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A FURTHER APPROACH IN OMNICHANNEL LSQ, SATISFACTION AND CUSTOMER LOYALTY

Purpose: The purpose of this research is to analyse the LSQ in the context of three different omnichannel purchasing scenarios while considering four dimensions (timeliness, availability, condition and return of the product) and to assess their impact on customer satisfaction and loyalty. In addition, an evaluation of the relationship between satisfaction and loyalty in the mentioned omnichannel scenarios is investigated.

Design/methodology/approach: A mixed two-phase research methodology is proposed: an initial qualitative analysis with 6 focus groups followed by quantitative research through surveys with a sample of 323 individuals. The proposed scales were tested for three purchase scenarios: "buy-online-ship-direct" (BOSD), "buy-online-pickup-in-store" (BOPS) and "buy-in-store-ship-direct" (BSSD). The data were analysed using partial-least squares structural equation modelling (PLS-SEM) techniques.

Findings: In an omnichannel context, the most important element of the logistics service deriving in satisfaction was timeliness for all the scenarios. The return-of-product dimension of LSQ was relevant for satisfaction in "ship-direct" scenarios, while the availability dimension was only relevant for customer loyalty in the BOPS scenario. Customer satisfaction had a positive impact on loyalty in the three purchasing scenarios.

Practical implications: These results might provide guidance to managers in order to improve not only logistics procedures and processes but also their relationships with their customers. Moreover, retailers need to account for return policies in ship-direct channels, prioritize punctuality and adapt delivery terms to ensure product availability.

Originality/value: This work represents a progress in LSQ research in the B2C omnichannel environment by extending its study to a previously untested purchasing scenario (BOSD) and including a fundamental and insufficiently explored dimension of the LSQ: the return.

Keywords: Logistics service quality, Omnichannel, Loyalty, Satisfaction, Retailing, Return.

Introduction

Customer experience evolves hand in hand with technological innovation and requires the union of multiple channels to enable companies to improve their value propositions and respond to the complex and changing world of e-commerce and new technologies (Saghiri *et al.*, 2017). Multichannel (MC) retailing has one shortcoming, namely that multiple channels can give rise to fragmented distribution networks in which different channels coexist without customers being able to interact between them (Anderson *et al.*, 2010). This lack of inter-channel synergy has prompted a shift towards omnichannel (OC) systems.

OC retailing is deemed to encompass activities involving the sale of goods through all available channels in which customers can initiate the interaction process while retailers control the integration of the different channels (Beck and Rygl, 2015). OC retailing is

one of the great revolutions in business strategy and has both practical and theoretical implications (Bell *et al.,* 2014; Verhoef *et al.*, 2015). It gives customers the chance to buy and return products through any channel and by means of any combination of on- and off-line interaction. From the logistics perspective, OC retailing requires integrated logistics processes across all channels creating a truly unified service experience (Peltola *et al.*, 2015). In this context, logistics service quality acquires great importance.

Taking in consideration the logistics operations needed to develop an OC system, the logistics service quality or LSQ is related to the back-end activities among which return acquires special relevance (Yumurtacı *et al.*, 2018). Sophisticated OC configurations allow the possibility of returning a product through a mean not connected to the channel where it was acquired (Hübner *et al.*, 2016b). Xu and Jackson (2019) highlighted the customer perception of the return process in OC retail purchase contexts explaining the need for further research in this field.

Murfield *et al.* (2017) were the first researchers to test LSQ in an OC supply chain, where products are delivered to customers through a combination of channels in a single transaction. They studied three key components of LSQ, availability, timeliness and condition-, but ignored the variable return, and highlighted the need for further research in this area, as also affirmed recently by Daugherty *et al.* (2018).

Recent literature has examined the importance of the customer perspective in the study of LSQ, specifically the analysis of customer satisfaction as a result of logistics operations (Rao *et al.*, 2011). In the OC sphere, Jain *et al.* (2017), Murfield *et al.* (2017) and Sorkun *et al.* (2020) analysed the impact of LSQ variables on customer satisfaction. Moreover, the integrated delivery of a product is a key dimension that strongly influences customer loyalty (Swaid and Wigand, 2012). However, literature has not paid sufficient attention to the role of LSQ in relation to loyalty in OC contexts, despite the important role of logistics in OC customer experience (Bell *et al.*, 2014; Ishfaq *et al.*, 2016). Furthermore, Mishra et al. (2020) highlight the need to analyse omni-channel consumer decision-making, focusing on the "how" of the intention to repeat the purchase.

OC is still in its early stages and academic research in its structure is only starting to emerge (Saghiri *et al.*, 2017). The most common channel "hybrids" for OC retailers are accessing product information online but picking up the product in store (Bell *et al.*, 2014), using the store as a showroom to access product information and purchase the product (Bell *et al.*, 2014), and having the product delivered directly to the customer. According to this, Murfield *et al.* (2017) considered two OC purchasing scenarios: buy-in-store-ship-direct (BSSD) and buy-online-pickup-in-store (BOPS). Recent studies, (e.g. Berman and Thelen, 2018) claimed that online shopping and direct shipping (BOSD) should also be considered contact points. If the company that develops online sales simultaneously uses other channels, BOSD could be considered part of the OC system. Moreover, this argument is reinforced if buyers can return in the store a product that they have bought online. Therefore this research incorporates this scenario given the need to encourage the customer to proceed in the buyer journey with the company, by providing seamless and intuitive transitions across channels in each touch-point to match customer preferences, needs, and behaviour (Peltola *et al.*, 2015).

Taking into account the gaps reported, the aim of this research is to analyse the influence of an LSQ that includes the return dimension, in addition to the usual availability,

timeliness and condition dimensions, on customer satisfaction and loyalty for the three OC most common purchase scenarios: BSSD, BOPS and BOSD.

Review of the literature

Omnichannel retailing and logistics

Today, the wide choice of retail stores and shopping channels, home delivery services and pick-up points provide customers with a different shopping experience. The use of multiple channels increases value propositions and reach a larger and more varied number of customers (Zhang *et al.*, 2010). MC companies go through different stages in their level of integration of processes between the different channels (Hübner *et al.*, 2016a), evolving from MC to OC retailing (Piotrowicz and Cuthbertson, 2014). Firms switch to OC retailing when they consider that cross-channel integration of the activities in all the different channels is essential (Ailawadi and Farris, 2017). Thus, OC retailing uses technologies and processes coordinated through all channels to provide customers with continuous, reliable and consistent services (Verhoef *et al.*, 2015). However, OC systems face the challenge of developing an uninterrupted experience (Hübner *et al.*, 2016b) which requires fully connected inter-channel logistics and the expansion of service functions.

