tracking devices would be necessary when repeating this research in a real context where consumers are faced with a situation where they would have to decide whether to make a purchase or not. Similarly, the product ranges sold on the travel agency, holidays in Seychelles islands, were probably not usually purchased by the respondents. In order to be able to analyse the influence of Web site engagement on the two unaided recall measures pertaining to the Web site's, brand and URL address, respondents completed the experiment only once on a Web site that was previously unknown to them and therefore the effects of repeated exposure of the Web site on the same group of users could not be assessed. Finally, due to the newness of this research field we acknowledge that our definition of Web site engagement could be improved, as it was based on the scarce literature available up to the moment of finalising this research.

In the last section of this final chapter we shall make some recommendations for future research.

7.6 RECOMMENDATIONS FOR FUTURE RESEARCH

The following suggestions are either made based on the limitation of existing research regarding Web site engagement or due to the need to advance in the consolidation of this research field through the developed of further empirical work. The recommendations hereby described confirm our intention to progress research in the field of Web site engagement. We also make a call to the research community in order to progress in the understanding of engagement, by studying further potential antecedents to Web site engagement and more valuable consequences of this new construct.

Due to the newness of our construct and methodology, we acknowledge the large number of recommendations which we consider worthwhile exploring. First, it is a priority to consolidate the Web site engagement construct, paying special attention to

the three dimensions which were not found to form part of Web site engagement: challenge, control and transformation of time. Second, we suggest studying the effect of Web site engagement over time, as engaging experiences could differ as users pay repeated visits to a same Web site. Moe and Fader (2001) showed that Internet behaviour changes over time. Third, whilst we studied the effect of online comparison on Web site engagement, respondents were subject to the Web site only once, therefore we did not have to opportunity to study continuance effects (Bhatnagar and Ghose, 2004) or derived aspects such as practice (Newell and Rosenbloom, 1981) or lock-in (Zauberman, 2003). Fourth, further research should concentrate on understanding what creates engagement, therefore research on further antecedents of Web site engagement should be undertaken. Fifth, in order to measure the influence of online comparative behavior on Web site engagement, we developed a series of twelve indicators which were designed to capture such behaviour. We thoroughly designed these indicators to the best of our knowledge based both on previous scientific research as well as indicators habitually used in the Internet industry. Accordingly, further research could focus on utilising other indicators that could influence Web site engagement.

Sixth, whilst data was obtained uniquely with the data acquisition Web site developed for this research, it would be useful to revalidate the Web site engagement construct utilising an eye tracking device such as *eyeglaze* or *tobii*. Lohse and Johnson (1996) compared how consumers behave on *mouselab* and on eye tracking devices, and revealed that eye tracking devices use less time, more fixations and more reacquisitions, but result in less search of the total information and have a more variable pattern of information search. Seventh, we suggest consolidating the Web site engagement construct in a real setting. Likewise, we utilised a *purchase intention* in order to assess potential purchase behaviour, therefore we suggest assessing the influence of Web site engagement with real purchase behaviour where the respondent encounters a potential real purchase of a product or service they are personally interested in. Eighth, we suggest studying the influence of demographic, psychographic and respondent's knowledge of the Internet medium data on Web site engagement. Ninth, due to the possible heterogeneity of the online behaviour of our respondent sample, future research could take into account the individual behaviour

of each respondent, as analysis at this level might offer new results. Tenth, we recommend further studying the effect of differently designed interfaces on Web site engagement. As researchers could focus on creating display assortments that produce greater perceptions of variety at a lower cost and with greater efficiency, aspect which is sometimes easier to create on e-commerce web sites than in offline environments, these could have an impact on Web site engagement. Whilst in our data acquisition Web site we used a matrix format, habitual interface structures are also *list* and *2-column* formats.

Eleventh, as we found that curiosity is a dimension of Web site engagement, it would be interesting to understand the effects of promoting the content of a Web site. Curiosity could be triggered through reception of fresh information through emails and through social media Web sites, which could keep users engaged with a site. Twelfth, in this direction, as well as we found that curiosity is a dimension of Web site engagement, future research could also investigate if *eudaimonia* and *surprise* could be dimensions of Web site engagement as Filep (2008) suggested online conducting research taking into account these constructs. Thirteenth, future research could take into account the influence of Web site engagement on offline behaviour, for instance, purchasing behaviour in traditional retail environments.

Fourteenth, whilst the engagement construct we have developed is specifically for Web sites and have found difference with regards to the dimensions of the engagement with technology scale of O'Brien (2008), due to the growth of mobile communications, we suggest testing the scale on m-commerce devices, as these might also have the capability to engage users. Accordingly, we also suggest testing the scale in mobile technological developments such as the Ipad. Fifteenth, whilst we found that Web site engagement leads to purchase intention of a holiday package which has not yet been experienced, we suggest researching the link between Web site engagement and post-travel dissatisfaction, that is, to understand if engaged users which actually bought a package, went on the holiday and became dissatisfied, can be once again engaged with the Web site that sold the travel package. Sixteenth and finally, we make a call to the research community for the development of constructs that are not exclusively based on clickstreams but that also take into

account aspects such as experiences that perhaps can only be measured with instruments such as surveys.

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APPENDICES

APPENDIX 1. A. 2-part survey scales
 B. Description of comparative choice
 behaviour variables

A. Survey Part 1 of 2

7-point Likert scales in A1-A6

N° Item	Variable	Items
A1 - PD1	Purchase involvement (Laurent and Kapferer, 1985) adapted	I choose my holiday packages very carefully
A2 - PD2		Which holiday package I buy matters to me a lot
A3 - PD3		Choosing my holiday package is an important decision for me
A4 - SK1	Internet search skills (Mathwick and Ridgon, 2004)	I am extremely skilled at using the Web
A5 - SK2		I consider myself knowledgeable about good search techniques on the Web
A6 - SK3		I know how to find for what I am looking for on the Web
A7 - SX	Gender	Male Female
A8 - AG	Age (O'Brien, 2008)	-18 18-25 26-35 36-45 46-55 55-65 + 65 years of age
A9 - ED	Level of education	No studies Primary studies Secondary studies University studies
A10-WK1	Type of employment (O'Brien, 2008)	Self-employed Employed by a company Retired Unemployed
A11-WK2	What is your profession? (O'Brien, 2008)	(open ended reply)
A12 - SA	Net monthly income (Bigné, 2006) adapted	600€ 600 a 1200€ 1200-1800€ 1800-2400€ +2400€ I prefer not to answer
A13 - PV	Province (AIMC, 2009)	Alava Albacete Alicante,....., Valencia Zaragoza I live out of Spain
A14 - FU	Frequency of use of the Internet (Bigné, 2006)	I do not usually use it Every month Every 15 days 1-2 days/week 3-6 days/week Every day of the week
A15 - AC	For how long do you have a connection to the Internet from home? (Bigné, 2006)	I do not have an connection to the Internet from home Less than 6 months Between 6 months and 1 year Between 1 and 2 years Between 2 and 4 years For more than 4 years

Survey Part 2 of 2

7-point Likert scales except 48 to 51

N° Item	Variable	Items
1 - CO1	Control (Huang, 2003) adapted	When navigating this website, I felt in control
2 - CO2		I felt that I had control over my interaction with the Web
3 - CO3		This website allowed me to control the computer interaction
4 - FA1	Focused attention (Huang, 2003) adapted	When navigating this website, I thought about other things
5 - FA2		When navigating this website, I was aware of distractions
6 - FA3		When navigating this website, I was totally absorbed in what I was doing
7 - TT1	Transformation of time (Guo and Poole, 2008)	Time appeared to go by very quickly
8 - TT2		I lost track of time
9 - TT3		Time flew
10 - FD1	Feedback (O'Brien, 2008) adapted	The organisation of information on this Web site made sense to me
11 - FD2		I didn't find the organisation of information on this shopping Web site confusing
12 - FD3		I didn't found this shopping Web site easy confusing to use
13 - FD4		It didn't took too many clicks to get to the product information I was looking for on this Web site
14 - CH1	Challenge (O'Brien, 2008) adapted	This shopping website was easy to use
15 - CH2		This shopping experience wasn't demanding
16 - CH3		Using this shopping website wasn't mentally taxing
17 - CH4		Shopping on this website wasn't too much trouble

