How an In-Store Self-Service Technology Impacts Customer Shopping Experience, Satisfaction and WOM Intentions

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Retailers are increasingly using self-service technologies (SSTs) in-store. However, their impacts are not well known. The objective of this study is to establish whether the use of SST and its key characteristics (perceived ease of use (PEOU) and perceived usefulness (PU)) has a significant effect on the customer experience (i.e., cognitive, affective, sensory, behavioral and social dimensions). The effect of these dimensions on satisfaction and positive word-of-mouth (WOM) intent were also investigated. We conducted an in-store experiment in which half of the 102 participants chose sports shoes using an interactive wall while a salesperson exclusively assisted the other half. The results demonstrate that the cognitive/positive affective and sensory dimensions of the experience are positively influenced by use of SST while the social dimension is diminished. Further, when SST was used, the negative affect increased. For customers who used the SST, PEOU and PU contribute to enhance all dimensions of the experience, except for PEOU which lowers the social experience. Customer experience positively impact consumer's satisfaction and WOM intent.

Keywords: self-service technology, SST, shopping experience, perceived ease of use, perceived usefulness, omnichannel, retail, post-purchase variables, Canada

INTRODUCTION

The evolution of digital technology is causing major transformation in the retail trade (Shankar, et al., 2021). The customer experience is being changed by the emergence of the internet, mobile devices and

social media (Shi, et al., 2020). In this highly competitive business environment, many traditional retailers offer physical and digital (phygital) in-store channels to enhance the customer experience. This hybrid experience is being offered to maintain competitiveness and better serve increasingly technologically demanding customers (Gerea, et al., 2021). Phygital is, therefore, part of omnichannel strategies where consumers are offered the use of different channels constantly, simultaneously, and interchangeably to facilitate and optimize their experience (Verhoef, et al., 2015). The COVID crisis has imparted momentum to this trend as retailers must continue to ensure a seamless customer experience while the retail world is being disturbed (Journal du Net, 2021).

The introduction of in-store self-service technology (SST) leads to certain business benefits, including improving the overall customer experience (Thiesse, et al., 2009; Lazaris, et al., 2015). Backström and Johansson (2017) also state that SST can play a major role in determining customers' experience. However, according to Verhoef et al. (2009), empirical research measuring the effect of SST on the individual dimensions of the customer experience is scarce.

The main objective of our study is to establish whether the use of in-store SST (phygital context) and its key characteristics (PEOU and PU)) significantly influences the dimensions of customer experience established by Brun et al. (2017). More specifically, this research investigates if the dimensions are impacted differently by the use of the technology studied in this context. Then, given the importance of the customer experience variable on the study of consumer behavior (e.g. Mhaya, et al., 2013; Klein, et al., 2016), this research also measures the individual influence of each of its dimensions on post-purchase variables (satisfaction and positive word-of-mouth intention). From a managerial point of view, it provides marketers with information relevant to the design of efficient SST support that consumers will appreciate in an omnichannel context.

LITERATURE REVIEW AND HYPOTHESES

Omnichannel and Phygital

Now that consumers are accustomed to moving freely between physical and digital channels, retailers have more difficulty controlling the in-store experience (Lemon & Verhoef, 2016). To address this issue, retailers are now integrating more technologies into their point of sale (Belghiti, et al., 2017). Thus, a new form of omnichannel specific to bricks and mortar environments is being created and is called "phygital" (Belghiti, et al., 2017). The term "phygital" is a neologism resulting from the contraction of the words "physical" and "digital". It consists in crossing the physical components (the point of sale, its products, etc.) and the digital ones (touch screens, connected mirrors, Near Field Communication (NFC) cards, etc.) within a store (Barba, 2013; Rivet & al., 2018). In such a context, according to Verhoef et al. (2015), the retailer's environment becomes hybrid, and the physical space as well as the digital channels work synergistically.

Some research on the digitization of the in-store experience focuses on SSTs such as touchscreen terminals (Belghiti, et al., 2017; Rivet, et al., 2018; Beck & Crie, 2015; Feenstra & Glerant-Glikson, 2017; Grewal & Roggeveena, 2017). As the name suggests, self-service technology relies on the consumer's active participation, as opposed to a more traditional service by a salesperson (Verhoef, et al., 2009). Moreover, consumers appreciate SST as it provides them greater independence and freedom from time constraints (Lin & Hsieh, 2011). The authors add that the co-creation of value from customers made possible by SST will become a key factor for the success of companies (e.g., online brand communities).

The Customer Experience

The customer experience has become a top-level concept for retailers. Functional benefits such as the quality of products or services, prices and range of inventory are now insufficient to meet consumer desires (Meyer & Schwager, 2007). To differentiate themselves in the face of intensifying competition, companies must rely on hedonic benefits, by providing their consumers with unique and memorable experiences (Pine & Gilmore, 1998). Schmitt (1999) proposes the most comprehensive view of the customer experience in the marketing literature and, according to his conceptualization, it must involve the consumer at five levels:

cognitive, affective, sensory, behavioral and social (Verhoef, et al., 2009; Gentile, et al., 2007). Brun et al. (2017) recently extended Schmitt's conceptualization by adding the negative affective dimension, since it has been shown that the concept is enriched when both positive and negative feelings are considered (Brun, et al., 2017; Montour-Brunet, et al., 2015). Therefore, the holistic vision of Brun et al. (2017) was used for this study.