In this new context, more coordination between customers, retailers and other actors in the direct and reverse supply chain is necessary for both traditional and online sales. A more complex logistics network must be managed since new shipping and drop off options are offered in order to satisfy customer expectation (Guerrero-Lorente *et al.*, 2017). From the logistics standpoint, OC retailing represents an important evolution as neither customers nor retailers distinguish between the channels (Brynjolfsson *et al.*, 2013; Bell *et al.*, 2014) since the firm represents a single integrated OC logistics unit. There is a single common logistics interface with customers through which orders can be processed indistinctly from physical or online stores (Beck and Rygly, 2015; Hübner *et al.*, 2016b).

Attention today focuses on the final stage, namely customer delivery; hence, Logistics Services acquire paramount importance (Bhattacharjya *et al.*, 2016). Verhoef *et al.* (2015) highlighted the importance of focusing on "customer contact points" to optimise their experience, since OC distribution systems are focused not only on the channel in which the product is purchased but also on integration activities through multiple channels that ensure customers can move freely across channels within a single transaction. OC commerce has, not only made direct shipments to individuals grow, but also increased the rate of commercial returns that retailers need to manage (Guerrero-Lorente *et al.*, 2017). Pei *et al.* (2014) stated that the depth of return conditions offered has a positive influence on both the customer's perception that they are being treated fairly and the purchase intention, while De Leeuw *et al.* (2016) argued that for a good customer service it is necessary to provide simple return methods, make return authorisations more flexible and provide information on the process. Bernon *et al.* (2016) indicated the need for maturation of managing returns in OC environments.

Logistics excellence has been recognised as one area in which firms can create competitive advantage through its impact on customer service (Subramanian *et al.*, 2014).

Mentzer *et al.* (1999) integrated marketing and logistics activities and developed the model of LSQ. Murfield *et al.* (2017) identified LSQ components in the OC context as timeliness, availability and condition. However, easiness of return must also be considered as another important dimension of the LSQ in online sales, since the possibility of returning a product is much higher in online sales than in physical sales; this is due to the customer's inability of physically inspecting and trying on products before purchase (Sorkun, 2019).

LSQ in B2C environments in an OC system

Research into LSQ has received a new boost from progress in new technologies and the development of OC systems. Rao *et al.* (2011) focused on the relationship between LSQ and the degree of customer satisfaction, costs and customer retention. Griffis *et al.* (2012) studied the impact of LSQ in relation to returns of online purchases and quality in the delivery, highlighting that the handling of returns has a positive effect on repurchasing behaviour. Murfield et al. (2017) were the first to conceptualise LSQ in OC retailing, analysing its effects on customer satisfaction and loyalty. In the OC era, the challenge associated with LSQ is not simply about satisfying customer demands by delivering the right products but also addressing different service-related problems. Increasingly demanding expectations regarding service pressure logistics professionals (Daugherty *et al.,* 2018). Yumurtacı *et al.* (2018) indicated that the ability to provide a seamless shopping experience with full-channel integration depends on the efficiency and effectiveness of retailers' logistics operations, due to the requirements for operational excellence, while Sorkun *et al.* (2020) examined the mediating role of flexibility and operational LSQ in the process of how OC capability leads to satisfaction.

Approach based on the model and hypotheses

LSQ and customer *satisfaction*.

Customer satisfaction plays a key role in relationships between customers and their suppliers. The importance of LSQ to achieve customer satisfaction has been demonstrated despite the recentness of research focusing on the customer perspective in MC environments (e.g. Nguyen *et al.*, 2018). Different service quality variables relating to the fulfilment of orders are predictors of customer satisfaction (e.g. Jain *et al.* 2017). Additionally, Seck and Philippe (2013) reported that perceived service quality in both virtual and traditional channels and the quality of MC integration positively influence satisfaction, being physical service quality the most influential factor. Recently Sorkun *et al.* (2020) confirmed that operational LSQ positively affects customer satisfaction in OC retailing if only in certain sectors of the retail industry.

In a B2C context, a positive relationship between LSQ and customer satisfaction has been reported in a purely online retail sales scenario, giving rise to the term "e-PDSQ" (electronic physical distribution service quality) (Rao *et al.* 2011). These authors showed that availability and timely delivery are key components of e-PDSQ and influence customer satisfaction. Griffis *et al.* (2012) highlighted the importance of timeliness in deliveries as one of the most important factors in their measurement of order fulfilment, demonstrating the significant impact on customer satisfaction in on-line shopping contexts. Moreover, the mentioned authors also identified easy product returns and fast

changes as additional components of customer satisfaction with logistics services. Xing *et al.* (2010) reported that product condition was another key component of e-PDSQ. In the OC context the crucial determinant of customers' satisfaction is effective logistics service quality management on each phase of purchase process (Radziszewska, 2018).

Taking in consideration the LSQ dimensions and according with Xing and Grant (2006), *timeliness* measures the choices the customer has over the delivery date and whether the retailer's actual performance matches its promise when the order is confirmed. *Availability* is related to whether the product is in-stock at the point of order placement or when it will be available including different types of substitution. The other two components (*condition* and *return)* assess the accuracy and quality of the order and how convenient and simple the ways of returning the products are. Some authors consider the return as an element of *condition*, while others, with whom we agree, give it its own dimension. What is clear is that these logistics service elements are considered significant factors in enhancing customer satisfaction in e-commerce (He et al., 2019).

For all the aforementioned reasons, some authors have proposed that these relationships will remain when traditional and online shopping channels are combined in an OC context, where logistics services and overall supply chain capabilities are extremely important (Brynjolfsson *et al.*, 2013; Cao, 2014; Cao and Li, 2015), prompting the following hypothesis:

H1: Customer perceptions of the a) timeliness, b) availability, c) condition and d) return components of LSQ are positively related to customer satisfaction in an OC environment.

LSQ and customer loyalty.

From a marketing standpoint, the individual channels may differ in their ability to provide different service outputs; in an OC setting, LSQ plays an important role in building customer loyalty (Ishfaq *et al.*, 2016). Online channels are particularly important in order to provide information on customers and reduce customer search costs. Another advantage is its ability to offer a wide variety of products and ones demanded by a minority or difficult to locate in offline environments (Oestreicher and Sundararajan, 2012). One advantage of traditional channels is the proximity and immediacy they offer to customers. Therefore, the offer of multiple complementary channels provides greater scope and a broader range of services to customers, thus enabling suppliers to enhance their value proposition (Wallace *et al.*, 2004). Online retailers often try to differentiate themselves by providing high grade service in one or more dimensions of the e-fulfillment process and exerting influence on customers' shopping satisfaction, repurchase intention, behavioral intention and loyalty (Jain et al., 2017).

LSQ activities in direction of the customer also act along a marketing axis: i.e. satisfaction and loyalty both on transaction-specific and on cumulative levels (Zhang et al., 2005), are not only influenced by product quality elements, but also by service-related dimensions building up the overall shopping experience.