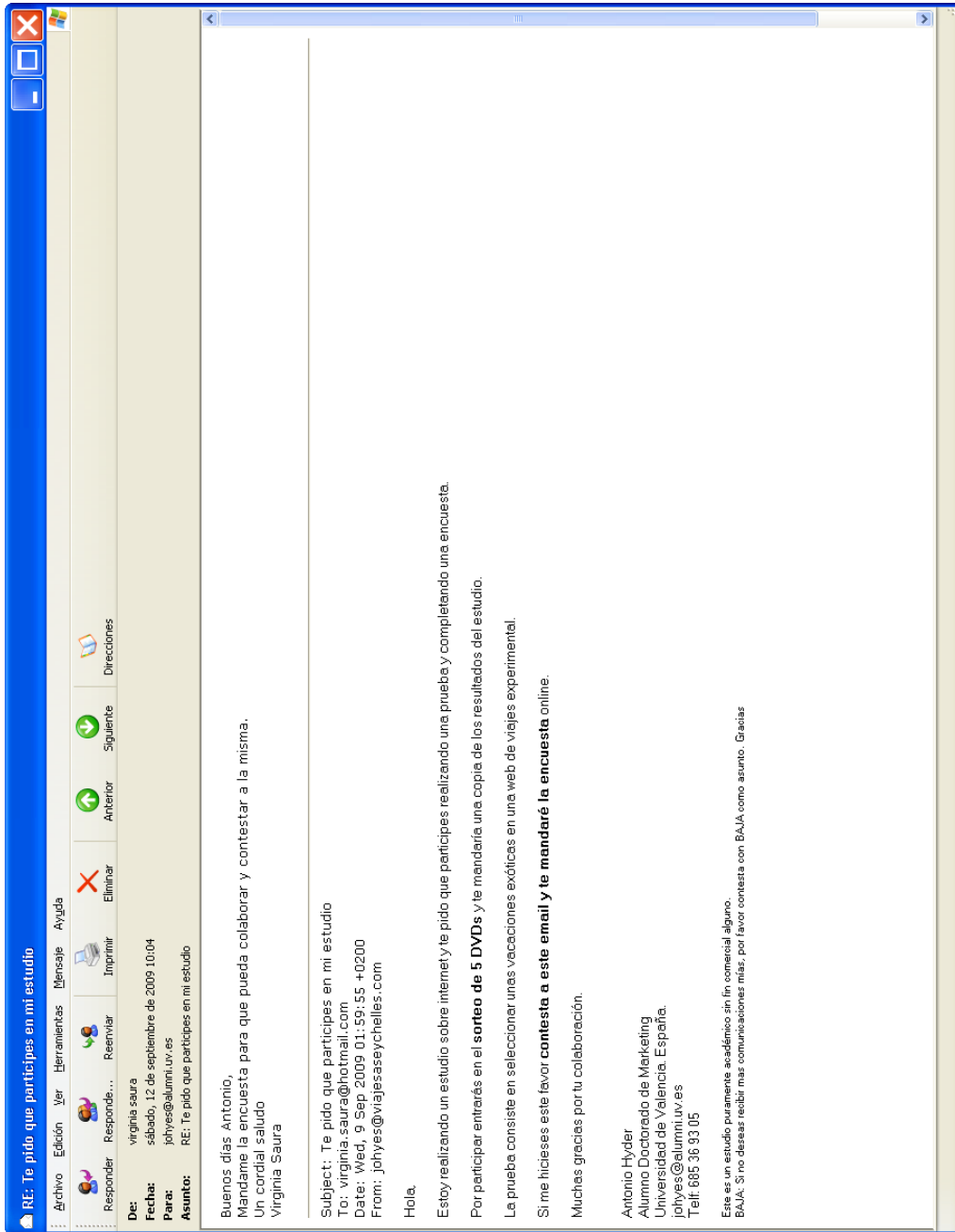
18 - EN1	Involvement (O'Brien, 2008) adapted	I felt involved in this shopping task
19 - EN3		It was easy to get wrapped up in this shopping experience
20 - EN4		I was really drawn into my shopping task
21 - G1	Global 1	The Web site captivated my attention
22 - G2	Global 2	The Web site maintained my attention
23 - G3	Global 3	Whilst I navigated I wanted to remain on the Web site
24 - G4	Global 4	Whilst I navigated I was concentrated
25 - AE1	Aesthetics (Mathwick et al., 2002)	The way the website displays its products is attractive
26 - AE2		The website is aesthetically appealing
27 - AE3		I like the way the website looks
28 - VB1	Branding virtual (Simeon, 2001) VB1+VB2+AE2	The general design of the Web has a good quality
29 - VB2	(part of Branding Virtual)	I would recommend this Web site to other users
30 - MO1	Web perceived value (O'Brien, 2008) adapted	I felt interested in my shopping task
31 - MO2		Shopping on this website was worthwhile
32 - MO3		My shopping experience was rewarding
33 - MO4		I consider my shopping experience a success
34 - NO1	Curiosity (O'Brien, 2008)	I continued to shop on this Web site out of curiosity
35 - NO2		This shopping experience satisfied my sense of curiosity
36 - NO3		The content of the shopping Web site incited my curiosity
37 - NO4	Up-to-dateness of information (Klopping and McKinney, 2004)	The online product information is sufficiently up-to-date for my purposes
		If I would have to buy the travel package ...
38 - PI1	Purchase intention (Lee and Kozar, 2009)	... I would intend to purchase it on this Web site
39 - PI2		... I predict I would purchase it on this Web site
40 - SW1	Switching intention (Bansal, Taylor and James, (2005) adapted	... it is <i>possible</i> that I would switch to another Web site
41 - SW2		... it is <i>probable</i> that I would switch to another Web site
42 - SW3		... <i>certainly</i> I would switch to another Web site
43 - RI	Return intention (Koufaris, 2002) adapted	If I need to purchase this type of holidays in the future it is likely that I will visit this Web site again
44 - BR1	Unaided brand recall (Dreze and Hussherr, 2003) adapted	While completing the task, do you recall seeing the brand of the Web site ? YES / NO 1= Yes 2=No
		If <i>yes</i> please enter the brand of the Web site: _____
45 - BR2	Degree of brand recall	1=Close recall 2=Full recall 0=No recall
46 - UR1	Unaided URL recall (Dreze and Hussherr, 2003) adapted	While completing the task, do you recall seeing the URL Internet address of the Web site ? YES / NO 1= Yes 2=No
		If <i>yes</i> please enter the URL of the Web site: _____
47 - UR2	Degree of URL recall	1=Close recall 2=Full recall 0=No recall
		Whilst I navigated on the Web site I felt ...
48 - PA1	Positive affect Babin and Attaway (2000) adapted	... excited
49 - PA2		... energetic
50 - PA3		... happy
51 - PA4		... satisfied
52 - PA5		... bold

B. Description of comparative choice behaviour variables

Factors	Items
F1. Cell comparisons	X1. Total fixations X5. Total fixation time X3. Cell repeats X6. Revisited cell ratio X7. Repeated cell ratio X19. Repeated unique cell ratio
F2. Cell reacquisitons	X2. Unique cells X8. Cell reacquisition ratio
F3. Product comparisons	X12. Product repeats X14. Repeated product ratio X15. Revisited page ratio X20. Repeated unique product ratio
F4. Web site depth of navigation	X4. Total product views X10. Unique product views X13. Total product view time X16. Total task time

APPENDIX 2. Emails to respondents and data acquisition Web site welcome page

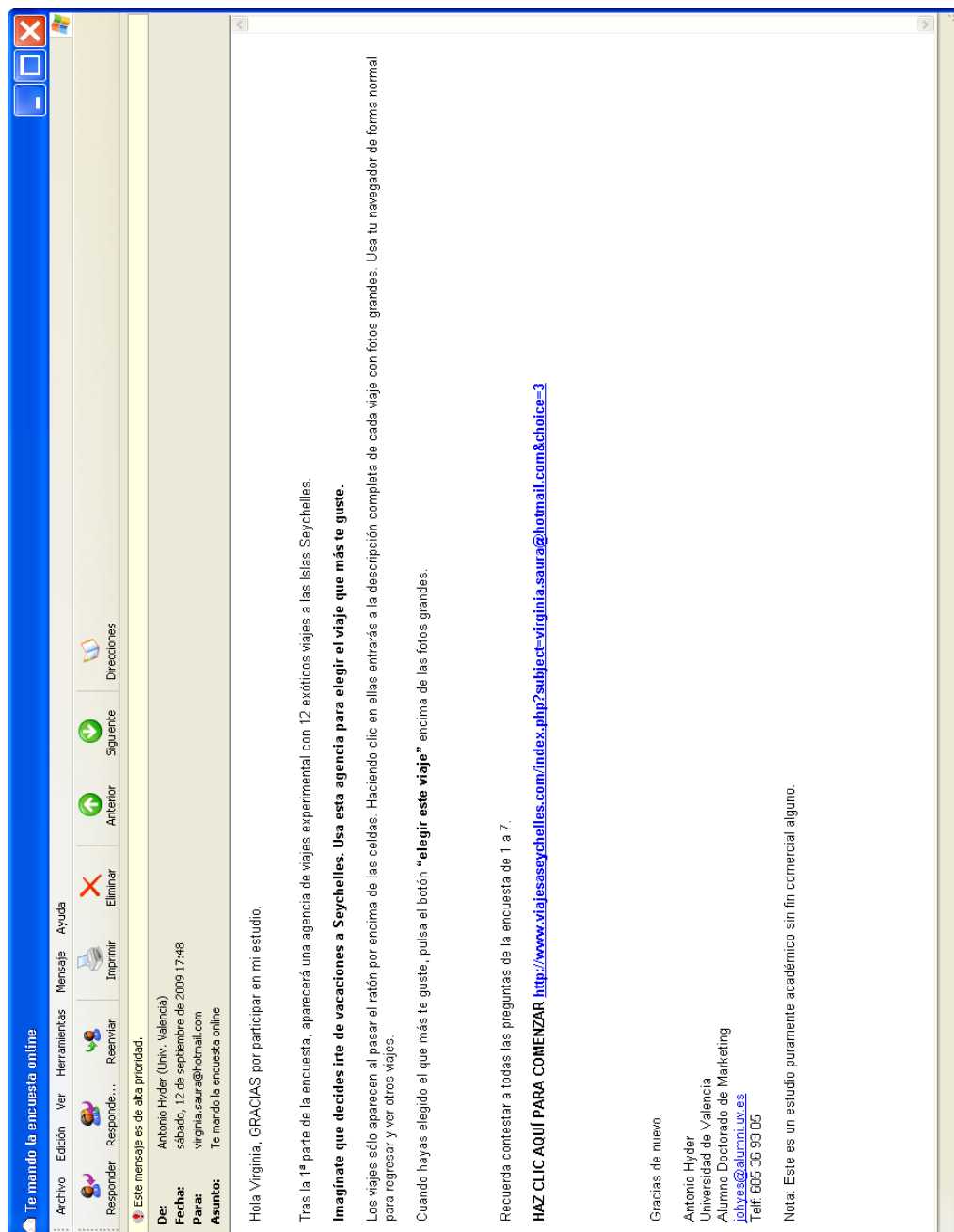
Figure 57. 1st email to potential respondent requesting to participate in the data collection process⁶



Source: Developed for this research

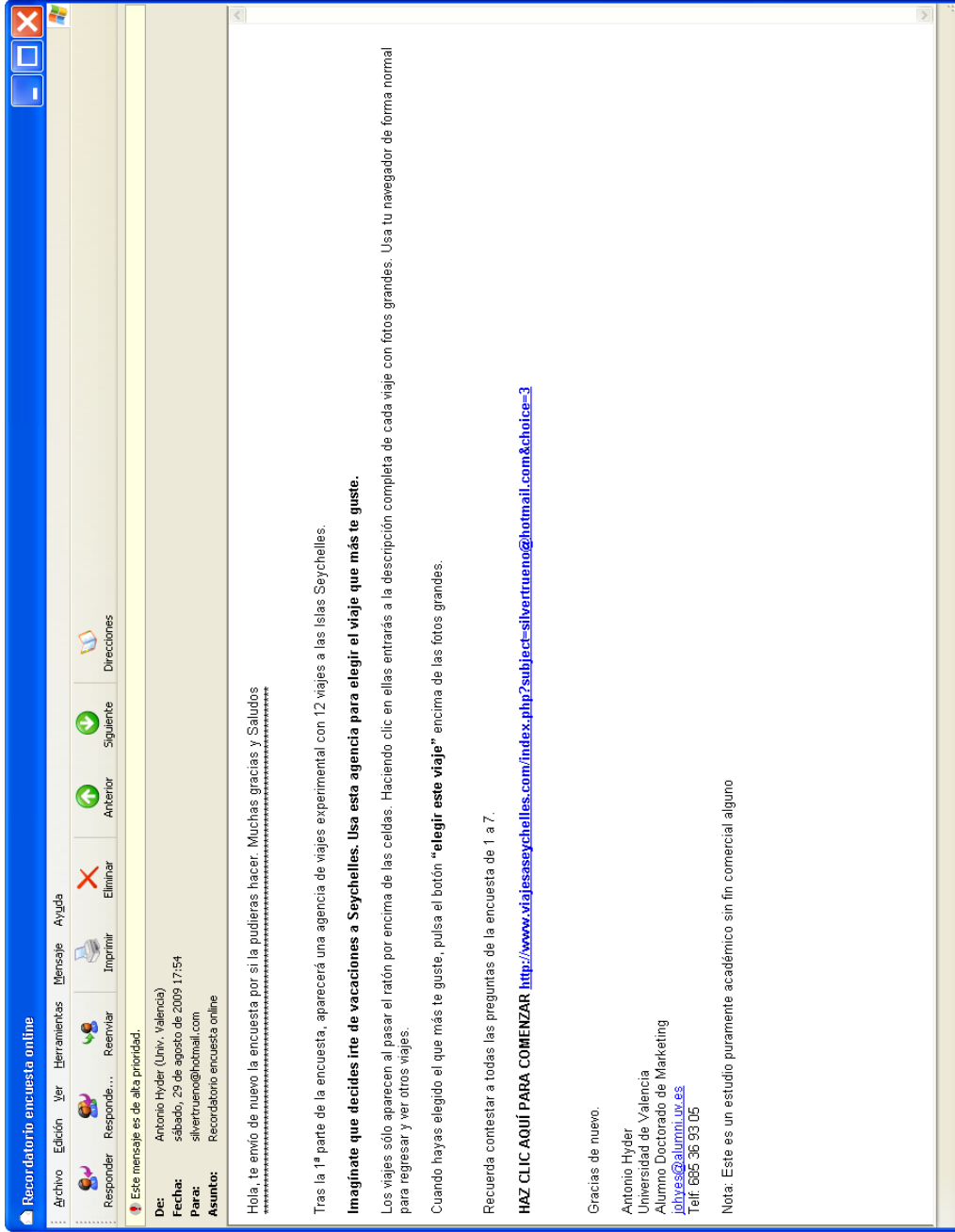
⁶ Figure also illustrates reply from respondent accepting to participate in the data collection process