This study examines and evaluates the six main customer experience dimensions of Brun et al. (2017) (cognitive; affective positive and negative; sensory; behavioral; social). The cognitive dimension characterizes an experience in which the consumer's thinking and mental processes are stimulated (Gentile, et al., 2007). Schmitt proposes that it can be associated with intellectual experiences such as creativity and problem solving. It stirs the mind, captures the attention, and prompts consumer thinking (Giboreau & Body, 2012). This dimension makes it possible to engage customers and even make them loyal to the company (Brun, et al., 2017; Schmitt, 1999). Lu et al. (2015) show that mobile SST improves accessibility to information and thereby creates personalized experiences for customers. The affective dimension concerns the generation of moods and feelings during an experience (Gentile, et al., 2007). Consumers can thus feel positive emotions such as joy, surprise, delight, but also negative ones, such as anger, impatience, and boredom during their experience (Brun, et al., 2017). According to Zhu et al. (2013), SST can offer consumers several advantages, including faster services. However, the authors also point out that SST can sometimes not work well and create user dissatisfaction. The sensory dimension represents the experience perceived through the five senses (Brun, et al., 2017; Verhoef, et al., 2009). Sight, hearing, touch, taste, and smell can, therefore, be stimulated to impact consumers' perception, judgment and behavior (Brun, et al., 2017; Schmitt, 1999). Belghiti et al. (2017) show that the sensory dimension is exacerbated during the omnichannel experience. Furthermore, Newman et al. (2010) found that digital signage can enhance a customer's sensory dimension at different levels including hearing, sight, and the general atmosphere of the store. The behavioral dimension refers to the physical movements and actions performed by the consumers during their experience (Montour-Brunet, et al., 2015). More specifically, Giboreau and Body (2012) argue that the behavioral dimension constitutes customers' acts during a shopping trip, such as consulting information or comparing the products offered. Brun et al. (2017) suggest that this customer experience dimension should seek to highlight behavior linked to the act of consumption (i.e., participating in the co-creation of a product or service).

Based on previous research (Newman, et al., 2010; Belghiti, et al., 2017) and the fact that SST improves the overall customer experience, the following hypotheses are put forward:

H1: *In-store SST has a positive effect on the customer experience, such that its use increases the cognitive (a), positive affective (c), sensory (d) and behavioral (e) dimensions and decreases the negative affective dimension (b) of the customer experience.*

Even though experience is an individual phenomenon, it is also part of a social context in which individuals can interact with other consumers or staff (Brun, et al., 2017; Yi & Gong, 2009). The social dimension therefore represents the creation of bonds, socialization, and relationships with other people (Giboreau & Body, 2012). One of the characteristics of SST used in stores is that it often does not require any interaction between the customer and the organization (Lu, et al., 2015). As a result, social relationships in stores have changed considerably over time. However, Lu et al. (2015) point out that certain characteristics of SST allow consumers to interact more closely with companies and other consumers; for example, the ability to consult consumer reviews or ratings, sending personalized information via email or text message, etc. (Lu, et al., 2015). However, it is important to specify that the SST studied here (interactive wall) is strictly informative; It does not offer information exchange and interaction among its functions. Therefore, the following hypothesis is proposed:

H1f: *In-Store SST has a negative effect on the customer experience, such that its use decreases the social dimension of the customer experience.*

The Effect of SST's Key Characteristics on the Customer Experience

Several researchers (e.g. Davis, 1986; Venkatesh, et al., 2003; Bruner & Kumar, 2005) have focused on the characteristics that influence consumer use and adoption of a technology. Davis (1986) proposed the Technology Acceptance Model (TAM), which predicts the propensity to use or adopt a technology based on two key characteristics: its perceived ease of use (PEOU) and its perceived usefulness (PU) (Bruner & Kumar, 2005). Perceived ease of use is defined as the extent to which an individual believes using a system (technology) will be free of effort (Davis, 1986). Perceived usefulness reflects the achievement of the desired outcome in the desired time with efficiency (Childers, et al., 2001). The literature (marketing and IT) devoted to the TAM model and its various variants shows the robustness of these two characteristics (e.g. Bruner & Kumar, 2005; Chen, et al., 2009; Childers, et al., 2001).

Very few studies have evaluated the impact of key technology features on the customer experience. The authors' main focus in the literature is on their effect on the user experience. Actually, user experience is often used interchangeably with customer experience in the literature. However, given that the SST studied is located in a store, it seems necessary to differentiate these two concepts. Thus, the user experience refers to a purely technological touchpoint, whereas for the customer experience, the entire experience (physical and technological touchpoints) is considered. More precisely, while user experience design is based on a user-centered design approach, customer experience management is related to a customer-oriented company process (Robier, 2015). Thus, this also includes user experience design in all relevant touchpoints for a positive perception resulting from the use or/and the anticipated use of all involved products, systems and services (Van de Sand, et al., 2019). Therefore, it is proposed that:

H2: *PEOU of in-store SST has a positive effect on the customer experience, such that it increases the cognitive (a), positive affective (c), sensory (d) and behavioral (e) dimensions and decreases the negative affective dimension (b) of the customer experience.*

H2f: *PEOU of in-store SST has a negative effect on the customer experience, such that its use decreases the social dimension of the customer experience.*