Research into online B2C contexts supports a positive relationship between timeliness and availability on measurements of customer loyalty (Rao *et al.*, 2011), prescriber behaviour (Griffis *et al.*, 2012) and purchasing intentions (Bouzaabia *et al.*, 2013). It was

also corroborated by Murfield *et al.* (2017) in a BSSD environment even though they were unable to confirm the effect of timeliness.

Swaid and Wigand (2012) focused their research on service quality related to BOPS scenarios. They found that in OC situations, integrated product delivery is a key dimension of service and has a strong influence on customer loyalty. BOPS is one "product-to-customer path" of an OC approach, as it requires high-quality integration of information dissemination and product fulfilment across channels (Bell *et al.*, 2014).

Murfield *et al.* (2017) concluded that LSQ has a positive influence on customer loyalty in an OC environment, but they were unable to confirm the relationship between "condition" and loyalty, in contrast to Xing *et al.* (2010) who did report such a relationship; hence the proposal to include this aspect for testing in the model described in this paper.

Finally, given the exponential growth in on-line purchases, returns handling is one of the main operational challenges facing retailers. Online retailers can achieve customer loyalty by presenting a convenient return process (Griffis *et al.,* 2012; Mollenkopf *et al.,* 2011). Xy and Jackson (2019) demonstrated that a positive relationship exists in OC settings between customer confidence in product return options and loyalty itself.

The aforementioned discussion prompts the following hypothesis:

H2: Customer perceptions of the a) timeliness, b) availability, c) condition and d) return components of LSQ are positively related to customer loyalty in an OC environment.

Customer satisfaction and loyalty.

Many authors have identified customer satisfaction as a predictor of loyalty (e.g. Davis-Sramek *et al.*, 2009; Chen, 2012), including in the online setting (Christodoulides and Michaelidou, 2010). Other researchers have suggested differences in the satisfaction-loyalty relationship and the strength of this relationship in an online vs. an offline setting (Chen, 2012). Balabanis *et al.* (2006) found that satisfaction is not necessarily a predictor of e-store loyalty. Such mixed results suggest the importance of considering what these relationships are really like in OC environments (Leuschner *et al.*, 2013).

Despite the major differences in results across existing research examining the satisfaction-loyalty relationship, several factors point to the direct effect of both constructs in an OC environment. Lee and Kim (2010) demonstrated that multi-channel retailers' cross-channel integration practices may drive customer loyalty intentions. Fernández and Román (2012) affirmed that, in a multi-channel setting, the value provided by each channel helps build customer loyalty, and Yong-zhi (2014) stated that the service quality of retailer stores and integrated multi-channel service quality were shown to positively influence customer loyalty. Satisfaction in a multi-channel environment has been shown to be a critical determinant in customer retention (Kibbeling *et al.*, 2013). Additionally, Swaid and Wigand (2012) found that BOPS customers perceive greater value and in turn express greater loyalty, whereas Murfield *et al.* (2017) demonstrated a positive relationship between satisfaction and loyalty in both BOPS and BSSD environments. Herhausen et al. (2019), recently demonstrated for different consumer segments with different degrees of OC touchpoints usage, that product and journey

satisfaction explain customer loyalty. Recently, Koo (2020) affirmed that satisfaction produced thanks to the services offered by retailers is sufficiently powerful to generate loyalty, while Hamouda (2019) confirmed consumer loyalty increases as consumer satisfaction increases, and even revealed that this relationship is stronger in omni-channel than in multi-channel environments due to the higher quality of integration in the channels. Therefore:

H3: Customer satisfaction is positively related to customer loyalty in an OC environment.

Presentation of the model

As described by Bell *et al.* (2014), the most common forms of OC services offered by retailers are: BOPS and BSSD, both scenarios tested by Murfield *et al.* (2017). This research incorporates a third scenario, BOSD which, according to Berman and Thelen (2018), must be considered together with other OC marketing options. While it is true that it is considered by many authors as pure e-commerce, to include it as OC in our model purchases made under this scenario must be to MC companies. As Verhoef *et al.* (2015) stated purchase channel forms include the traditional brick-and-mortar and online channels, as well as more recent blended channels such as online buying and picking up in store, and in-store buying and home delivery. Consequently, the model proposed in Figure 1 seek to analyse the relationships and effects of the timeliness, availability, condition and return components of LSQ on customer satisfaction and loyalty, as well as the effect of satisfaction on loyalty in three shopping scenarios representing different OC situations: BOSD, BOPS, BSSD.

(Figure 1.).

Methodology

A mixed-method approach was used combining a qualitative study with a questionnaire-based quantitative study. As explained previously, a gap was detected in the studies that have analysed LSQ in OC settings and its relationship with satisfaction and loyalty. Although Murfield *et al.* (2017) used a quantitative research approach to study two shopping environments and their effect on customer satisfaction and loyalty we believed that a more in-depth approach was necessary, particularly when proposing a new scenario. In this sense, an exploratory study was considered essential as a prior phase to the design of the questionnaire to identify key aspects in the purchase of physical products in OC contexts. Six focus groups were developed with a total of 39 students at Spanish universities with different backgrounds and nationalities. The aim was to obtain information on the factors that influence purchases through different channels in the three shopping scenarios so the target participants were young people, in order to ensure that they had used all three scenarios, in a wider spectrum of sectors. Moreover, not only older people feel less comfortable with online shopping than young people (Liebermann and Stashevsky, 2002), but according to Cetelem (2018) the millennial customer is more omni-channel than ever, as they buy indistinctly online and offline and jump from one channel to the other during the purchase process. All focus groups were led by two of the researchers, who guided the discussion towards characteristics and evaluations of real experiences of the omni-channel purchasing process (1. search, comparison, influences; 2. purchase decision, where, why, payment; 3. place of delivery and collection of the

product, reasons; 4. exchanges and returns; 5. problems and complaints; 6. post-purchase behaviour), distinguishing between product categories (hedonic-non-hedonic and high-risk, low-risk). CAQDAS Atlas.ti was used to document the research process and to help in the analysis of the content.

The factors highlighted by the participants were grouped into three categories: online/offline shopping, quality of service, and satisfaction and loyalty. Results arousing from the focus group show that participants expressed a higher degree of satisfaction with online purchases when the order arrives on time and the organization offers facilities with possible returns. Moreover, participants showed a repurchase intention in the same store if the organization guarantees an agile and fast return process in case of a defective product. In summary, the respondents pointed out the importance of the omnichannel purchasing scenarios provided by the store and the different components of the LSQ.

Measurement scales

Based on the results obtained in the qualitative study, the quantitative study was designed emphasizing the participants' valuation of their experience in the three shopping scenarios. The indicators for measuring the variables to be analysed in the model were selected based on the analysis of the empirical studies reviewed. The measurement scales relating to LSQ, previously validated in literature, were adapted to each of the proposed OC purchasing scenarios. 5-point Likert scales were used in the instruments to measure the variables.