Figure 58. 2nd email to respondent with instructions and coded link



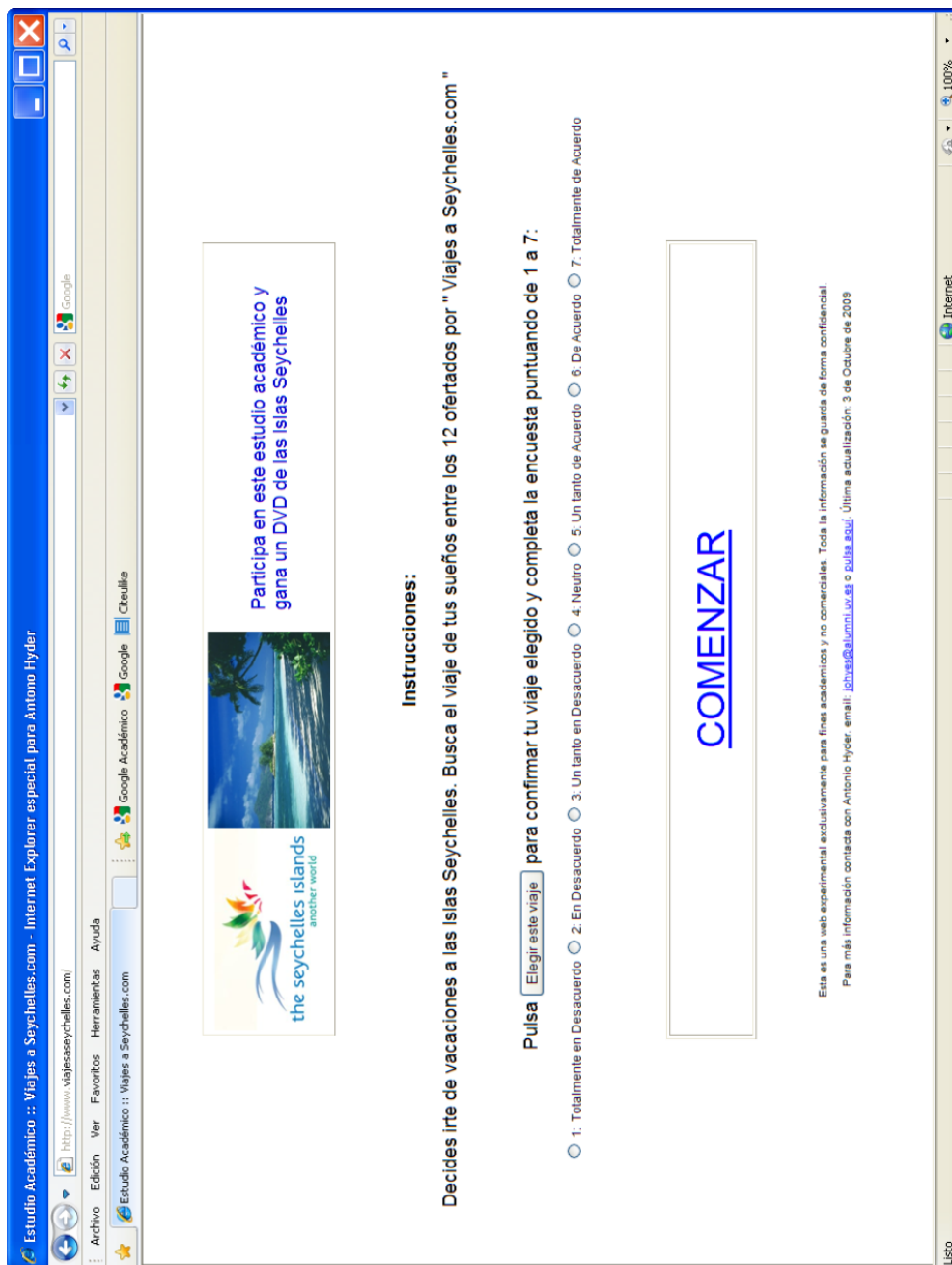
Source: Developed for this research

Figure 59. Reminder to respondent who failed to complete survey within seven days of sending 2nd email



Source: Developed for this research

Figure 60. Welcome page on data acquisition Web site



Source: Developed for this research

RESUMEN EN CASTELLANO

**PROPUESTA DE UNA ESCALA Y MODELO DE
ENGANCHE CON SITIOS WEB. ANÁLISIS DE
LA INFLUENCIA DEL COMPORTAMIENTO
COMPARATIVO INTRA-WEB**

RESUMEN

En esta investigación se propone una escala de “enganche con sitios Web” que sirve de base para un modelo con dos partes. En la primera parte se estudia la influencia del comportamiento comparativo online de consumidores utilizando datos obtenidos a partir de encuestados que escogieron un paquete vacacional en una agencia de viajes online capaz de registrar remotamente el comportamiento intra-página Web e intra-sitio Web. En la segunda parte del modelo se estudia la influencia del constructo enganche con sitios Web sobre consecuencias de relevancia para online marketers. Los resultados confirman que el constructo enganche con sitios Web tiene cinco dimensiones: afecto positivo, atención centrada, curiosidad, implicación y reto. Asimismo se confirman antecedentes y consecuencias de este constructo. La metodología de estimación se basa sobre modelización estructural con partial least squares path modelling (PLSPM).

INTRODUCCIÓN

Investigaciones recientes se han centrado en estudiar cómo retener a consumidores en sitios Web (Li et al., 2006) evitando así que cambien a otras Webs competidoras (Li et al., 2007). Aunque se puede diseñar y lanzar sitios Web con relativa facilidad, una vez que una Web consigue cautivar la atención de un consumidor, hoy en día ya no es suficiente si es meramente usable (Hausman and Siekpe, 2009) o apta para su propósito (Hong et al., 2005). Los sitios Web de éxito *enganchan* a sus visitantes (Bakker y Sádaba, 2008; O’Brien, 2008). Sin embargo la mayoría de empresas diseñan sus Webs basándose en modelos desarrollados por ingenieros e ignoran las necesidades de sus usuarios objetivo (Pace, 2004; Stibel, 2005).

Basándonos en la teoría *fluir* (Csikszentmihalyi, 1988), y en una escala previa de *enganche con la tecnología* (O’Brien, 2008), en esta investigación proponemos una nueva escala de enganche específicamente diseñada para sitios Web de comercio electrónico. Debido a que este tipo de Webs permiten que los consumidores puedan comparar productos y servicios remotamente (Ruiz and Sanz, 2009), y como el hecho de comparar es un aspecto central en la toma de decisiones (Dhar and Nowlis, 2004), desarrollaremos un modelo que tendrá en cuenta como el comportamiento comparativo de consumidores puede influir en su enganche con un sitio Web.

Estudiaremos los efectos del comportamiento comparativo realizado tanto dentro de una página Web o *intra-página* (Lohse and Johnson, 1996) así como dentro de un sitio Web o *intra-Web* (Bucklin and Sismeiro, 2003; Senecal et al., 2005), sobre el enganche con un sitio Web. Para poder alcanzar estos objetivos, se ha desarrollado especialmente para esta investigación un sitio Web de adquisición de datos, así como la tecnología sobre la que se respalda, que simula una agencia de viajes online y que permite remotamente registrar las comparativas online que realizan los que navegan en esta Web que simula una Web de comercio electrónico. Por último, el modelo contrastará la influencia del enganche con un sitio Web sobre consecuencias de gran valor para profesionales del marketing online.

PLANTEAMIENTO DEL PROBLEMA

En la actualidad existe un gran interés por parte del sector empresarial por entender como los consumidores se *enganchan* con sitios Web, sin embargo el término todavía no está consolidado en la literatura científica. *Engancharse* o “to *engage*” en inglés es “*implicar (a una persona o su atención) con intensidad*” (Collins Essential English Dictionary, 2006). Chapman et al. (1999) afirmaron que una experiencia que *engancha* ocurre cuando se atrae y mantiene la atención de personas. Similarmente, Jacques et al. (1995) afirmaron una experiencia que engancha es una que cautiva y captura el interés de un usuario. El enganche con la tecnología ha sido previamente estudiado en contextos como en presentaciones multimedia (Webster y Ho, 1997) y en sistemas multimedia educacionales (Jacques et al., 1995). Recientemente O’Brien (2008) propuso una medida de enganche con la tecnología basada sobre la teoría *fluir* (Csikszentmihalyi, 1988), una prometedora área de investigación de marketing en Internet (Schibrowsky et al., 2007). Basándonos sobre la investigación de O’Brien (2008), en esta tesis propondremos la primera escala de *enganche con sitios Web* desarrollada específicamente para el contexto de compras realizadas por parte de consumidores en un contexto online.

Con relación a la retención online, dentro del contexto del marketing en Internet, existen áreas de investigación focalizadas en estudiar como retener a consumidores cuando acceden a sitios Web. Ya existe investigación previa sobre conceptos como el *apego* (Li et al., 2006), el comportamiento de *cambio* (Li et al., 2007), la *lealtad*

hacia un sitio Web (Tarafdar y Zhang, 2008), el *compromiso* (Li et al., 2006), el *bloqueo cognitivo* (Zauberman, 2003), la *absorción cognitiva* (Agarwal y Karahanna, 2000) y la *implicación continua* (Huang, 2006). Estos constructos de retención son gran valor en los contextos online ya que es más difícil conseguir compromiso por parte de los usuarios hacia empresas online que hacia empresas que operan en contextos offline (Li et al., 2007).

Si bien el concepto de enganche ha sido investigado previamente en contextos offline, salvo una reciente contribución de Mollen y Wilson (2008) sobre *enganche online* en general, hay una carencia de investigación sobre este concepto en el ámbito de Internet. En este reciente artículo los autores tampoco detallaron las posibles dimensiones de un constructo de enganche con sitios Web.

Referencias empresariales a enganche

Las empresas online están utilizando en la actualidad variables clickstream (Bucklin y Sismeiro, 2009) para la medición del enganche online. Según el informe de Nielsen sobre marketing interactivo integrado (2005), el enganche es “la medida más esencial de medición del éxito de cualquier medio”. Según Nielsen (2005) una buena manera de evaluar el enganche online es comparar el crecimiento de los visitantes únicos de una Web con el crecimiento en el número de páginas consumidas. Similarmente, la firma consultora McKinsey (2008) desarrolló un informe titulado “cómo las métricas pobres minan el marketing digital”, afirmando que “la Web es el medio más medible de toda la historia del marketing. Ahora solo falta como averiguar cómo medirlo”. En su informe sugirieron que el mundo digital ha evolucionado más rápidamente que las herramientas necesarias para medirlo, y consiguientemente esto ha hecho que los marketers no puedan sacar mayor provecho de la promesa de que la Web sea *el medio más medible*.