H3: *PU of in-store SST has a positive effect on the customer experience, such that it increases the cognitive (a), positive affective (c), sensory (d) and behavioral (e) dimensions and decreases the negative affective dimension (b) of the customer experience.*

H3f: *PU of in-store SST has a negative effect on the customer experience, such that its use decreases the social dimension of the customer experience.*

The Effect of the Customer Experience on Satisfaction and Positive Word of Mouth (WOM)

This study focuses on the post-purchase variables of satisfaction and positive WOM. Oliver's Expectancy-Disconfirmation model (1980) is the most widely used to conceptualize consumer satisfaction (Matos & Rossi, 2008; Carpenter, 2008). This model argues that attitudes towards a shopping experience, product/service, lead to expectations. Once consumers purchase or use the product or service, they evaluate the shopping experience and product / service performance against their initial expectations. This assessment results in a "decision", namely that of being satisfied or dissatisfied (Oliver, 1980; Carpenter, 2008).

Positive WOM is defined as positive informal interpersonal communication between a non-commercial sender and receiver, concerning a brand, a product/service, or an organization (Moulins & Roux, 2008). Several authors show the positive effect of the customer experience on various post-purchase variables such as satisfaction (Brakus, et al., 2009; Triantafillidou & Siomkos, 2014), WOM (Triantafillidou & Siomkos, 2014; Klein, et al., 2016;) and loyalty (Tsaur, et al., 2006; Brakus, et al., 2009). However, most of this literature treat the customer experience as a global construct, implying that all the dimensions that make up the experience have the same overall impact on post-purchase variables (Triantafillidou & Siomkos, 2014). Therefore, by considering the customer experience as a unidimensional construct, it is impossible to

determine each dimension's relative importance on the post-purchase variables, and only general conclusions can be drawn from it (Triantafillidou & Siomkos, 2014). Some studies have conceptualized the customer experience from a multidimensional perspective and show that its components elicit distinct responses from consumers (Mhaya, et al, 2013; Montour-Brunet et al., 2015). Thus, it can be said that the dimensions that make up the customer experience may have a varying degree of influence on behavior (Triantafillidou & Siomkos, 2014).

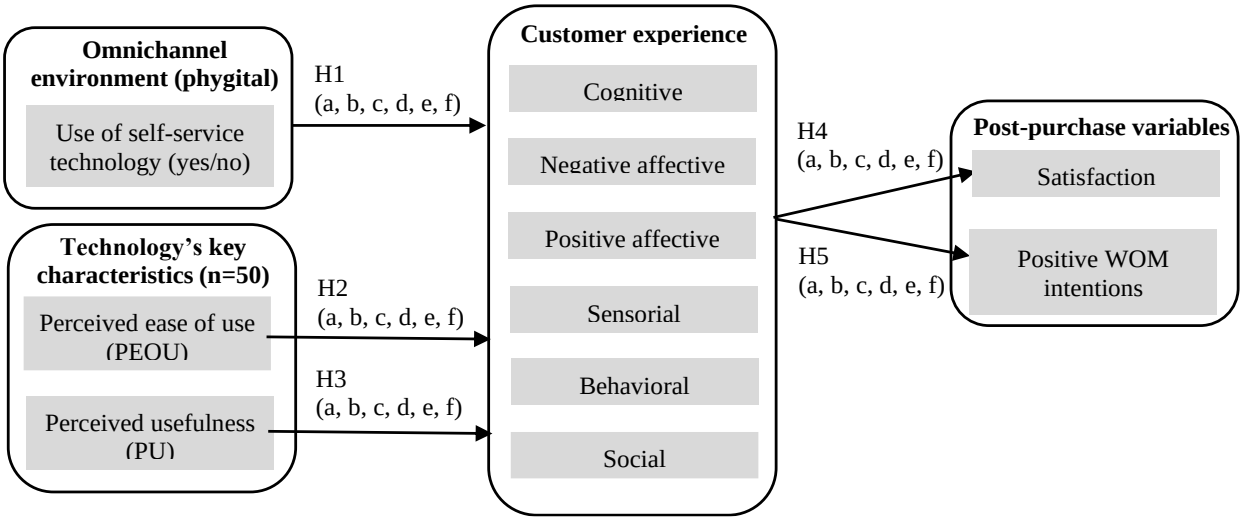
Based on these studies having demonstrated the distinct impacts of the customer experience dimensions on satisfaction and positive WOM, the following hypotheses are proposed:

H4: *The customer experience influences satisfaction such that the more the cognitive (a), positive affective (c), sensory (d), behavioral (e) and social (f) dimension increases, the more satisfaction increases. Conversely, H4b proposes that the more the negative affective dimension increases, the more satisfaction decreases.*

H5: *The customer experience influences positive WOM intention such that the more the cognitive (a), affective positive (c), sensory (d), behavioral (e) and social (f) dimension increases, the more the positive WOM intention increases. Conversely, H5b proposes that the more the negative affective dimension increases, the more the positive WOM intention decreases.*

The conceptual model illustrating the research hypotheses is presented in Figure 1.

FIGURE 1
CONCEPTUAL MODEL FOR THE STUDY



METHODOLOGY

Research Design

To test the hypotheses, a field experiment is performed in the store of a Canadian sporting goods retailer already using SST. This form of experimentation (vs laboratory study) enables data to be collected in a context where the customer experience is as realistic as possible, maximizing the credibility of the experiment in the eyes of the subjects, and gaining greater external validity of the data (Malhotra, et al., 2011). Permission to collect the data was obtained through a research collaboration agreement signed with the brand managers. The store's employees were not notified of the study in order to minimize the introduction of potential bias by them.