Mentzer *et al.* (1999) proposed the LSQ scale incorporating components of the SERVQUAL to the logistics sphere. Xing *et al.* (2010) proposed the e-PDSQ scale, comprising availability, condition, timeliness and return. Rao *et al.* (2011) developed the e-LSQ scale adapting the LSQ to the online purchasing context. Lastly, Murfield *et al.* (2017) used the LSQ scale selecting only three components: timeliness, availability and condition. For this study, LSQ was conceptualised using four first-order components: timeliness, availability, condition and return based on the scale proposed by Xing *et al.* (2010), as they included the return component. The measurement scales were adapted to each of the three shopping scenarios proposed, with slight differences between them in terms of the delivery timeliness and order availability factors (Table 1).

One of the main dependent variables in this study was customer satisfaction. From an operational standpoint, satisfaction is similar to attitude in that it represents the sum of different judgements of attribution regarding satisfaction, so satisfaction is a measurement of a specific transaction (e.g. Brady and Robertson, 2001). The approach used in this study focused on customer satisfaction as a specific shopping experience relating to the perception standards adapted by Davis-Sramek *et al.* (2009). The measurements proposed by them were also adapted to the B2C context of this study, using the same scale for the three shopping scenarios. As for loyalty (Table 1), this study uses the customer loyalty scale applied by Davis-Sramek *et al.* (2009) because it is formed by operational and relational components in the service quality context. These components were adapted to the settings studied here, in accordance with Murfield *et al.* (2017).

(Table 1.).

Quantitative methodology

A 32-question questionnaire was developed using advanced questions logic to allow respondents to answer only questions about the scenarios with which they had had an effective shopping experience. A prior test was carried out with 10 individuals in two phases and the questionnaire was modified to make it easier to understand. The scope of the study was Spain, where 10.5 million people buy online each quarter (ONTSI, 2018). As happened to Yumurtacı *et al.* (2018), random sampling could not be employed since it was not possible to identify and access all OC shoppers, so the sample was selected using the non-probabilistic snowball method, exponential type. Thereby we began by sending the questionnaire to Spanish professors and PhD students, with online shopping experience, so that they would recruit new participants. To partly avoid the risks of bias in the results (Sorkum *et al.,* 2020) they were asked to respond on the three proposed scenarios where there was a recent (last three months) shopping experience. In spring 2018, 759 on-line self-administered questionnaires were sent from which 323 with valid answers were obtained. The sample profile comprised 64% women and the average age of respondents was between 36 and 45 years.

The analysis of the data obtained was processed using the variance-based Structural Equations Method, Partial Least Squares (PLS), using the statistical tool SmartPls version 3.2.7. The PLS method provides an approach for modelling structural equations (SEM) that allows researchers to analyse simultaneous causal relationships with interactive effects between manifest and latent variables, as well as providing less contradictory results than the regression analysis in terms of detecting mediation effects (Ramli *et al.*, 2018).

Results

The descriptive analysis of the results of each proposed purchase scenario revealed that 53% of respondents purchased BOSD at least once a month. The other two purchase scenarios presented much lower frequencies (14%). The percentages for purchases less than once a month are 44% BOSD, 39% BOPS and 36% BSSD.

Regarding the measurement analysis, Table 2 shows the results for the reliability and validity measurements after the filtering phase. Five indicators in the BOSD scenario and one in each of the other two scenarios were eliminated. After the filtering process, the loads of all were > 0.6 (Hair *et al.*, 2014).

(Table 2.).

Discriminant validity was measure following the criteria described by Fornell and Larker (1981) and the heterotrait-monotrait ratio of correlations (HTMT) criterion (Henseler *et al.*, 2015). The model met both criteria for the three scenarios.

The results for R^2 and Q^2 shown in Figure 2 confirmed that the proposed model for the three scenarios presented significant predictive capacity for endogenous variables. The hypotheses were compared (Table 3) based on the analysis of the structural model of the three scenarios.

(Table 3.).

H1 was fulfilled in the case of the timeliness component in the three scenarios and the return component in the BOSD and BSSD scenarios. Previous research supports the idea that customer satisfaction and loyalty are driven by product availability and condition, as well as delivery time in B2C environments (e.g. Xing *et al.*, 2010; Rao *et al.*, 2011). However, Murlfield *et al.* (2017) affirmed that in an OC context, the most important logistics service element deriving in customer satisfaction and loyalty is timeliness. Our results confirmed these affirmations, adding the return component as a very relevant factor due to its influence on customer satisfaction.

The hypothesis relating the effect of logistics service quality and its availability component with consumer loyalty (H2) was confirmed in only one of the three scenarios: buy-online-pickup-in-store (BOPS). Accordingly, the only logistics service quality component directly related to and relevant for consumer loyalty is product availability, specifically in the buy-online-pickup-in-store scenario. In this sense, our results coincide with those described by Beckwith (2017), who reported that consumers seek the fastest delivery option, which entails being able to pick up online orders made in physical stores without delays in delivery. No other direct and significant effects of the logistics service quality components on consumer loyalty were observed, except for the relationship in the BOPS model described previously.

The hypothesis linking satisfaction with consumer loyalty (H3) in the three purchase scenarios was confirmed. These results are in line with the research conducted by Stank et al. (2003), Zhang et al. (2005), Kumar et al. (2013) and Schirmer et al. (2018).

As presented in Figure 2, the relationship models incorporating the accepted hypotheses for the two shopping scenarios involving "ship-direct" services are the same.

(Figure 2.).

Conclusion

Contributions

This article improves the overall understanding of consumer behaviour in the omni-channel context given that, as stated by Mishra et al. (2020), most omni-channel studies have been approached from the retailer perspective. The first contribution of this research is derived from H1 which predicted a positive relationship between timeliness and customer satisfaction. Previous research supported the idea that customer satisfaction is originated by availability, condition and delivery time in B2C contexts (e.g. Xing *et al.*, 2010; Rao *et al.*, 2011). The results obtained in this research go beyond confirming that the relationship between LSQ component timeliness and customer satisfaction is significant in different purchasing scenarios such as BSSD, BOPS and a new and never tested before, the BOSD setting. This last setting might not be considered by precedent literature as an OC scenario, but our results indicate that many customers expect from retailers to provide this logistics service as part of the OC environment. Wilson and Daniel (2007) highlighted as a critical OC success factor the ability of a retailer to maintain a single, coherent firm while dynamically competing in multiple channels and delivering consistent physical distribution service to online and store customers. This view supports

complementarity in managing distribution networks through an integrated distribution infrastructure. Regarding the timeliness element, this study is in line with Douglas (2017), affirming the growing need customers have of receiving the requested product as soon as possible and having the best service, setting the normality precedent in these logistics conditions (Daugherty, 2018).