Definiciones de enganche

En inglés *engancharse* o “to engage” es “*implicar (a una persona o su atención) con intensidad*” (Collins Essential English Dictionary, 2006). En investigación científica, algo que engancha a las personas es algo que les absorbe, atrae y mantiene su atención (Chapman et al. 1997). En el contexto de investigaciones multimedia,

Jacques et al. (1995) sugirieron que una experiencia que engancha es un proceso activo en el cual un sistema “capta”, “cautiva”, “mantiene” y “retiene” el “interés” y “atención” de los usuarios. Para O’Brien (2008), *enganche con la tecnología* es un constructo holístico encuadrado en el contexto de las experiencias y que engloba aproximaciones de investigación de la interacción humano-ordenador.

En esta tesis definiremos enganche con sitios Web como “una experiencia que ocurre cuando la atención de un usuario es cautivada y mantenida por un sitio Web y el usuario quiere seguir interactuando con la Web de manera concentrada durante un período de tiempo”.

OBJETIVOS DE LA INVESTIGACIÓN

El objetivo general de esta tesis doctoral es contribuir a la investigación académica sobre el comportamiento del consumidor online. Se propondrá un constructo de enganche con sitios Web, se estudiará si es influenciado por el comportamiento comparativo online de consumidores y por último se contrastará si este constructo está relacionado con consecuencias de interés para profesionales del marketing online.

Los objetivos específicos de esta tesis son:

1. – Proponer una escala de *enganche con sitios Web*, válida en el marco de los sitios Web de comercio electrónico, e identificar sus dimensiones. Asimismo sugeriremos una definición académica de este constructo.

Basándonos en esta escala de enganche con sitios Web, se desarrollará un modelo de relaciones, con el fin de:

2. – Analizar la influencia de variables antecedentes, provenientes y no provenientes de la teoría *fluir*, sobre el constructo enganche con sitios Web.
3. – Estudiar la influencia del comportamiento comparativo online sobre el enganche con sitios Web.

4. – Determinar las consecuencias de enganche con sitios Web de gran relevancia para profesionales del marketing online.

En la actualidad hay una escasez de modelos integrados que tienen en cuenta tanto perspectivas tecnológicas como de consumidor. Basándonos en hueco de investigación, atenderemos la llamada de Dennis et al., (2010) que argumentaron que modelos combinados consumidor-tecnología analizarían mejor el comportamiento de los consumidores online. Por tanto construiremos nuestra investigación en base a esta novedosa perspectiva.

Propuesta de un constructo de enganche con sitios Web

Para la propuesta de un constructo de enganche con sitios Web, nos hemos basado en el constructo *enganche con la tecnología* de O'Brien (2008). Haciendo uso de encuestas semi-estructuradas en un estudio semi-exploratorio, la autora desarrolló y sugirió un concepto multidimensional de enganche con la tecnología. Posteriormente, mejoró la escala en tres consecutivas etapas de investigación. Es sobre la tercera y más reciente propuesta de su constructo sobre la que nos hemos basado para sugerir las dimensiones potenciales de un constructo específicamente desarrollado para su aplicación en sitios Web.

La tabla 1 detalla las ocho dimensiones que sugerimos formarán parte del constructo enganche con sitios Web, y que nos permitirá responder al primer objetivo de esta tesis. La tabla 1 presenta un resumen de estos factores, junto con una breve descripción de cada dimensión así como el fundamento teórico que respalda nuestra propuesta.

Tabla 1. Dimensiones propuestas de enganche con sitios Web

DIMENSIÓN	FUNDAMENTO TEÓRICO
1. Afecto positivo: el esfuerzo emocional que realiza un usuario cuando se sumerge en un entorno y mantiene su implicación con el mismo	Aaker y Myers (1987); Arnold y Reynolds (2003); Babin y Attaway (2000); Batra y Ray (1986); Bloch et al. (1986); Hudlicka (2003); Jennings (2000); McCarthy y Wright (2004); Nahl (2007); O'Brien (2008); Rozell y Gardner (2000); Stone et al. (2005); Webster y Ho (1997)

2. Atención centrada: el grado con que la atención de un usuario está centrada en su interacción con un sitio Web	Chapman (1997); Chapman et al. (1999); Csikszentmihalyi (1990); Ghani et al. (1991); Guo y Poole (2008); Jacques et al. (1995); Jennings (2000); Koufaris (2002); Matlin (1994); Novak et al. (2000); Novak y Hoffman (2000); O'Brien (2008); Trevino y Webster (1992), Webster y Ho (1997); Wells y Matthews (1994)
3. Reto: la cantidad de esfuerzo que los usuarios perciben que están invirtiendo	Chen (2006); Csikszentmihalyi (1990); Koufaris (2002); Hoffman y Novak (2000); Novak et al. (1998); O'Brien (2008); Pace (2004); Webster y Ahuja (2004)
4. Control: la percepción de los usuarios sobre el control sobre la interacción con un sitio Web	Csikszentmihalyi (1990); Ghani et al. (1991); Guo y Poole (2008); Hoffman y Novak (1996); Huang (2003); Koufaris (2002); Novak y Hoffman (1999); Novak et al. (2000); O'Brien (2008); Scheiderman y Plaisant (2005); Siekpe (2005); Trevino y Webster (1992); Venkatesh (2000); Webster et al. (1993); Webster y Ho (1997)
5. Curiosidad: hecho de que una experiencia estimule la curiosidad sensorial y cognitiva de un individuo	Aboulafia y Bannon (2004); Agarwal y Karahanna (2000); Huang (2003); O'Brien (2008); Toms (2000)
6. Implicación: estado cognitivo, basado en las necesidades de identificación psicológica con un objeto o actividad	Chapman (1997); Chen (2008); Laurel (1993); Jacques et al. (1995); Hull y Reid (2003); Kappelman (1995); Makkonen (1997); O'Brien (2008); Said (2004); Sánchez y Bigné (2001); Webster y Ahuja (2004); Webster y Ho (1997); Zaichkowsky (1985)
7. Transformación del tiempo: percepción de que el tiempo parece que pasa muy lentamente o muy rápidamente comparado con experiencias ordinarias	Agarwal y Karahanna (2000); Chan y Ahern (1999); Chan y Repman (1999); Chen y Nilan (1999); Chen (2006); Csikszentmihalyi (1988, 1990); Davis y Wiedenbeck (2001); Guo y Poole (2008); Li y Browne (2004); Moon y Kim (2001); O'Brien (2008); Shin (2006); Skadberg y Kimmel (2004)
8. Grado de actualización de información: Grado en que el un sitio Web contiene información que está suficientemente actualizada para los propósitos de sus usuarios	Basado sobre Chaffey et al. (2000); Klopping y McKinney (2004); Huang (2003); Supphelen y Nysveen (2001); O'Brien (2008)

Fuente: Elaboración propia

HIPÓTESIS DE LA INVESTIGACIÓN

En la sección anterior se han descrito las dimensiones potenciales de un constructo de enganche con sitios Web. A continuación formularemos veinte hipótesis que serán sometidas a test estadísticos con el fin de contrastar las relaciones potenciales entre los antecedentes y consecuencias del constructo *enganche con sitios Web*. Estas relaciones conducirán a la propuesta de un modelo fundamentado sobre este constructo.

Con el fin de presentar las hipótesis con claridad, han sido organizadas siguiendo el orden de las cuestiones de esta investigación, comenzado a partir del segundo

objetivo, pues el primer está centrado en la determinación de las dimensiones del constructo de enganche con sitios Web.

Con relación al segundo objetivo acerca de los antecedentes de enganche con sitios Web, proponemos el siguiente grupo de cuatro hipótesis:

H1a. La estética de un sitio Web influye positivamente en el enganche con el mismo

H1b. El feedback de una Web influye positivamente en el enganche con el mismo

H2. La implicación con la compra influye positivamente en el enganche con sitios Web

Con relación al tercer objetivo, y con el fin de captar el comportamiento comparativo online de usuarios, hemos diseñado dieciséis indicadores tanto estáticos como dinámicos fundamentados en investigaciones previas sobre procesos elementales de información o EIPs (Bettman et al., 1990; Johnson et al., 1989; Lohse and Johnson, 1996) así como variables clickstream (Bucklin and Sismeiro, 2003; Senecal et al., 2005; Bucklin and Sismeiro, 2003; Senecal et al., 2005). La totalidad de estos indicadores fueron sujetos a un análisis factorial exploratorio que ha generado cuatro grupos de indicadores. Los cuatro factores fueron interpretados y comparados con literatura previa y concretamente fueron nombradas “comparativas entre celdas”, “readquisiciones de celdas”, “comparativas de productos” y “profundidad de navegación en un sitio Web”. Estos cuatro factores se utilizan para formular cuatro hipótesis de investigación que relacionan el comportamiento comparativo online con el constructo enganche con sitios Web.

H3a. La comparativa de celdas influye positivamente sobre el enganche de un sitio Web

H3b. Las readquisiciones de celdas influyen positivamente sobre el enganche de un sitio Web

H3c. Las comparativas de productos influyen positivamente sobre el enganche con un sitio Web

H3d. La profundidad de navegación en un sitio Web influye positivamente sobre el enganche con un sitio Web

Además de estas siete hipótesis, también estamos interesados en contrastar dos hipótesis adicionales sobre la influencia de la estética sobre la implicación de compra en un sitio Web así como la relación entre el grado de actualización información de la Web y la implicación en la compra.

H4a. La estética de sitios Web influye positivamente sobre la implicación de compra

H4b. La actualización de información en una Web influye positivamente la implicación de compra en la misma

Con relación al cuarto objetivo de esta investigación, se formulan siete hipótesis acerca de la influencia del enganche con sitios Web sobre consecuencias de gran relevancia para profesionales de marketing online.