Self-Service Technology – Interactive Wall

The SST studied comprises a wall of shoes fitted with RFID chips, a sensor, and an interactive screen. By placing a shoe on the sensor, the consumer can obtain information regarding the product (e.g., material of manufacture), the type of sport for which the shoe is designed, the availability of products, inventory, etc. (see Figure 2). However, it is worth mentioning that the interactive wall does not feature transactional actions (e.g., purchase, reservation, etc.).

FIGURE 2
INTERACTIVE WALL

Sampling

The subjects who participated in the experiment (n=102) were young adults between the ages of 18 and 35 living in Quebec. This generation (also called millennials) is particularly relevant since it is known for high use of SSTs, according to Mele et al. (2021); The business partner favoured it with particular interest in this age group. Subjects were selected using a convenience non-probability sampling method by intercepting consumers near the store to solicit their participation (i.e., mall intercept interviews).

Experiment Design and Procedures

Two scenarios were developed for the experiment. In the first, recruited subjects are asked to imagine preparing to participate in a running race. In this scenario, subjects are instructed to choose an appropriate pair of running shoes using only the interactive wall (without assistance from an employee) during their shopping session. In the second, subjects are presented with the same scenario, except that they only have access to an employee for assistance in choosing a pair of shoes. The scenarios are randomly assigned to the subjects - whether or not the technology is used - to ensure the randomization of the experimental units (Malhotra, et al., 2011). Only one variable is manipulated during the experiment, namely the use (or not) of the SST.

The data collection consists of three stages. First, all subjects are required to complete a pre-task questionnaire probing socio-demographic variables and setting out the experimental scenario. Then, they are invited to go to the store to experiment. Finally, once their shoes are chosen (no purchase necessary), they must complete the post-task questionnaire. The latter questionnaire includes questions about the shopping experience, perceptions of the interactive wall (PEOU and PU) for participants that used the technology (n=50), post-purchase variables, and shopping habits at the sporting goods retailer, including previous experience with the SST studied. A coding system made it possible to combine the pre- and post-task questionnaires while maintaining the anonymity of the subjects. To avoid any research suspicion, it is also important to note that completion of the pre-task and post-task questionnaires is carried out outside the retail store so that the study in progress and its goal are not revealed to the employees.

Measures

For consistency, seven-point Likert-type scales are used throughout the study. The multidimensional scale of Brun et al. (2017) is used to measure customer experience; this scale comprises 23 items measuring the six dimensions studied. Following a pretest of the questionnaire, three items are removed from the scale, on the basis of scoring low on an exploratory factor analysis (<0.55) (Hair & Anderson, 2010). Note that an item on the olfactory sensory dimension is also removed due to its lack of relevance to our study context. PEOU and PU scales were adapted from the TAM model (Davis, et al. 1992; Bruner & Kumar, 2005). Three items are used for each construct. For the post-purchase variables, the scales of San-Martin et al. (2014) are favored. The satisfaction scale is made up of six items and the intention for positive word-of-mouth by four items. Finally, the items are adapted to the study's context and the experiment's analytical needs when required.

RESULTS

Demographic Profile

The sample includes a higher proportion of women than men (60%). The median annual income is less than $ 20 000, and a high school diploma is the highest obtained for 38% of subjects. The subjects' low income and education level is due to the young age of the target studied (18 to 35 years). Almost forty percent of subjects had visited the retailer once or twice in the past six months, and the vast majority (81%) says they had never used an interactive wall before the study. Finally, the profile of the subjects in the two experimental conditions for all these variables are statistically similar.

Descriptive Statistics

For the experience's scale, the following mean values were obtained for each dimension evaluated: Cognitive /positive affective (4.86), affective negative (2.70), sensorial (4.59), behavioral (4.93), and social (3.69). The average customer satisfaction for their shopping at the retailer was 5.39 and positive WOM intentions were a bit lower at 4.64. Consumers who had experienced the interactive wall (n=50) found it easy to use (6.06) and somewhat useful (5.14). Note that all constructs were measured with a 7-point Likert scale (7 = completely agree).

Validity and Reliability of Measurement Scales

Principal component factor analyses (Oblimin rotations) were performed to assess the convergent and discriminant validity of the measurement scales, while the Cronbach's alpha was used to assess their reliability. Once the presuppositions were verified and the factor analyses carried out, particular attention was paid to the scores.

Customer Experience

Four items from the scale of Brun et al. (2017) were removed based on scoring low on their factor dimension (<0.55) (Hair & Anderson, 2010). Then, following a second-factor analysis excluding these items, the final solution includes five factors explaining 75.72% of the cumulative extracted variance. Thus, in the first component, the statements intended to measure the positive affective dimension of the customer experience are also strongly correlated with those on the cognitive dimension. It therefore appears that consumers make no distinction between their cognitive engagement (attentive thought process) and being entertained / enchanted. Therefore, the hypotheses regarding the positive cognitive and affective experience were grouped together for further analysis. For reliability, a Cronbach alpha of 0.89 was observed for the "positive cognitive / affective" component, 0.81 for the "negative affective" dimension, 0.91 for the "social" component, 0.77 for the "behavioral" component and 0.86 for the "sensory" dimension.