A second contribution concerns the return component of the LSQ and the relationship with customer satisfaction. Our results reveal its importance for satisfaction in all shopping scenarios that involve "direct delivery to the customer's address". These findings are in consonance with Pei *et al.* (2014) agreeing that the depth of the return conditions offered by organizations has a positive influence both on the customer's perception that they are being treated fairly, and on the purchase intention. Likewise, in line with Yan and Pei (2018), return policies are a priority instrument for establishing lasting relationships with customers.

An original contribution to academic literature relates to the leading role of the only component of LSQ to show a direct and significant relationship with customer loyalty, namely product availability in the online shop and in-store pick-up scenario. Ramanathan (2010) and Bouzaabia *et al.* (2013) results support our statement about the importance of this component of the logistics service on customer loyalty. In addition, other authors have confirmed the positive association of customer loyalty towards establishments with product availability in stock (Moussaoui *et al.,* 2016). It is surprising that, except in the case mentioned, none of the variables making up LSQ influenced loyalty in any scenario. Omni-channel consumer shopping habits are complex as consumers go back and forth between different touchpoints (Christoforou, 2019), combining different web portals and different brands. This raised the question, also asked by Huma et al. (2019), of whether the relational aspects of logistics services and not the operational ones could be responsible for generating greater loyalty in omni-channel customers. In fact, for the omni-channel context, Tyrväinen et al. (2020) affirmed that it is the emotional and hedonic components of the shopping experience that influence loyalty. Koo (2020) determined that consumer loyalty in omni-channel environments depends on the option customers have to complete orders online from physical stores (shipping-from-store service) given that lack of stock is perceived as a common problem in physical stores due to space limitations. In this sense, in our research and for the BOPS scenario, availability is the only variable related to loyalty. Our results reflect a direct influence of this LSQ component on customer loyalty; hence, the need for further research to shed more light on this aspect.

Finally, regarding hypothesis H3, it is confirmed for all scenarios that satisfaction in an OC environment is, as previously stated by Kibbeling *et al.* (2013), a critical determinant in consumer retention.

Managerial implications

Our findings provide several practical insights for managers. As shown previously the timeliness element is crucial to consumer satisfaction regardless of the purchase scenario. In the age of the impatient customer, customers want immediate delivery and a fast service (Beckwith, 2017) therefore managers have to become accustomed to the complex, dynamic and every-changing world of OC, and focus their efforts on designing a

distribution structure, in all purchase channels offered, capable of adapting to the ever increasing demands for faster delivery times, which implies greater coordination, collaboration and exchange of information. In turn, management must provide appropriate, reliable and homogeneous information in real time in all the firm's purchasing channels. The costs to the firm of the continuing increase in the number of orders and the speed at which they must be delivered, together with the effects this has on sustainability, must be considered and evaluated by managers. The role of the 3PLs who are actually the operators providing the service to both retailers and consumers is crucial, so we propose to the 3PLs to collaborate with each other both to reduce time and to share and reduce costs (both monetary and environmental) while retailers should encourage their efforts, and to collaborate only with those that are excellent from the point of view of service provision. At the same time, we advise both retailers and logistics operators not to forget to use relevant communication tools to inform consumers about the sustainable practices implemented. Moreover, the importance of the return component on satisfaction in the home delivery scenarios only reinforces the need for the efforts proposed to retailers and 3PL. The fact is that our results suggest that the organisations need to implement relevant return policies in all their channels, and specifically those that include home delivery services, however, managerial decisions made regarding this policy may be a double-edged sword insofar as a generous return policy may boost sales by inducing purchases by a larger number of customers while at the same time increasing the number of returns pushing up costs. In conclusion, managing order processing and product returns is one of the biggest challenges facing retailers. Synchronization between the channels can help to resolve this situation considerably; just as customers are offered the buy-online-pickup-in-store option, they can also be given the opportunity to receive orders online and return in store. Since we have confirmed that availability positively affects loyalty, retailers should develop shipping-from-store service systems; in this way, customers can ensure they obtain their products in a simple way even if they are not available in store, thus minimizing the sense of risk.

The challenge that the COVID-19 pandemic continues to pose to retailers points to a continued momentum of e-commerce as well as a potential divergence of the supply chain or a re-imagining of shop take-up (Passport Euromonitor, 2020). Moreover, a recent McKinsey study signed by Adhi *et al.* (2020) states that consumers during this stage have become accustomed to shopping online, forcing even the smallest neighbourhood retailers to launch OC initiatives, offering pavement contactless pickup, thus deepening the OC integration to meet growing customer demand for contactless fulfilment options. In the future, retailers must therefore continue to improve the features of the "buy online, collect in shop" service. To this end, following Audrin (2020) we suggest deepening the knowledge of the different actors involved to facilitate the implementation of self-service technologies (SST), which will undoubtedly result in greater satisfaction and lower costs.

Limitations and future research directions

One of the limitations of this work stems from its scope. In an omnichannel perspective, retailers need to combine all the different touchpoints in order to reach highly loyal customers (Simone and Sabbadin, 2017), hence OC also covers the use of different electronic devices. In our research, as the device from which the purchase was made has not been considered, it is proposed as a line for future studies. Likewise, the field of

analysis should continue to be extended to new purchase scenarios that may arise because of technological advances or changes in consumer trends.

Methodological limitations of this study could be overcome with a larger sample that facilitates the identification of possible differences according to the type of industry, and also with a complementary qualitative analysis, as for example, since the results obtained here showed that the "condition" component did not influence satisfaction and loyalty, a more in-depth analysis is necessary to clarify its causes; could this be because customers are used to optimal delivery conditions? Or perhaps they are not worried because they can return products easily?

The result that three of the four components of LSQ, timeliness, condition and return, do not have a direct effect on loyalty, raises questions that open up another interesting line of research: is LSQ an indispensable asset but one that does not add sufficient value to gain loyal customers? Or is it perhaps necessary to rethink the way loyalty is measured in OC environments? Or have new components of LSQ emerged that could have direct positive effects on loyalty? In this sense, the recent innovative work of Närvänen *et al.* (2020) reflects on and encourages us to use qualitative methodologies to address future research in this area.

As with loyalty, we believe that the way in which satisfaction is measured should also be revisited, incorporating new items given the radical changes demanded by a truly OC consumer. In short, there are still many opportunities for future research in this field since many of those mentioned by Murfield *et al.* (2017) or Sorkun *et al.* (2020) are still relevant. Complementary lines of research in relation to LSQ in OC purchasing environments should focus on the paradigm shift in customers' expectations regarding service from a logistic perspective, and on areas such as integrated OC management, after-sales logistics service and returns handling, but above all on the likely emergence of new key components of LSQ.