H5a. El enganche con un sitio Web influye positivamente el valor percibido de Web

H5b. El enganche con un sitio Web influye positivamente la intención de compra

H5c. El enganche con un sitio Web influye negativamente la intención de cambio a otro sitio Web

H5d. El enganche sobre un sitio Web influye positivamente la intención de regreso a la misma

H5e. El enganche con un sitio Web influye positivamente el potencial de branding virtual

H5f. El enganche con un sitio Web influye positivamente sobre el recuerdo no asistido de la marca de la Web

H5g. El enganche con un sitio Web influye positivamente sobre el recuerdo no asistido de la URL de la Web

Por último, también estamos interesados en comprender la relación entre el valor percibido de una Web y cuatro consecuencias de especial relevancia empresarial:

H6a. El valor percibido de Web influye positivamente la intención de compra en la misma

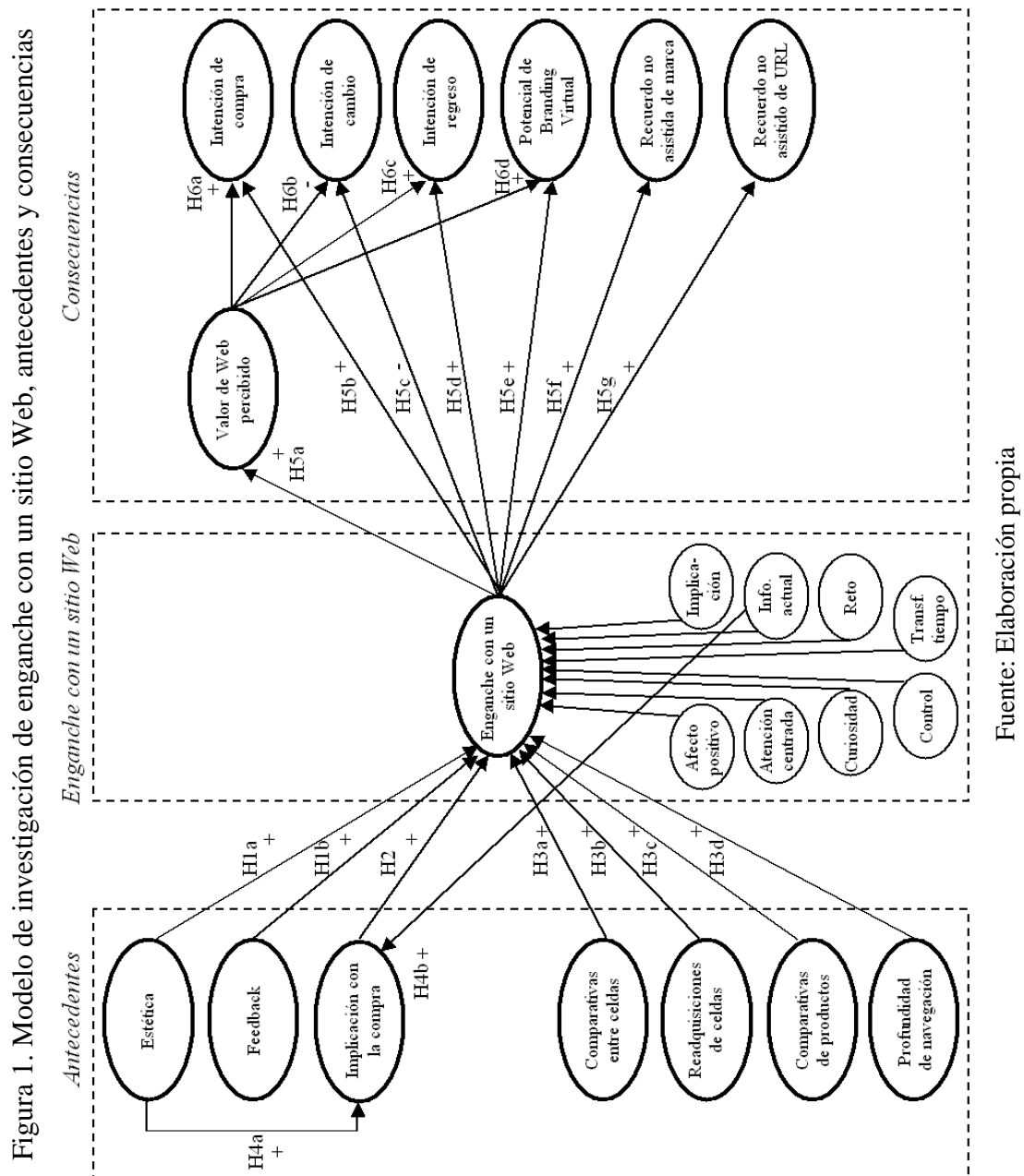
H6b. El valor percibido de Web influye negativamente la intención de cambio a otra Web

H6c. El valor percibido de Web influye positivamente en la intención de regreso a la misma

H6d. El valor percibido de Web influye positivamente el branding virtual de la misma

PROPUESTA DE UN MODELO DE ENGANCHE CON SITIOS WEB

La formulación de veinte hipótesis realizadas en la sección anterior, nos permiten proponer el siguiente modelo de investigación de enganche con un sitio Web.



Fuente: Elaboración propia

DISEÑO DE LA INVESTIGACIÓN

Con el fin de contrastar las veinte hipótesis que constituyen el modelo de investigación, se han obtenido datos a partir de encuestados que completaron una encuesta con dos partes, que tuvieron lugar la primera antes y la segunda después de realizar una tarea de navegación en una *Web de adquisición de datos*, especialmente desarrollada para esta tesis y que simulaba una agencia de viajes.

La combinación de encuestas online y adquisición de datos online todavía no han sido utilizadas de forma combinada en un mismo contexto metodológico, y debería ser adecuada para la consecución de los objetivos de esta investigación. Asimismo, aunque se ha utilizado anteriormente métodos informáticos de registro procesos utilizando datos EIP y clickstream para el registro del comportamiento de consumidores intra-página Web e intra-sitio Web, hasta ahora estos métodos han sido utilizados de forma separada. En esta tesis, y por primera vez, se combinan estos dos métodos. Dennis et al. (2010) sugirieron recientemente que hay una carencia de investigaciones combinadas consumidor-tecnología. La metodología desarrollada para esta tesis tiene en cuenta tanto aspectos tecnológicos como de comportamiento del consumidor online, área de investigación encuadrada dentro de la disciplina de marketing.

Esta investigación se ha realizado en el contexto comercial de Internet. Consideramos que era importante utilizar un sector relevante de comercio electrónico a partir del cual se pudiera obtener datos adecuados, y por tanto la aplicación empírica se ha realizado con datos de la industria turística. El sector de los viajes es uno de los sectores empresariales con un crecimiento más rápido y las ventas realizadas a través de Internet siguen creciendo en importancia (Andreu et al., 2009). En 2008, el 67.4% de los turistas españoles utilizaron Internet para realizar reservas y el 30.8% para realizar pagos (Familtur, 2008). El volumen total de ventas turísticas a través de Internet en Internet alcanzaron la cifra de 2452.64 millones de Euros y supusieron el 40.2% de las ventas totales realizadas mediante comercio electrónico en la categoría de turismo y viajes, la cual incluye transporte aéreo y por carretera así como alojamiento.

El sitio Web de adquisición de datos está basado en *mouselab* (Johnson et al, 1989; Lohse y Johnson, 1996) y permite registrar el comportamiento intra-página Web e intra-sitio Web (Bucklin y Sismeiro, 2003; Lohse y Johnson, 1996; Senecal et al., 2005) del panel de encuestados. El sitio Web estaba ubicado en Internet en la dirección <http://www.ViajesASeychelles.com>. Esta Web comercializa de forma simulada una única gama de productos, en concreto, viajes a Seychelles. Por este motivo, se asignó también a la Web como marca “Viajes a Seychelles”. La Web disponía de un interface con 12 celdas, que incluyen una breve descripción de 12 paquetes vacacionales a las Islas Seychelles. El contenido de las celdas se hace visible cuando los usuarios pasaban el punto del ratón por encima de cada una. Esto se utiliza para capturar el movimiento ocular de los encuestados y con ello su navegación intra-página. Al hacer click en una celda, se carga y presenta al encuestado una nueva página *de producto* con una descripción completa de ese viaje en particular. Esto sirve para trazar el comportamiento intra-sitio Web. Una vez elegido un viaje para su compra se presenta a los encuestados la segunda parte del cuestionario donde se obtiene información que permite averiguar las dimensiones del constructo enganche con sitios Web, sus antecedentes potenciales y consecuencias valiosas para marketers. En la encuesta se utilizaron escalas Likert 1-7 para todas las preguntas, salvo para dos que trataban el recuerdo no asistido de marca “Viajes A Seychelles” y de la URL “Viajes A Seychelles.com”. Para éstas se utilizaron campos de texto libre.

Se enviaron 9372 correos electrónicos de invitación a los suscriptores del directorio online comercio electrónico Citylogo.com, el cual dispone de una cuantiosa sección dedicada a los viajes. Los correos fueron enviados entre el 25 de agosto y el 14 de Septiembre de 2009. 479 personas aceptaron participar en la encuesta y a éstos se les envió un segundo correo con las instrucciones de cómo realizar la encuesta y la navegación. Asimismo, este correo incluía un link personalizado que una vez clicado dirigía al encuestado a la primera parte del cuestionario donde introducía sus datos demográficos y declaraba su intención de compra. En la segunda etapa, los encuestados tuvieron que seleccionar una de los doce posibles viajes a las Islas Seychelles. Una vez finalizado, en la tercera y última etapa completaron la segunda encuesta.

Características de la muestra

La muestra final consiste de 336 encuestados, de edades de menos de 18 a más de 65 y que viven en España (85.97%), así como usuarios de Internet hispano parlantes que viven en el extranjero (14,03%). En cuanto a la relación a la población habitante en España, hay representación de todas las comunidades autónomas. La tabla 2 muestra un resumen de los principales aspectos del estudio cuantitativo.

Tabla 2. Características del estudio cuantitativo

Población	Encuestados de menos de 18 años a más de 65 años de edad
Ámbito geográfico	Territorio español 85% e hispano parlantes viviendo en el extranjero 15%
Método de contacto	Mediante email
Tamaño de la muestra	336
Método de muestreo	Sin muestreo: se utilizaron respuestas directas
Trabajo de campo	24 de Agosto a 14 Septiembre 2009

Fuente: Elaboración propia

Se recibieron 383 cuestionarios de los cuales se analizaron 336 de éstos (87.73%). 174 correspondían a varones (51.8%) y 162 eran de mujeres (48.2%). Los encuestados pertenecían a estos rangos de edad: de menos de 18 (n=4, 1.2%); 18-25 (n=27, 8%); 26-35 (n=129, 38.4%); 36-45 (n=98, 29.1%); 46-55 (n=57, 17.0%); 56-65 (n=16, 4.8%); más de 65 (n=5, 1.5%). La mayoría de participantes eran usuarios habituales de Internet: 86.9% lo usan cada día, 10.4 % 3 a 6 días a la semana y 2% de menos una vez a la semana o menos. Una gran proporción disponía de conexión a Internet desde cada desde hace más de 4 años (n= 232, 70.4%).

Estimación del modelo

Para la estimación del modelo se optó por la estimación mediante partial least squares path modelling (PLSPM). La razón fundamental de esta opción, radica en que el constructo enganche con un sitio Web hace referencia a un fenómeno relativamente nuevo, donde los modelos teóricos no están asentados. Asimismo, el modelo es relativamente complejo con gran número de variables latentes. Estas son algunas de las razones a las que la literatura hace referencia para optar por PLSPM frente a los enfoques tradicionales de estimación de modelos estructurales basados en covarianzas (Chin, 1998a; Chin, 1998b; Chin y Newsted, 1999; Haenlein y Kaplan, 2004; Fornell y Bookstein, 1982; Fornell y Cha, 1994) y que está gozando

de cada vez más atención en la investigación en dirección de empresas y marketing tanto a nivel internacional (Birkinshaw, Morrison y Hulland, 1995; Hulland, 1999; Staples, Hulland y Higgins, 1999; Johansson y Yip, 1994; Tsang, 2002; Grey y Meister, 2004) como a nivel nacional (Sánchez y Roldán, 2005; Sánchez y Villarejo, 2004).

CONCLUSIONES DEL ANÁLISIS EMPÍRICO

Esta investigación ha extendido el área de conocimiento sobre *enganche* mediante la propuesta de un nuevo constructo de enganche con sitios Web y mediante el hallazgo de antecedentes y consecuencias de este constructo. De las ocho dimensiones esperadas del constructo enganche con sitios Web se ha encontrado que en realidad tiene cinco dimensiones: afecto positivo, atención centrada, curiosidad, implicación y reto. Las tres dimensiones que no se pudieron demostrar como dimensiones del constructo son actualización de la información, control y transformación del tiempo. Las dimensiones que forman el constructo están detalladas en la tabla 3.