PEOU and PU of the SST

All items related to the key characteristics of the SST were retained. The factor analysis including both factors explains 76% of the variance. All factor scores are higher than 0.70 on their respective construct

with low cross-loading (<0.30), showing evidence of good discriminant validity. Actually, PEOU and PU are not statistically (p>0.10) correlated. Cronbach alphas are in the 0.80 range.

Satisfaction and Positive WOM Intention

A factor analysis was also performed with the satisfaction and positive WOM intention constructs. Following this, one item of the positive WOM intention scale is to be removed since it obtains factor scores greater than 0.5 on both dimensions, suggesting a low discriminant validity situation. As expected, the final solution includes two factors, which explains 83% of the cumulative variance. As recommended by Nunnally (1978), all factor scores are greater than 0.70. Table 1 presents these results.

Results of Hypotheses Tests

Self-Service Technology (SST) and Customer Experience

Analyzes of variance (ANOVAs, one-sided) show that using SST in-store has distinct effects on the various dimensions of the customer experience. Initially, the subjects using the SST during the experiment give the positive cognitive / affective dimension a higher average score (M. = 5.13 / 7) than those who are not using SST (M. = 4.6 / 7) (p = 0.015). Therefore, using self-service technology significantly increases the positive cognitive / affective customer experience dimension, thus confirming H1 a / c.

Secondly, the mean given to the negative dimension of the customer experience is significantly (p = 0.002) higher for the subjects who used SST during the experiment (M. Yes = 3.08 / 7> M. No = 2.32 / 7). However, the H1b hypothesis proposed that use of SST would decrease the negative affective dimension, but the results obtained show the opposite. In other words, using self-service technology significantly impacts the customer experience, increasing the frustration associated with it. H1b is, therefore, invalidated.

Third, a significant positive relationship (p = 0.018) is observed between the sensory dimension of the customer experience and the use of SST. Indeed, the subjects who used self-service technology during the experiment give a higher average to the sensory dimension than those who did not (M. Yes = 4.93 / 7> M. No = 4.25). H1d is therefore confirmed.

Fourthly, the H1e hypothesis is invalidated. The relationship between SST use and the customer experience's behavioral dimension is not significant (p = 0.684).

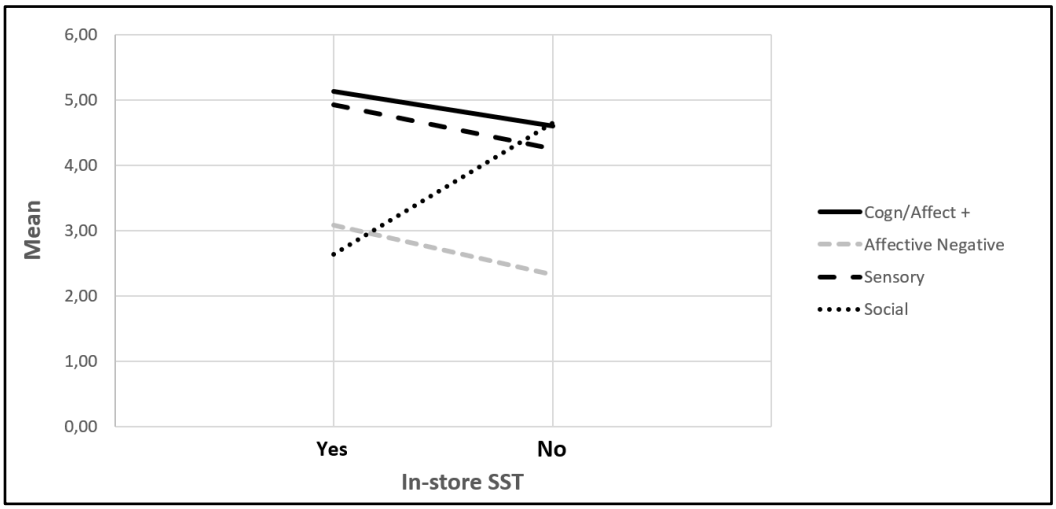
Finally, as anticipated, the use of self-service technology decreases the social dimension of the customer experience (M. Yes = 2.64 / 7> M. No = 4.65 / 7) (p = 0.000). H1f is confirmed. Figure 3 illustrates the results.

TABLE 1
ITEMS USED IN THE STUDY, RELIABILITY AND CONVERGENT VALIDITY

Construct	Factor score	Cronbach α
Customer experience		
When I choose a product using (the interactive wall/the vendors) of this retailer….		0.89
Cognitive/affective (+)		
-I engage in a thinking process	0.82	
-I am really focused	0.79	
-My attention is captivated	0.81	
-I am entertained	0.76	
-I am enchanted	0.73	
Affective (-)		0.81
-I sometimes feel disappointed	0.69	
-I sometimes feel angry	0.80	
-I sometimes feel bored	0.79	
-I sometimes feel impatient	0.86	