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Figure 1. Model of LSQ relationships in omnichannel environments

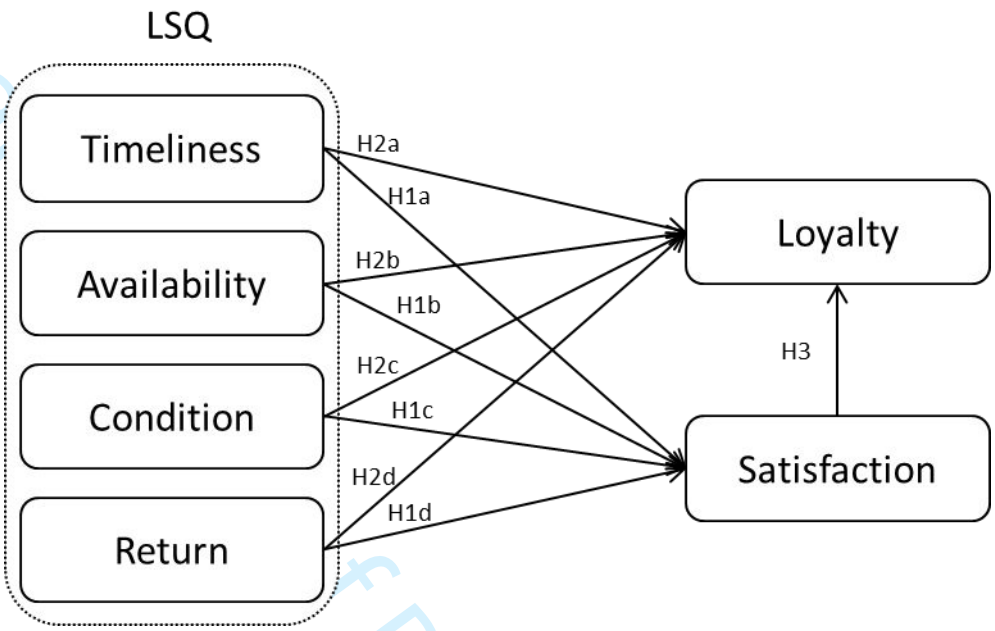


Table 1. Scales: LSQ scale for the different shopping scenarios, Consumer satisfaction and Consumer Loyalty

Construct		Items
LSQ Timeliness	Scenario 1 (BOSD)	BOSDCSLP1: Information about the delivery day BOSDCSLP2: Arrival on time of the order BOSDCSLP3: Information about delivery time-slot BOSDCSLP4: Speed in delivery
	Scenario 2 (BOPS)	BOPSCSLP1: Information on the day of collection in store BOPSCSLP2: Arrival on time of the order BOPSCSLP3: Fast store delivery
	Scenario 3 (BSSD)	BSSDCSLP1: Information about the delivery day BSSDCSLP2: Arrival on time of the order BSSDCSLP3: Information about delivery time-slot BSSDCSLP4: Speed in delivery
LSQ Availability	Scenario 1 (BOSD)	BOSDCSLDI1: Confirmation about the availability of the product BOSDCSLDI2: Timeout for items out of stock BOSDCSLDI3: Variety of delivery options BOSDCSLDI4: Tracking the order BOSDCSLDI5: Availability of offering an alternative product
	Scenario 2 (BOPS)	BOPSCSLDI1: Availability of the product BOPSCSLDI2: Timeout for items out of stock BOPSCSLDI3: Availability to check inventory online BOPSCSLDI4: Availability of offering an alternative product
	Scenario 3 (BSSD)	BSSDCSLDI1: Confirmation about the availability of the product BSSDCSLDI2: Timeout for items out of stock BSSDCSLDI3: Variety of delivery options BSSDCSLDI4: Tracking the order BSSDCSLDI5: Availability of offering an alternative product
LSQ Condition	Scenario 1 (BOSD) Scenario 2 (BOPS) Scenario 3 (BSSD)	BOSDCSLE1: Condition of the product BOSDCSLE2: Accuracy of the order BOSDCSLE3: Integrity and complete order
LSQ Return	Scenario 1 (BOSD) Scenario 2 (BOPS) Scenario 3 (BSSD)	BOSDCSLD1: Ease and channel return options BOSDCSLD2: Efficiency and speed in the collection BOSDCSLD3: Efficiency and speed in the change
Consumer Satisfaction		SAT1: In general, I am very satisfied with the service of this online/offline store SAT2: Compared with other online/offline stores, my current shopping experience with this one has been superior SAT3: This online/offline store is very close to offering a "perfect" service SAT4: This online/offline store differs from others by its superior service
Consumer Loyalty		LEAL1: I'm really interested in what happens to this online/offline store LEAL2: I am proud to comment to others that I have purchased from this online/offline store LEAL3: I consider this online/offline store the best shopping alternative for this type of product LEAL4: I would recommend this online/offline store to others LEAL5: I buy regularly in this online/offline store LEAL6: I bought more from this online/offline store than from others with similar products

Sources:
LSQ scales were adapted from Xing *et al.* (2010) and Murfield *et al.* (2017).
Consumer satisfaction scale was adapted from Davis-Sramek *et al.* (2009).
Consumer loyalty scale was adapted from Davis-Sramek *et al.* (2009) and Murfield *et al.* (2017).

Table. Discriminant validity

According to the Fornell-Larcker criterion

	BOSD RETURN	BOSD AVAILABILITY	BOSD CONDITION	BOSD LOYALTY	BOSD TIMELINESS	BOSD SATISFACTION
BOSD RETURN	0,944					
BOSD AVAILABILITY	0,324	0,769				
BOSD CONDITION	0,208	0,469	0,943			
BOSD LOYALTY	0,053	0,285	0,325	0,766		
BOSD TIMELINESS	0,260	0,548	0,462	0,362	0,841	
BOSD SATISFACTION	0,250	0,434	0,377	0,716	0,492	0,848

	BOPS RETURN	BOPS AVAILABILITY	BOPS CONDITION	BOPS LOYALTY	BOPS TIMELINESS	BOPS SATISFACTION
BOPS RETURN	0,945					
BOPS AVAILABILITY	0,419	0,745				
BOPS CONDITION	0,257	0,565	0,940			
BOPS LOYALTY	0,111	0,409	0,386	0,783		
BOPS TIMELINESS	0,376	0,598	0,497	0,286	0,931	
BOPS SATISFACTION	0,228	0,388	0,465	0,645	0,496	0,880

	BSSD RETURN	BSSD CONDITION	BSSD TIMELINESS	BSSD SATISFACTION	BSSD AVAILABILITY	BSSD LOYALTY
BSSD RETURN	0,969					
BSSD CONDITION	0,206	0,945				
BSSD TIMELINESS	0,194	0,418	0,913			
BSSD SATISFACTION	0,292	0,534	0,529	0,890		
BSSD AVAILABILITY	0,409	0,275	0,531	0,294	0,763	
BSSD LOYALTY	0,336	0,477	0,336	0,757	0,254	0,811