Tabla 3. Dimensiones del constructo enganche con sitios Web

DIMENSIONES DEL CONSTRUCTO ENGANCHE CON SITIOS WEB	
Afecto positivo	La inversión emocional que realiza un usuario para sumergirse en un entorno y mantener su implicación con el mismo (Jennings, 2000)
Atención centrada	La concentración de la actividad mental. Concentración en un único estímulo, ignorando el resto (Matlin, 1994)
Reto	La cantidad de esfuerzo que los usuarios perciben que están realizando cuando utilizan un sitio Web (Chen, 2006)
Curiosidad	Tendencia a buscar elementos que son nuevos, interesantes o inusuales en nuestro entorno (Huang, 2003)
Implicación	Los intereses inherentes, valores o necesidades que motivan a un usuario a utilizar un sitio Web (Basado sobre Chen, 2008 y Zaichkowsky, 1985)

Fuente: Elaboración propia

Una vez halladas las dimensiones, estamos en la posición de poder ofrecer una definición de este constructo, por lo que definiremos enganche con sitios Web como “una experiencia que ocurre cuando la atención de un usuario es cautivada y mantenida por un sitio Web y el usuario quiere seguir interactuando con la Web de manera concentrada durante un período de tiempo. Las cinco dimensiones de este constructo son: afecto positivo, atención centrada, curiosidad, implicación y reto”.

Se ha propuesto también un modelo de relaciones donde el enganche con sitios Web era el constructo principal. Se han formulado veinte hipótesis de las cuales se han demostrado siete de éstas. La tabla 4 presenta el resultado del contraste de hipótesis.

Tabla 4. Resultados del contraste de las hipótesis de investigación

Hipótesis	Path	Coefic. estandarizados	Valor t (bootstrap)
H1a	Estética → Enganche con un sitio Web	0,246**	4,23
H1b	Feedback → Enganche con un sitio Web	0,095	1,67
H2a	Implicación con la compra → Enganche con un sitio Web	-0,029	1,33
H3a	Comparativas entre celdas → Enganche con un sitio Web	-0,006	0,24
H3b	Readquisiciones de celdas → Enganche con un sitio Web	-0,018	0,94
H3c	Comparativas de productos → Enganche con un sitio Web	0,007	0,17
H3d	Profundidad de navegación → Enganche con un sitio Web	0,011	0,34
H4a	Estética → Implicación con la compra	0,117	1,88
H4b	Actualización de información → Implicación con compra	0,007	0,16
H5a	Enganche con un sitio Web → Valor de Web percibido	0,796**	35,41
H5b	Enganche con un sitio Web → Intención de compra	0,038	0,81
H5c	Enganche con un sitio Web → Intención de cambio	-0,061	0,98
H5d	Enganche con un sitio Web → Intención de regreso	0,160**	2,14
H5e	Enganche con un sitio Web → Potencial de branding virtual	0,088	1,54
H5f	Enganche con un sitio Web → Recuerdo de marca no asistido	-0,072	1,57
H5g	Enganche con un sitio Web → Recuerdo de URL no asistido	0,003	0,09
H6a	Enganche con un sitio Web → Intención de compra	0,740**	12,09
H6b	Enganche con un sitio Web → Intención de cambio	-0,463**	5,79
H6c	Enganche con un sitio Web → Intención de regreso	0,604**	8,65
H6d	Enganche con un sitio Web → Potencial de branding virtual	0,764**	13,52

**p<.01

Fuente: Elaboración propia

Con relación al segundo objetivo de este trabajo, los resultados demuestran que la estética de un sitio Web (H1a, $\beta=0.246$; $p<0.01$) influye significativamente sobre el enganche con un sitio Web y nos permite por tanto poder confirmar esta hipótesis. Asimismo, sobre la influencia de feedback sobre el enganche con un sitio Web (H1b, $\beta=0,095$) se rechaza esta hipótesis. Sobre la hipótesis H2a, no se confirma que la implicación con la compra determine el enganche con un sitio Web (H2a, $\beta=-0.029$) y por tanto se rechaza.

Con relación a la influencia del comportamiento comparativo online aspecto central del tercer objetivo de esta investigación, se habían formulado cuatro hipótesis acerca del comportamiento comparativo de los visitantes a una Web mientras que navegan por la misma con el fin de realizar una compra. Las cuatro hipótesis H3a-H3d son rechazadas ya que se desprende del análisis que ni las comparativas entre celdas (H3a, $\beta=-0,006$), ni las readquisiciones de celdas (H3b, $\beta=-0,018$), ni la comparativa de productos (H3c, $\beta=0,007$) ni la profundidad de navegación en un sitio Web (H3d, $\beta=0,011$) influyen sobre el enganche con un sitio Web.

Con relación a la influencia de la estética de un sitio Web sobre la implicación de compra, los resultados demuestran que no se confirma esta hipótesis (H4a, $\beta=0,117$). Similarmente, se ha encontrado que el grado de actualización de información en una Web tampoco influye sobre la implicación de compra (H4b, $\beta=0,007$) y por tanto también se rechaza esta hipótesis. Con relación a las influencia del enganche con un sitio Web sobre el valor de Web percibido, los resultados confirman esta hipótesis (H5a, $\beta=0,796$; $p<0,01$). Asimismo se confirma la influencia del enganche con un sitio Web sobre la intención de regreso a la misma (H5d, $\beta=0,160$; $p<0,01$).

En cuanto a la hipótesis sobre si el enganche con un sitio Web influye sobre la intención de compra, aunque no se ha podido confirmar ésta (H5b, $\beta=0,038$), tal y como explicará posteriormente, se confirma esta relación cuando es mediada con el valor de Web percibido. Lo mismo ocurre con la relación propuesta entre el enganche con un sitio Web con la intención de cambiar a otra Web (H5c, $\beta=-0,061$). Aunque los resultados no permiten confirmar esta relación de forma directa, sí se confirma cuando es mediada con el valor de Web percibido.

Con relación a la hipótesis que relaciona el enganche con un sitio Web con el potencial de branding virtual, se rechaza ésta (H5e, $\beta=0,088$). Sin embargo se confirma cuando es mediada por el valor de Web percibido tal y cómo se explicará seguidamente. En cuanto a la relación entre el enganche con un sitio Web y el recuerdo de marca no asistido (H5f, $\beta=-0,072$) así como con el recuerdo de URL no asistido (H5g, $\beta=0,003$), no se pudieron demostrar estas relaciones y por tanto no se han podido confirmar estas dos hipótesis.

Tal y como veníamos anticipando, aunque no se ha podido demostrar la relación directa entre el enganche con un sitio Web y las variables intención de compra, intención de cambio, intención de regreso y potencial de branding virtual, si se confirman estas relaciones cuando son mediadas con la variable valor de Web percibido. Los resultados han demostrado que el valor de Web percibido influye significativamente en la intención de compra (H6a, $\beta=0.740$; $p<0.01$) permitiéndonos confirmar esta hipótesis. Con respecto a la relación negativa propuesta entre el valor de Web percibido y la intención de cambio, los resultados son significativos (H6b, $\beta=-0.463$; $p<0.01$) permitiéndonos confirmar esta relación. En cuanto a la hipótesis que relaciona el valor de Web percibido y la intención de regreso, también resulta ser significativa, por tanto se puede confirmar (H6c, $\beta=0.604$; $p<0.01$). Por último, también se ha podido evidenciar significativamente la relación entre el valor de Web percibido y el potencial de branding virtual (H6d, $\beta=0.764$; $p<0.01$).

IMPLICACIONES TEÓRICAS Y DE GESTIÓN

Los resultados de esta investigación nos permiten tener una mayor comprensión sobre lo que significa *engancharse con un sitio Web* y esto conduce lleva a numerosas implicaciones tanto teóricas como de gestión, las cuales se recogen en las tablas 5 y 6 respectivamente.

En líneas generales podemos anticipar que el diseño estético de un sitio Web conduce al enganche por parte de usuarios, sin embargo, ni la organización de contenidos ni la intención de compra influyen en el enganche. También hemos demostrado que el enganche es un constructo altamente relevante para los marketers ya que influye sobre la intención de compra, sobre la intención de no cambiar a otra Web, sobre la intención de regreso así sobre como el branding virtual. En algunos casos estas relaciones se demostraron de forma directa y en otros casos se demostraron cuando fueron mediados con el valor percibido de marca.

Implicaciones teóricas

La investigación realizada nos permite sugerir cuantiosas implicaciones teóricas las cuales han sido recogidas en la tabla 5.

Tabla 5. Implicaciones teóricas

IMPLICACIÓN	DESCRIPCIÓN
1. Propuesta de una escala de enganche con sitios Web	Sugerimos que el enganche con sitios Web se puede medir con una encuesta Likert 1-7 que mide las variables: afecto positivo, atención centrada, curiosidad, implicación y reto
2. Antecedentes del constructo enganche con sitios Web	Hemos testado siete antecedentes potenciales de enganche con sitios Web revelando que tanto sólo la estética predice este constructo
3. Antecedente estética	Hemos demostrado que la estética conduce a los consumidores a engancharse con un sitio Web
4. Antecedente feedback	Nuestra investigación ha puesto de manifiesto que la organización del contenido de un sitio Web no conduce a que los consumidores se enganchen con el mismo
5. Implicación en la decisión de compra	La intención de un consumidor a implicarse en una decisión de compra en un sitio Web no conduce a que se enganche con el mismo
6. Variables de comportamiento comparativo del consumidor	No hemos encontrado evidencia de que cuando los consumidores comparan información para realizar compras online, esto conduce a que se enganchen con el sitio Web que están utilizando
7. Influencia de la estética sobre la implicación en la compra	No hemos encontrado evidencia de que el contenido estético de un sitio Web conduzca a que los consumidores quieran implicarse con en una compra
8. Influencia del grado de actualización de información sobre la implicación de compra	No hemos encontrado evidencia de que la actualización del contenido de información en un sitio Web conduzca a querer implicarse en una compra
9. Consecuencias de enganche con sitios Web	Hemos demostrado que el enganche con un sitio Web conduce simultáneamente a cinco consecuencias de relevancia para marketers
10. Valor de Web percibido	Hemos revelado que el enganche con un sitio Web conduce al valor percibido de un consumidor de un sitio Web de comercio electrónico
11. Intención de compra	Cuando un consumidor se engancha con un sitio Web, esto le conduce a querer realizar una compra en esa Web
12. Intención de cambio	Cuando un consumidor se engancha con un sitio Web de comercio electrónico, no desea cambiar otra Web competidora que vende un producto o servicio similar
13. Intención de regreso	Los consumidores que se han enganchado con un sitio Web tienen la intención de regresar a esa Web en el futuro
14. Potencial de branding virtual	Cuando un consumidor está enganchado con un sitio Web, eso conduce a un branding virtual potencial del sitio más elevado
15. Recuerdo de marca y de URL no-asistido	Los consumidores que se enganchan con un sitio Web no muestran una tendencia a recordar la marca o dirección URL de un sitio Web en su primera visita
16. Un modelo integrado de enganche con sitios Web	Hemos sugerido un modelo de relaciones donde el enganche con un sitio Web es el constructo principal
17. Evidencia de la necesidad de realizar investigaciones multidisciplinares comportamiento del consumidor-interacción humano/ordenador	Hemos demostrado que existe un solapamiento significativo entre marcos teóricos de comportamiento del consumidor e interacción humano/ordenador. Esto evidencia la necesidad de realizar investigaciones combinando estas dos áreas

Fuente: Elaboración propia

Implicaciones para la gestión

Este trabajo también sugiere un número cuantioso de implicaciones prácticas que podrían ayudar a empresas de marketing online a comprender mejor sus relaciones con sus consumidores online. Estas implicaciones se recogen en la tabla 6.