Construct	Factor score	Cronbach α
Sensory		0.86
-My visual sense is stimulated	0.82	
-My sense of touch is stimulated	0.91	
Behavioral		0.77
-I tend to consult more information	0.77	
-I tend to be more involved in my shopping	0.61	
-I tend to make product comparisons	0.93	
Social		0.91
-I develop relationships with the staff	0.90	
-I socialize	0.91	
Key characteristics of SST		
Using this interactive wall...		0.82
PU		
-allows me to do my shopping faster	0.85	
-improves my shopping tasks	0.91	
-is useful for my shopping	0.85	
PEOU		0.84
-Learning how to use the interactive wall is easy for me	0.93	
-It is easy to get the information I am looking for with the interactive wall	0.71	
-It is easy for me to skillful with this interactive wall	0.94	
Post-purchase variables		
Satisfaction		
- I think I made the right decision by shopping at this sporting goods retailer	0.76	
-My shopping expectations have been met while shopping at this sporting goods retailer	0.89	
-My shopping experience at this sporting goods retailer has been satisfactory	0.88	
- I am happy with the information I received from this sporting goods retailer	0.89	
- I am generally happy with having shop at this sport goods retailer	0.88	
-In general, I have liked shopping at this sporting goods retailer	0.83	
Positive WOM intention		0.88
-Whenever I have the opportunity I express to friends or relations how satisfied I am with this sporting goods retailer	0.85	
-I say positive things about this sporting goods retailer	0.84	
-I would highlight the positive aspects of this sporting goods retailer to anyone who criticized it	0.85	

FIGURE 3
THE IMPACT OF USING IN-STORE SST ON THE DIMENSIONS OF THE CUSTOMER EXPERIENCE (WHEN SIGNIFICANT)



SST Key Characteristics and Customer Experience

Simple linear regressions were performed to measure the effect of PEOU and PU of the interactive wall on the customer experience. Results of the analyses (one-sided) show that, for those who used it in their shopping, PEOU has a positive influence on every dimension of the experience except for the social dimension (b = -0.24; p=0.045) which is reduced, in lines with H2f. Otherwise, PEOU enhances the behavioral dimension (b = 0.41; p = 0.015) the cognitive/affective positive one (b = 0.38; p = 0.03) and reduces the negative emotions (b = -0.33; p = 0.01). Finally, the better the perception of usability, the better the sensory experience (b = 0.26; p = 0.032). In short, H2 is validated. Turning to the impact of PU, its positive impact is particularly important on the behavioral dimension of the customer experience, stimulating shopping involvement (b = 0.49; p = 0.000). Usefulness of the in-store SST also contributes to increase the sensory dimension (b = 0.26; p = 0.032) and, surprisingly, enhance the social one (b = 0.26; p = 0.032) as well. PU has also a positive impact on the cognitive/affective positive dimension (b = 0.21; p = 0.065) and allows to reduce the negative emotions in the shopping experience (b = -0.22; p = 0.062), but its impact is marginal. H3 is then confirmed, except for H3f.

Customer Experience and Post-Purchase Variables

Simple linear regressions (one-side) measuring the effect of customer experience dimensions on satisfaction (H4) show a significant positive effect on satisfaction. Indeed, as anticipated, only the negative affective dimension negatively affects satisfaction (b =-0,10). However, this relationship is not significant (p > 0.10). In descending order of importance, the positive cognitive / affective dimension of the customer experience (H4a /c) explains 21.2% (R2) of the variation in satisfaction (b = 0.50; p = 0.000), the behavioral dimension (2e) explains 15.4% (R2) of satisfaction (b = 0.40; p = 0.000), the sensory dimension (H4d) explains 11.5% (R2) of satisfaction (b = 0.29; p = 0.000) and the social dimension (H4f) explains 10.9% (R2) of satisfaction (b = 0.23; p = 0.000). The results of hypothesis H5, also resulting from simple linear regressions, are rather mixed. Positive WOM intent is significantly (p <0.05, one-sided) and positively influenced by the sensory, behavioral, and cognitive/affective dimensions of the customer experience as anticipated by H5a /c, H5d and H5e. On the other hand, negative emotions (H5b) and social experience (H5f) during a shopping experience are not influencing factors on positive WOM intention. More precisely, the positive cognitive/affective dimension (H5a /c) explains 8.3% (R2) of positive WOM intention (b = 0.30; p = 0.001), the behavioral dimension (H5e) explains 7.5% (R2) of positive WOM intention (b = 0.26;

p = 0.000) and the sensory dimension (H5d) and explains 6.7% (R2) of positive WOM intention (b = 0.21; p = 0.000). Table 2 presents the results of the hypotheses testing in detail.

TABLE 2
RESULTS OF LINEAR REGRESSIONS

Hypothesis and anticipated relation	**b**	**R^2**	**Result**
Effects of key characteristics of in-store SST on dimensions of customer experience			
H2a/c PEOU -> Cognitive/affective +	0.38**	15%	Confirmed
H2b PEOU -> Affective negative	-0.33**	11%	Confirmed
H2d PEOU -> Sensory	0.26**	7%	Confirmed
H2e PEOU -> Behavioral	0.41**	17%	Confirmed
H2f PEOU -> Social	-0.24**	6%	Confirmed
H3a/c PU -> Cognitive/affective +	0.21*	4.6%	Marginally confirmed
H3b PU -> Affective negative	-0.22*	4.8%	Marginally confirmed
H3d PU -> Sensory	0.26**	7%	Confirmed
H3e PU -> Behavioral	0.49***	24%	Confirmed
H3f PU -> Social	0.26**	7%	Rejected
Effects of dimensions of customer experience on post-purchase variables			
H4a/c Cognitive/affective + -> SAT	0.50***	21.2%	Confirmed
H4b Affective negative -> SAT	-0.01	N/A	Rejected
H4d Sensory -> SAT	0.29***	11.5%	Confirmed
H4e Behavioral -> SAT	0.40***	15.4%	Confirmed
H4f Social -> SAT	0.23***	10.9%	Confirmed
H5a/c Cognitive/affective + -> BAO +	0.30***	8.3%	Confirmed
H5b Affective negative -> BAO +	0.06	N/A	Rejected
H5d Sensory -> BAO +	0.21***	6.7%	Confirmed
H5e Behavioral -> BAO +	0.26***	7.5%	Confirmed
H5f Social -> BAO +	0.06	N/A	Rejected