According to the HTMT criterion

	BOSD RETURN	BOSD AVAILABILITY	BOSD CONDITION	BOSD LOYALTY	BOSD TIMELINESS
BOSD RETURN					
BOSD AVAILABILITY	0,410				
BOSD CONDITION	0,222	0,601			
BOSD LOYALTY	0,080	0,377	0,355		
BOSD TIMELINESS	0,288	0,729	0,511	0,417	
BOSD SATISFACTION	0,270	0,569	0,415	0,819	0,566

	BOPS RETURN	BOPS AVAILABILITY	BOPS CONDITION	BOPS LOYALTY	BOPS TIMELINESS
BOPS RETURN					
BOPS AVAILABILITY	0,528				
BOPS CONDITION	0,273	0,620			
BOPS LOYALTY	0,113	0,458	0,419		
BOPS TIMELINESS	0,391	0,679	0,537	0,309	
BOPS SATISFACTION	0,236	0,429	0,505	0,715	0,543

	BSSD RETURN	BSSD CONDITION	BSSD TIMELINESS	BSSD SATISFACTION	BSSD AVAILABILITY
BSSD CONDITION	0,215				
BSSD TIMELINESS	0,203	0,445			
BSSD SATISFACTION	0,312	0,575	0,570		
BSSD AVAILABILITY	0,487	0,278	0,555	0,301	
BSSD LOYALTY	0,362	0,516	0,367	0,833	0,272

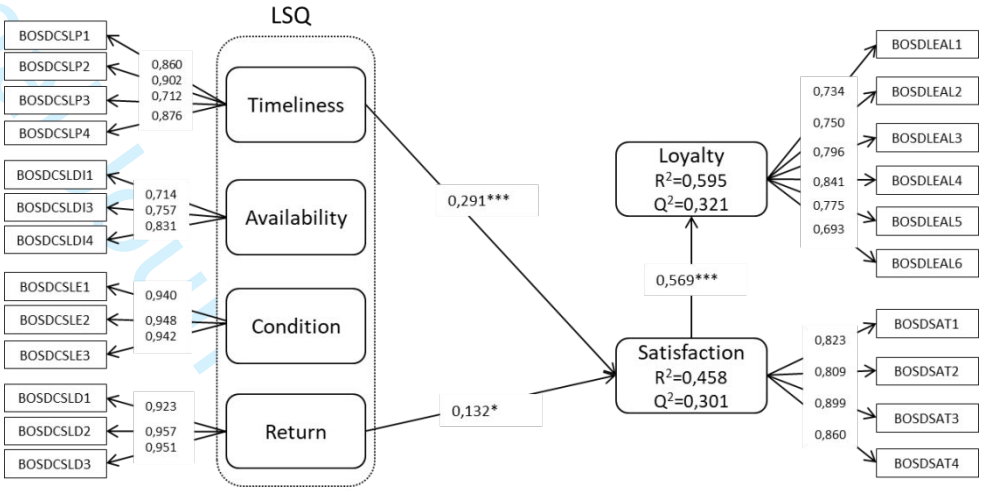
Table 2. Reliability and validity of the constructs

Construct		Item	Loading	Cronbach's α	Composite reliability	Average variance extracted (AVE)
Scenario BOSD						
LSQ BUY-ONLINE-SHIP-DIRECT	AVAILABILITY	BOSDCSLDI1	0,714	0,652	0,812	0,591
		BOSDCSLDI3	0,757			
		BOSDCSLDI4	0,831			
	CONDITION	BOSDCSLE1	0,940	0,938	0,960	0,890
		BOSDCSLE2	0,948			
		BOSDCSLE3	0,942			
	TIMELINESS	BOSDCSLP1	0,860	0,858	0,905	0,707
		BOSDCSLP2	0,902			
		BOSDCSLP3	0,712			
		BOSDCSLP4	0,876			
	RETURN	BOSDCSLD1	0,923	0,939	0,961	0,891
		BOSDCSLD2	0,957			
		BOSDCSLD3	0,951			
SATISFACTION BUY-ONLINE-SHIP-DIRECT	SATISFACTION	BOSDSAT1	0,823	0,870	0,911	0,720
		BOSDSAT2	0,809			
		BOSDSAT3	0,899			
		BOSDSAT4	0,860			
LOYALTY BUY-ONLINE-SHIP-DIRECT	LOYALTY	BOSDLEAL1	0,734	0,859	0,895	0,587
		BOSDLEAL2	0,750			
		BOSDLEAL3	0,796			
		BOSDLEAL4	0,841			
		BOSDLEAL5	0,775			
		BOSDLEAL6	0,693			
Scenario BOPS						
LSQ BUY-ONLINE-PICKUP-IN-STORE	AVAILABILITY	BOPSCSLDI1	0,801	0,749	0,832	0,554
		BOPSCSLDI2	0,703			
		BOPSCSLDI3	0,746			
		BOPSCSLDI4	0,724			
	CONDITION	BOPSCSLE1	0,951	0,935	0,958	0,884
		BOPSCSLE2	0,934			
		BOPSCSLE3	0,936			
	TIMELINESS	BOPSCSLP1	0,930	0,923	0,951	0,867
		BOPSCSLP2	0,942			
		BOPSCSLP3	0,921			
	RETURN	BOPSCSLD1	0,962	0,942	0,962	0,893
		BOPSCSLD2	0,955			
		BOPSCSLD3	0,918			
SATISFACTION BUY-ONLINE-PICKUP-IN-STORE	SATISFACTION	BOPSSAT1	0,842	0,902	0,932	0,774
		BOPSSAT2	0,873			
		BOPSSAT3	0,888			
		BOPSSAT4	0,916			
LOYALTY BUY-ONLINE-PICKUP-IN-STORE	LOYALTY	BOPSLEAL1	0,715	0,873	0,904	0,612
		BOPSLEAL2	0,824			
		BOPSLEAL3	0,752			
		BOPSLEAL4	0,846			
		BOPSLEAL5	0,818			
		BOPSLEAL6	0,731			
Scenario BSSD						
LSQ BUY-IN-STORE-SHIP-DIRECT	AVAILABILITY	BSSDCSLDI1	0,829	0,830	0,874	0,582
		BSSDCSLDI2	0,678			
		BSSDCSLDI3	0,815			
		BSSDCSLDI4	0,788			