Tabla 6. Implicaciones para la gestión

IMPLICACIÓN	DESCRIPCIÓN
1. Escala de enganche con sitios Web	Se puede medir el enganche con un sitio mediante una encuesta Likert 1-7 que recoge las variables: afecto positivo, atención centrada, curiosidad, implicación y reto
2. Afecto positivo es una dimensión del constructo enganche con sitios Web	Los usuarios que se enganchen con un sitio Web deben sentir afecto positivo
3. Atención centrada es una dimensión de enganche con sitios Web	Los usuarios que se enganche con un sitio Web deben sentirse concentrados así como no distraídos mientras que utilizan un sitio Web
4. Reto es una dimensión de enganche con sitios Web	Cuanto mayor sea el reto percibido por los usuarios que visiten una Web, menor será el enganche
5. Curiosidad es una dimensión de enganche con sitios Web	Se estimula la curiosidad sensorial y cognitiva de los usuarios que se enganchan con un sitio Web
6. Implicación es una dimensión de enganche con sitios Web	Los usuarios enganchados con un sitio Web se sienten implicados con la actividad que realizan en el mismo
7. El enganche con un sitio Web influye sobre el valor percibido de una Web	Los usuarios enganchados perciben un alto valor, que corresponde a la experiencia interactiva, relativa y preferencia que resulta de visitar un sitio Web
8. El enganche con un sitio Web influye en la intención de regreso al mismo. Esta influencia es aún mayor cuando está mediada mediante el valor percibido de la Web	Los usuarios enganchados tienen la intención de regresar al sitio Web en un futuro. Si además perciben un alto valor de la Web, la intención de regreso es aún mayor
9. El enganche con un sitio Web media el valor percibido de una Web	Los usuarios enganchados tienen una alta intención de compra, esto es, la voluntad de querer comprar un producto. Se además perciben un alto valor de la Web, la intención de compra es aún mayor
10. El enganche con un sitio Web influye negativamente sobre la intención de cambiar a otra Web cuando esta relación es mediada mediante el valor percibido de la Web	Los usuarios enganchados no tienen la intención de cambiar a otra Web que proporcione servicios o contenidos similares. Si los usuarios además valoran el contenido del sitio, la intención de cambiar es aún mayor
11. El enganche con un sitio Web influye en su branding virtual potencial	El enganche influye sobre el potencial de branding virtual, esto es, la habilidad de un sitio Web para obtener reconocimiento y establecer su existencia en las mentes de los consumidores y del público
12. La estética de un sitio Web conduce al enganche con esa Web	Los marketers online pueden enganchar a visitantes en sitios Web mediante la utilizan de imágenes y gráficos que llamen la atención
13. Control no es una dimensión del enganche con sitios Web	Los visitantes pueden engancharse con un sitio Web sin que sientan que están en control del mismo
14. Transformación del tiempo no es una dimensión de enganche con sitios Web	Los usuarios que se enganchan con un sitio Web no sienten que pierdan la noción del tiempo
15. La actualización de información no es una dimensión de enganche con sitios Web	No es necesario que un sitio Web presente información actualizada para enganchar a sus visitantes

16. Feedback no conduce al enganche con un sitio Web	La organización de contenidos en un sitio Web no influye sobre el grado de enchanche por parte de usuarios a la misma
17. La decisión de implicación en una compra no influye el enganche con un sitio Web	Los visitantes de una Web de comercio electrónico se pueden enganchar con la misma sin que hayan tenido originalmente la intención de implicarse en un proceso de compra
18. La actualización de información no conduce a la implicación en la compra	La presentación de la última información disponible sobre un producto o servicio no conduce a que un consumidor quiera implicarse en un proceso de compra
19. Los usuarios se pueden enganchar con un sitio Web sin querer implicarse en una tarea de decisión de compra	Los visitantes que originalmente no tenían la intención de implicarse en una Web para realizar una compra pueden engancharse con la misma
20. Navegar por un sitio Web no conlleva a engancharse con ella	Cuanto más navegue un consumidor por un sitio Web no implica que vaya a engancharse con el mismo
21. Es posible enganchar a usuarios sin sobrecargar páginas Web con contenido	Los diseños de sitios Web deben mantenerse sencillos y sin sobrecarga de contenido
22. Contribución para los diseñadores de interfaces	A la hora de diseñar interfaces, los diseñadores de sitios Web deberían utilizar fotos que llamen la atención
23. La medición del éxito de un sitio no sólo se debe medir con variables clickstream sino también con medidas perceptuales como es el enganche con un sitio Web	El éxito de un sitio Web no debe medirse sólo con clickstreams sino también mediante encuestas, ya que constructos como el enganche sólo puede valorarse con este tipo de instrumentos
24. Los usuarios se pueden enganchar con sitios Web en los que no se hacen clicks	El enganche un sitio Web es una experiencia cognitiva y no es necesario que un consumidor realice clicks en el mismo para poder engancharse con él
25. Las teorías del mundo no pueden ser transferidas directamente al entorno online, incluso puede producir resultados contrarios	El hecho de abarrotar gamas de productos en sitios Web, adoptando las técnicas de merchandising utilizadas en entornos offline como son los supermercados, no conduce a que los usuarios se enganchen con un sitio Web
26. Es aconsejable evitar que los usuarios tengan que invertir esfuerzo	Los diseñadores Web debería diseñar sitios Web en los que sea fácil navegar, con el fin de evitar que los usuarios tengan que realizar esfuerzos innecesarios
27. Conduzca a los usuarios a los productos comercializados por la Web cuanto antes	Ya que la estética de una Web conduce a engancharse con ella, pero no el hecho de realizar esfuerzo, se debería conducir a los visitantes de una Web a las fotografías de los productos comercializados por la misma lo más rápidamente posible
28. Evite aglutinar artículos en una página con el fin de evitar que usuarios tengan que hacer esfuerzo	La sobrecarga de información en un sitio Web no conduce a engancharse con ella
29. Debería evitarse diseñar sitios Web de comercio electrónico con muchas páginas	Evitar los que visitantes de una Web realicen esfuerzo para mirar muchas páginas en un sitio Web puede ayudar a mantenerles enganchados con el sitio
30. Las empresas de marketing online pueden beneficiarse mediante el uso de investigación científica en sus sitios Web	Aunque muchas empresas online frecuentemente aprenden mediante <i>prueba y error</i> , la investigación científica puede contribuir a predecir posibles resultados así como a minimizar errores
31. Las empresas online comerciales podrían beneficiarse de la incorporación de un investigador científico en el equipo de diseño	Las empresas online pueden integrar los resultados de la investigación científica del ámbito de Internet. Los científicos de marketing tienen la habilidad de poder localizar investigación en este área
32. Se tarda un tiempo en que los usuarios puedan recordar la marca de un sitio Web	Es difícil que los clientes de una Web puedan recordar la marca de la misma en una primera visita aunque incluso se enganchen con ella

33. Se tarda un tiempo en que los usuarios puedan recordar las dirección URL de un sitio Web	Es difícil que los clientes de una Web puedan recordar la dirección URL de la misma en una primera visita aunque incluso se enganchen con ella
34. Check list para marketers del ámbito online	En esta tesis se proporciona un instrumento en formato de encuesta que pueden utilizar los gestores de una Web con el fin de valorar el grado de enganche de sus visitantes

Fuente: Elaboración propia

LIMITACIONES DE LA INVESTIGACIÓN

Esta tesis no está libre de limitaciones y éstas serán descritas a continuación. La principal limitación de tesis es que tanto el constructo de enganche con sitios Web como el modelo de investigación han sido contrastado con datos procedentes de sólo un sitio Web que simulaba una agencia de viajes online. Similarmente, sólo se han estudiado los datos procedentes de una gama de productos del sector empresarial de los viajes. Esto podría limitar la aplicabilidad de estos descubrimientos a otros sectores ya que las dimensiones del enganche con sitios Web podrían ser distintos en otros contextos diferentes al sector de los viajes, como podría ocurrir con productos tangibles.

Con relación a las escalas utilizadas en los cuestionarios de esta investigación, aunque se han utilizado escalas ampliamente aceptadas donde era posible, en algunos casos las escalas han tenido que ser adaptadas para los requisitos de la investigación. Similarmente, aunque las cuatro variables que hemos utilizado para medir el comportamiento comparativo online han sido diseñadas basadas en investigaciones previas, tal vez otras variables o escalas podrían haber sido más adecuadas para valorar el comportamiento comparativo online. En este sentido, se podría argumentar que era difícil comparar los doce paquetes vacacionales utilizados en la Web de adquisición de datos ya que no se presentaban simultáneamente. Este sitio Web estaba basado sobre mouselab y sólo se presentaba un paquete vacacional a la vez cuando se desplazaba el puntero de ratón por encima de cada una de las doce celdas. Aunque este método es el único conocido que podría utilizarse para registrar remotamente tanto el movimiento de ojos como el comportamiento de los encuestados, esta limitación se podría haber superado utilizando un sistema de tracking visual.

Otra limitación de esta investigación es que el sitio Web de viajes desarrollado para esta investigación no era un sitio de comercio electrónico real donde los visitantes podrían realizar compras, pues era una Web experimental. Los resultados podrían variar si la investigación se hubiera realizado con una agencia de viajes real y en una situación de compra real. Aunque era posible adquirir remotamente en comportamiento de los usuarios con nuestro sitio Web de viajes, tal vez la utilización de un dispositivo tracking visual sería necesario si se repitiese esta investigación en un contexto real donde los consumidores se viesen en una situación donde tuvieran que decidir o no hacer una compra.

Similarmente, la gama de productos ofertada en la agencia de viajes, viajes a las Islas Seychelles, tal vez no era una compra habitual para los encuestados. Con el fin de analizar la influencia del enganche con sitios Web sobre las dos medidas de recuerdo no asistido sobre la marca y dirección URL del sitio Web, los encuestados realizaron el experimento tan sólo una vez en un sitio Web que era previamente desconocido para ellos y por tanto no se pudieron valorar los efectos de la exposición repetida al mismo tiempo con el mismo grupo de usuarios. Finalmente, y debido a la novedad de este campo de investigación, reconocemos que nuestra definición de enganche podría ser mejorada, ya que fue basada sobre la escasa literatura disponible en el momento de finalizar esta investigación.

En la última sección de este resumen realizaremos unas recomendaciones para futuras investigaciones.

FUTURAS LINEAS DE INVESTIGACIÓN

A continuación proponemos las siguientes sugerencias basadas en la limitación de investigación existente sobre enganche con sitios Web o debido a la necesidad de avanzar en la consolidación de este campo de investigación mediante el desarrollo de un mayor trabajo empírico. Las recomendaciones aquí descritas confirman nuestra intención de progresar en el campo de investigación de enganche con sitios Web, mediante la investigación de más antecedentes potenciales y de más valiosas consecuencias de este nuevo constructo.