*p (one-sided): *** ≤ 0.001, ** p ≤ 0.05, * p ≤ 0.10*

DISCUSSION

Little marketing literature has addressed the influence of SST on the customer experience, even though it is an emerging concept in retail (Gerea, et al., 2021; Verhoef, et al., 2015). The phygital environment,

while presenting many opportunities for retailers, increases the various challenges that must be managed to ensure a fluid in-store omnichannel experience (Mele, et al., 2021). Similarly, the pandemic forces the retail sector to change its business models and activities in response to consumers who are adopting new social behavior (EDC, 2021).

The primary objective of this study was to establish the degree to which the use of in-store SST impacts the various customer experience dimensions. Four of our five customer experience dimensions were revealed to be significantly influenced by use of the SST studied. Subjects who used SST were assessed to have a higher customer experience according to the cognitive/affective and sensory dimensions. As might be expected, use of SST during the shopping session diminishes the social dimension. Contrary to what had been expected, however, negative emotions are increased when using SST. Neverthelesss, this customer experience dimension does not appear to significantly affect post-purchase variables such as satisfaction and positive WOM intention.

The secondary objective was to determine the main effects of the customer experience on satisfaction and positive WOM variables in a phygital context. The positive impact of customer experience dimensions on satisfaction is found to be significant for Four of the five customer experience dimensions studied were found to have a significant positive impact on satisfaction. The anticipated negative effect of the negative affective dimension is the only one not confirmed. Concerning positive WOM intention, three (cognitive / affective positive, sensory and behavioral) of the five customer experience dimensions have a significant positive impact; although the relationships studied are weak.

In the marketing literature, some authors have raised the issue of the absence of human interaction when using SST (Backstrom & Johansson, 2017; Lu et al., 2015). However, no identified empirical study has evaluated the effect of SST on the social dimension of the in-store customer experience. The results obtained contribute to the literature by demonstrating that SST, such as interactive walls, negatively affects the social experience of the consumer in the store.

By demonstrating the positive impact of SST on the sensory dimension of the customer experience, the results of this study indicate that consumers feel more visually stimulated by looking at images on a screen rather than products on the shelf. Some authors have been interested in the pleasure that SST brings to consumers regarding perceived utility (Demoulin & Djelassi, 2016) and perceived quality (Lin & Hsieh, 2011) of the SST. Still, none have focused on the customer experience as such. The results observed concerning the effect of using a SST on the positive cognitive / affective dimension of the customer experience extend our knowledge in this regard. In addition, the relationship between the positive cognitive / affective dimension of the customer experience and the post-purchase variables studied was also positive.

CONCLUSION AND IMPLICATIONS FOR RETAILERS

This study aims to assess whether and how the use of self-service technology in-store (phygital context) and its key features (PEOU and PU) significantly impact the customer experience dimensions established by Brun et al. (2017) (cognitive, positive affective, negative affective, sensory, behavioral and social). This research also measures the effect of each of these dimensions on satisfaction and positive word-of-mouth intent.

The results show the relevance of analyzing the customer experience from a multidimensional perspective. Indeed, the use of SST positively influences the cognitive/ positive affective and sensory dimensions of the customer experience. In addition, contrary to what was expected, the negative affective dimension also increases when the SST is used. On the other hand, the social dimension decreases during its use. PEOU and PU of the interactive wall contribute to improving all dimensions of the customer experience among customers who used it, except for the PEOU that reduces the social experience. The analysis further shows that customer experience dimensions differently impact the consumer's satisfaction and positive WOM intention.

Retailers wishing to increase satisfaction and positive WOM intention of their millennial customers would benefit from capitalizing on SST in their strategy by promoting the right information available at the right time to support the omnichannel consumer decision-making process. (e.g., being able to consult the

availability of a product in inventory via the interactive wall or any other channel without having to wait for a sales advisor for the answer).

The behavioral dimension of the customer experience has a significant and positive on the two post-purchase variables studied. However, in our study, the use of SST does not significantly affect this dimension. Marketing managers should therefore plan to integrate features that encourage participation (e.g., value co-creation through User-Generated Content (UGC) such as ratings and comments).

Because the social interactions experienced in stores positively affect consumer satisfaction, marketers should consider SST as a complementary tool to the customer's shopping journey and not as a substitute for employees. Furthermore, to increase social interaction and thereby satisfaction, it would be relevant for marketing managers to integrate in-store SST with social functionalities (e.g., customer ratings or comments, expert opinions, sending email messages, social media sharing, etc.).