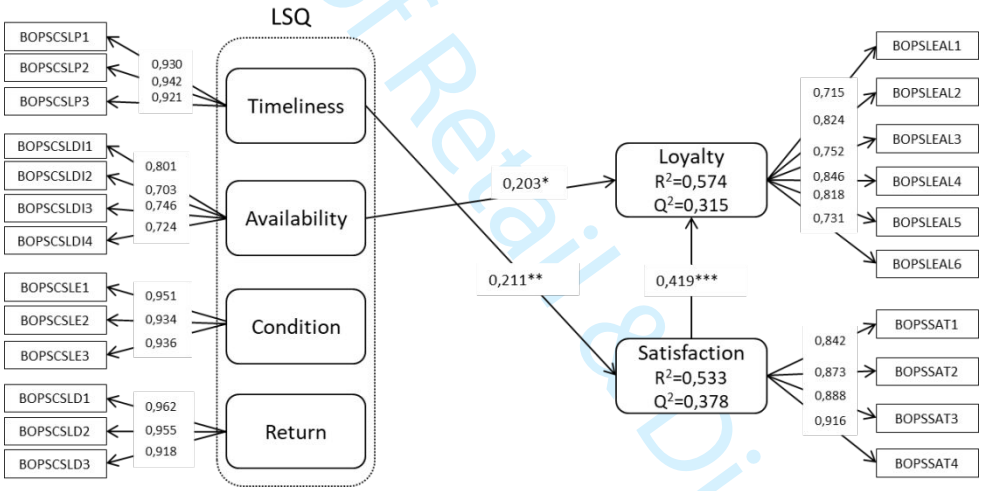
	BSSDCSLDI5	0,692			
CONDITION	BSSDCSLE1	0,940	0,940	0,962	0,893
	BSSDCSLE2	0,947			
	BSSDCSLE3	0,949			
TIMELINESS	BSSDCSLP1	0,895	0,934	0,953	0,834
	BSSDCSLP2	0,944			
	BSSDCSLP3	0,874			
	BSSDCSLP4	0,939			
RETURN	BSSDCSLD1	0,958	0,967	0,978	0,938
	BSSDCSLD2	0,966			
	BSSDCSLD3	0,982			

Figure 2. Structural results and significant relationships

BOSD



BOPS



BSSD

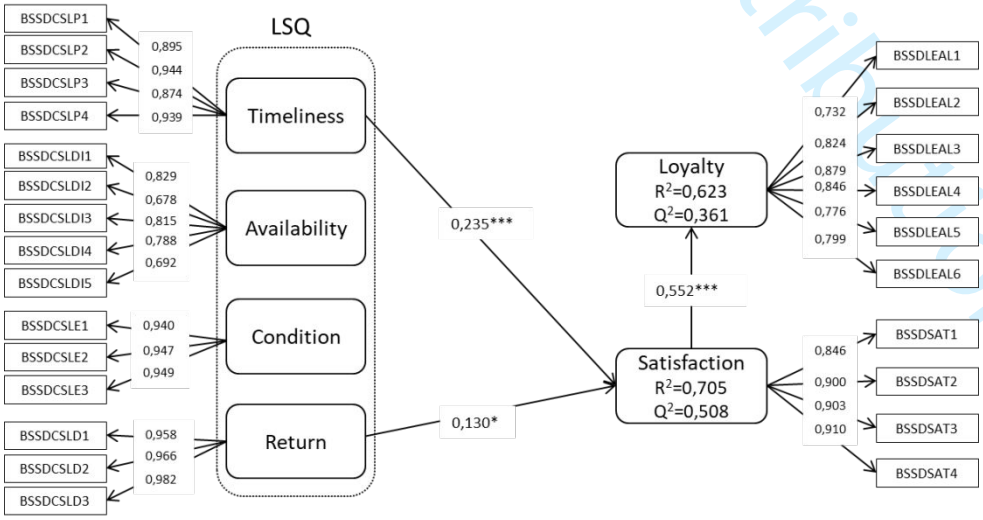


Table 3. Model hypothesis testing results

HYPOTHESIS	Structural relationships	Standardized β	sample average (M)	STDEV	t-statistics bootstrap	P value	statistical significance	Hypothesis
BOSD Model								
H1a	BOSD timeliness → BOSD satisfaction	0,291	0,294	0,052	5,601	0,000	***	Accept
H1b	BOSD availability → BOSD satisfaction	0,070	0,070	0,054	1,298	0,195	ns	Reject
H1c	BOSD condition → BOSD satisfaction	0,036	0,036	0,053	0,691	0,490	ns	Reject
H1d	BOSD return → BOSD satisfaction	0,132	0,135	0,053	2,482	0,013	*	Accept
H2a	BOSD timeliness → BOSD LOYALTY	0,055	0,050	0,052	1,066	0,287	ns	Reject
H2b	BOSD availability → BOSD LOYALTY	-0,079	-0,070	0,051	1,557	0,120	ns	Reject
H2c	BOSD condition → BOSD LOYALTY	0,039	0,039	0,047	0,840	0,401	ns	Reject
H2d	BOSD return → BOSD LOYALTY	-0,099	-0,098	0,043	2,325	0,020	*	Reject
H3	BOSD satisfaction →BOSD LOYALTY	0,569	0,570	0,054	10,618	0,000	***	Accept
BOPS Model								
H1a	BOPS timeliness → BOPS satisfaction	0,211	0,2	0,086	2,456	0,014	**	Accept
H1b	BOPS availability → BOPS satisfaction	-0,09	-0,07	0,094	0,958	0,339	ns	Reject
H1c	BOPS condition → BOPS satisfaction	0,121	0,118	0,096	1,268	0,205	ns	Reject
H1d	BOPS return → BOPS satisfaction	0,046	0,048	0,07	0,665	0,507	ns	Reject
H2a	BOPS timeliness → BOPS LOYALTY	-0,231	-0,223	0,093	2,477	0,014	**	Reject
H2b	BOPS availability → BOPS LOYALTY	0,203	0,215	0,091	2,226	0,026	*	Accept
H2c	BOPS condition → BOPS LOYALTY	0,013	0,003	0,073	0,174	0,862	ns	Reject
H2d	BOPS return → BOPS LOYALTY	-0,031	-0,031	0,071	0,439	0,661	ns	Reject
H3	BOPS satisfaction → BOPS LOYALTY	0,419	0,405	0,097	4,312	0	***	Accept
BSSD Model								
H1a	BSSD timeliness → BSSD satisfaction	0,235	0,224	0,066	3,553	0,000	***	Accept
H1b	BSSD availability → BSSD satisfaction	-0,094	-0,064	0,076	1,232	0,218	ns	Reject
H1c	BSSD condition → BSSD satisfaction	0,075	0,075	0,061	1,231	0,219	ns	Reject
H1d	BSSD return → BSSD satisfaction	0,130	0,116	0,056	2,307	0,021	*	Accept
H2a	BSSD timeliness → BSSD LOYALTY	-0,122	-0,130	0,083	1,464	0,144	ns	Reject
H2b	BSSD availability → BSSD LOYALTY	0,019	0,021	0,075	0,248	0,804	ns	Reject
H2c	BSSD condition → BSSD LOYALTY	0,079	0,078	0,079	0,997	0,319	ns	Reject
H2d	BSSD return → BSSD LOYALTY	0,123	0,118	0,069	1,787	0,075	ns	Reject
H3	BSSD satisfaction → BSSD LOYALTY	0,552	0,543	0,102	5,430	0,000	***	Accept