Primero, es una prioridad consolidar el constructo enganche con sitios Web poniendo especial atención en las tres variables que no resultaron ser dimensiones del mismo: control, reto y transformación del tiempo. En segundo lugar, sugerimos estudiar el efecto de enganche con sitios Web a lo largo del tiempo, ya que las experiencias de enganche podrían diferir según los usuarios realizan visitas repetidas a un mismo sitio Web. Moe y Fader (2001) demostraron que el comportamiento en Internet cambia a lo largo del tiempo. Tercero, aunque hemos estudiado el efecto de la comparativa online sobre el enganche con sitios Web, los encuestados interactuaron con la Web una sólo vez y por tanto no tuvimos la oportunidad de estudiar efectos de continuidad (Bhatnagar y Ghose, 2004) así como aspectos derivados tales como son la práctica (Newell y Rosenbloom, 1981) o el *bloqueo cognitivo* (Zauberman, 2003).

En cuarto lugar, futuras investigaciones podrían concentrarse en comprender qué crea el enganche, y por tanto se debería realizar una mayor investigación sobre posibles antecedentes de enganche con sitios Web. En quinto lugar, con el fin de medir la influencia del comportamiento comparativo online sobre el enganche con sitios Web, hemos desarrollado doce indicadores que fueron diseñados para capturar tal comportamiento. Diseñamos estos indicadores de manera concienzuda basados en literatura tanto científica como en variables utilizados habitualmente en la industria de Internet. Consiguientemente, futuras investigaciones deberían centrarse en utilizar otros indicadores que podrían influir el enganche con sitios Web.

En sexto lugar, mientras que los datos que utilizamos solamente se obtuvieron con el sitio Web de adquisición de datos desarrollado para esta investigación, sería útil revalidar el constructo enganche con sitios Web utilizando un dispositivo de tracking visual tales como son *eyeglaze* o *tobii*. Lohse y Johnson (1996) compararon los comportamientos de consumidores con *mouselab* y con sistemas de tracking visual, y descubrieron que éstos últimos requieren de menos tiempo para registrar el comportamiento, con ellos se realizan más fijaciones y más readquisiciones, resultan en un menor tiempo de búsqueda y el patrón de búsqueda de información es más variable. En séptimo lugar sugerimos consolidar el constructo enganche con sitios Web en un entorno real de compras online. Hemos utilizado una variable de intención de compra con el fin de valorar un comportamiento de compra potencial, y

por tanto sugerimos estudiar la influencia de enganche con sitios Web en una situación donde el encuestado se encontraría en una situación de compra real de un producto o servicio con el que esté interesado.

Octavo, ya que el constructo de enganche con sitios Web que hemos desarrollado es específico para sitios Web y hemos encontrado diferencias con respecto a la escala de enganche con tecnología de O'Brien (2008), debido al crecimiento de las comunicaciones mediante dispositivos móviles, sugerimos testar nuestra escala en este tipo de terminales, ya que también podrían tener la capacidad de enganchar a usuarios. Noveno, y por último, hacemos una llamada a la comunidad investigadora: sugerimos el desarrollo de constructos que no estén basados exclusivamente sobre variables clickstream y que tengan también en cuenta fenómenos que tal vez sólo podrían ser medidos con instrumentos como son las encuestas.

APÉNDICE. A. Escalas de medida

B. Descripción las variables de comportamiento comparativo

A. Encuesta parte 1 de 2

Escala likert de 7 puntos en A1-A6

A1 - PD1	Involucración en la decisión de compra <small>(Laurent y Kapferer, 1985) Adaptada</small>	Voy a elegir mi viaje con cuidado
A2 - PD2		Me importa mucho el viaje que voy a comprar
A3 - PD3		Elegir el viaje adecuado es una decisión importante para mí
A4 - SK1	Habilidades de búsqueda en internet <small>(Mathwick y Ridgón, 2004)</small>	Me manejo muy bien en Internet
A5 - SK2		Tengo gran conocimiento sobre cómo hacer búsquedas en Internet
A6 - SK3		Se cómo encontrar lo que busco en Internet
A7 - SX	Género	Hombre Mujer
A8 - AG	Edad (O'Brien, 2008)	-18 años 18-25 26-35 36-45 46-55 55-65 + 65 años
A9 - ED	Nivel de Educación	Sin Estudios Primarios Secundarios Universitarios
A10-WK1	Tipo de trabajo <small>(O'Brien, 2008)</small>	Trabajo por cuenta propia Trabajo por cuenta ajena Estoy jubilado No trabajo
A11-WK2	¿Cuál es su profesión? <small>(O'Brien, 2008)</small>	(campo de texto para la respuesta)
A12 - SA	Nivel mensual de ingresos netos <small>(Bigné, 2006) adaptada</small>	600€ 600 a 1200€ 1200-1800€ 1800-2400€ +2400€ prefiero no contestar
A13 - PV	Provincia (AIMC, 2009)	Álava Albacete Alicante,....., Valencia Zaragoza Vivo fuera de España
A14 - FU	Frecuencia Uso de Internet (Bigné, 2006)	No lo utilizo habitualmente Cada mes Cada 15 días 1-2 días/semana 3-6 días/semana Todos los días de la semana
A15 - AC	¿Hace cuánto tiempo que tiene acceso a Internet desde el hogar? (Bigné, 2006)	No tengo acceso desde el hogar Desde hace menos de 6 meses Entre 6 meses y 1 año Entre 1 y 2 años Entre 2 y 4 años Desde hace más de 4 años

Encuesta parte 2 de 2

Escala likert de 7 puntos excepto 48 a 51

Nº Item	Variable	Ítems
1 - CO1	Control <small>(Huang, 2003) adaptada</small>	Mientras que interactuaba con la web sentía que tenía el control sobre ella
2 - CO2		Sentía que controlaba la navegación
3 - CO3		La web me permitía controlar la interacción
4 - FA1	Atención centrada <small>(Huang, 2003) adaptada</small>	Mientras navegaba pensaba en otras cosas
5 - FA2		Mientras navegaba me daba cuenta si me distraían otras cosas
6 - FA3		Mientras navegaba estaba totalmente inmerso en lo que estaba haciendo
7 - TT1	Transformación del tiempo (Guo y Poole, 2008)	Parecía que el tiempo pasaba rápidamente
8 - TT2		Perdí la noción del paso del tiempo
9 - TT3		El tiempo pasó volando
10 - FD1	Feedback <small>(O'Brien, 2008) adaptada</small>	Tiene sentido cómo está organizada la información en la web
11 - FD2		La organización de la información en la web era clara
12 - FD3		La web era clara en su uso
13 - FD4		No me llevó muchos clicks llegar hasta la descripción de los viajes
14 - CH1	Reto <small>(O'Brien, 2008) adaptada</small>	Usar la web fue fácil
15 - CH2		No he tenido que esforzarme mucho para usar la web
16 - CH3		La experiencia de navegación no me supuso mucho esfuerzo
17 - CH4		Elegir en esta web no ha sido demasiado problemático

19 - EN1	Enganche (O'Brien, 2008) adaptada	Me sentí totalmente inmerso en la tarea de compra
21 - EN3		Resultaba fácil dejarse envolver por la experiencia de compra
22 - EN4		Me involucré mucho en la tarea de compra
23 - EN5		La tarea de compra me absorbió
24 - G1	Global 1	La web cautivó mi atención
25 - G2	Global 2	La web mantenía mi atención
26 - G3	Global 3	Mientras navegaba quería permanecer en la web
27 - G4	Global 4	Mientras navegaba estaba concentrado
28 - AE1	Atractivo estético (Mathwick et al., 2002)	La web presenta sus productos de manera atractiva
29 - AE2		La estética de la web es atractiva
30 - AE3		Me gusta la apariencia de la web
31 - VB1	Branding Virtual (Simeon, 2001) VB1+VB2+AE2	El diseño general de la web es de buena calidad
32 - MO1	Valor Percibido (O'Brien, 2008)	La tarea de compra me ha parecido interesante
33 - MO2		Comprar en esta web merece la pena
34 - MO3		Mi experiencia de compra ha sido gratificante
35 - MO4		Considero mi experiencia de compra muy exitosa
36 - NO1	Curiosidad (O'Brien, 2008)	Mi curiosidad por el contenido de la web me hacía seguir busco
37 - NO2		La experiencia ha satisfecho mi curiosidad
38 - NO3		El contenido de la web provocaba mi curiosidad
39 - NO4	Grado de actualización de información (Klopping y McKinney, 2004)	La información en la web está lo suficientemente actualizada para mi propósito
		<u>Si tuviera que hacer la compra del viaje ...</u>
40 - PI1	Intención de compra (Lee y Kozar, 2009)	... tendría la intención de hacerlo en esta web
41 - PI2		... lo haría en esta web
42 - SW1	Intención de cambio Bansal, Taylor y James (2005) adaptada	... es <i>posible</i> que cambiara a otra web
43 - SW2		... es <i>probable</i> que cambiara a otra web
44 - SW3		... <i>seguro</i> que cambiara a otra web
45 - RI	Intención de regreso (Koufaris, 2002) adaptada	Si en un futuro tuviera que comprar este tipo de viajes regresaría a esta web
46 - VB2	(parte de Branding Virtual VB1)	Recomendaría esta web a otros usuarios
47 - RE1	Reenganche (O'Brien, 2008) RE1+ RI + PI2 + RE4	Recomendaría esta Web a otra persona que quisiera que hacer el mismo tipo de compra
48 - RE4		Deseo volver a comprar en esta web
49 - BR1	Recuerdo no asistido de marca (Dreze y Hushherr, 2003) adaptada	¿ Recuerda haber visto el nombre de la web ? SI / NO 1= Sí 2=NO
		En caso afirmativo, por favor escriba el nombre :
50 - BR2	Grado de acierto de recuerdo de marca	1=Próximo 2=Acierto 0=No acierta

51 - UR1	Recuerdo no asistido de URL <small>(Dreze y Hussherr, 2003) adaptada</small>	¿ Recuerda haber visto la dirección de la web ? SI / NO 1= Sí 2=NO
		En caso afirmativo, por favor escriba la dirección: _____
52 - UR2	Grado de acierto de recuerdo de URL	1=Próximo 2=Acierto 0=No acierta
		<u>Mientras navegaba por la web me sentía ...</u>
53 - PA1	Afecto Positivo <small>Babin y Attaway (2000) adaptada</small>	... entusiasmado
54 - PA2		... enérgico
55 - PA3		... contento
56 - PA4		... satisfecho
57 - PA5		... audaz

B. Variables de comportamiento comparativo online

Factors	Ítems
F1. Comparativas de celdas	X1. N° total de fijaciones X5. Tiempo total de fijaciones X3. Repeticiones de celdas X6. Ratio de revisita de celdas X7. Ratio de repeticiones de celdas X19. Ratio de repeticiones de celdas únicas
F2. Readquisiciones de celdas	X2. Celdas únicas X8. Ratio de readquisiciones de celdas
F3. Profundidad de navegación en un sitio Web	X4. N° total de productos vistos X10. N° de productos únicos vistos X13. Tiempo total de visionado de productos X16. Tiempo total de la tarea
F4. Comparativas de productos	X12. Repeticiones de productos X14. Ratio de repeticiones de productos X15. Ratio de páginas revisitadas X20. Ratio de productos únicos repetidos