The data collection in this study has some limitations that are to be noted. First, the small size of the non-probability convenience sample. The small number of subjects significantly limits the possibility of more sophisticated confirmatory analyses (e.g., structural equations modeling). Only people aged between 18 and 35 were surveyed; hence the results specific to this age group cannot be generalized to the entire population. The customer experience measurement scale used also has some limitations. Indeed, the positive affective dimension of this scale tends to correlate strongly with other dimensions of the customer experience. Some limitations presented in the previous section set the stage for future research work focusing on in-store SST. For example, studying the customer experience impacts of different SSTs available in various stores would be relevant. Another fruitful research avenue is to compare the sectors in which SSTs are present (e.g., retail banking, grocery, hardware, fashion apparel, etc.). Thus, by identifying characteristics important to an industry, functionalities optimized to the needs of consumers could be incorporated into SSTs for the benefit of both consumers and brands.

To conclude, it is hoped that the present study and results will inspire future research into SSTs to enrich the marketing literature on this promising subject.

ENDNOTE

1. A preliminary version of this paper is published in Marketing and Smart Technologies, Proceedings of ICMarkTech 2021, Volume 2, Reis, J. L, Peter, M.K., Cayolla, R. and Bogdanovi'c, Z. (Éditors), p. 349, Springer. https://link.springer.com/book/10.1007/978-981-16-9272-7

REFERENCES

Backstrom, K., & Johansson, U. (2017).An exploration of consumers' experiences in physical stores: Comparing consumers' and retailers' perspectives in past and present time. *International Review of Retail, Distribution and Consumer Research, 27*(3), 241–259. https://doi.org/10.1080/09593969.2017.1314865

Barba, C. (2013). *Le magasin n'est pas mort! - Comment réussir la transition numérique de votre activité en 15 sujets clés*. Retrieved from https://www.limoges.cci.fr/tl_files/cci-limoges/PDF/Internet/Catherine-Barba-Le-magasin-n-est-pas-mort.pdf

Beck, M., & Crié, D. (2015). Les nouvelles aides à la vente et à l'achat: Définition, état de l'art et proposition d'une taxinomie,. *Décisions Marketing, 79*, 131–150. http://dx.doi.org/10.7193/DM.079.1

Belghiti, S., Ochs, A., Lemoine, J.F., & Badot, O. (2017, June). The phygital shopping experience: An attempt at conceptualization and empirical investigation. In P. Rossi, & N. Krey (Eds.), *Academy of Marketing Science World Marketing Congress* (pp. 61–74). Cham: Springer. https://doi-org./10.1007/978-3-319-68750-6_18

Brakus, J.J., Schmitt, B., & Zarantonello, L. (2009). Brand experience: What is it? How is it measured? Does it affect loyalty? *Journal of Marketing, 73*, 52–68. https://doi.org/10.1509/jmkg.73.3.052

Brun, I., Rajaobelina, L., Ricard, L., & Berthiaume, B. (2017). Impact of customer experience on loyalty: A multichannel examination. *The Service Industries Journal*, *37*(5–6), 317–340. https://doi.org/10.1080/02642069.2017.1322959

Bruner, G.C., & Kumar, A. (2005). Explaining consumer acceptance of handheld internet devices. *Journal of Business Research*, *58*(5), 553–558. doi: 10.1016/j.jbusres.2003.08.00

Carpenter, J.M. (2008). Consumer shopping value, satisfaction and loyalty in discount retailing. *Journal of Retailing and Consumer Service, 15*, 358–363. https://doi.org/10.1016/j.jretconser.2007.08.003

Chen, S.C., Chen, H.H., & Chen, M.F. (2009). Determinants of satisfaction and continuance intention towards self-service technologies. *Industrial Management & Data Systems, 109*(9), 1248–1263. doi: 10.1108/02635570911002306

Childers, T.L., Carr, C.L., Peck, J., & Carson, S. (2001). Hedonic and utilitarian motivations for online retail shopping behavior. *Journal of Retailing, 77*(4), 511–535. doi: 10.1016/s0022-4359(01)00056-2

Davis, F.D. (1986). *A technology acceptance model for empirically testing new end-user information systems: Theory and results*. Massachusetts Institute of Technology.

Davis, F.D., Bagozzi, R.P., & Warshaw, P.R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology*, *22*(14), 1111–1132.

Demoulin, N.T.M., & Djelassi, S. (2016). An integrated model of self-service technology (SST) usage in a retail context. *International Journal of Retail & Distribution Management*, *44*(5), 540–559. https://doi.org/10.1108/IJRDM-08-2015-0122

EDC. (n.d.). *La COVID-19 change les règles du commerce de détail*. Retrieved from https://www.edc.ca/fr/guide/effets-covid-19-commerce-de-detail.html

Feenstra, F., & Glerant-Glikson, A. (2017). Identifier et comprendre les sources de valeur dans l'interaction avec les SSIT (Self-Service Information Technologies) en magasin. *Décisions Marketing*, *86*, 53–72. http://dx.doi.org/10.7193/DM.086.47.66

Gentile, C., Spiller, N., & Noci, G. (2007). How to sustain the customer experience: An overview of experience components that co-create value with the customer. *European Management Journal, 25*(5), 395–410. https://doi.org/10.1016/j.emj.2007.08.005

Gerea, C., Gonzalez-Lopez, F., & Herskovic, V. (2021). Omnichannel customer experience and management: an integrative review and research agenda. *Sustainability*, *13*(2824). https://doi.org/10.3390/su13052824

Giboreau, A., & Body, L. (2012). *Marketing sensoriel une démarche globale pour produits et services* (2nd Ed.). Vuibert, France.

Grewal, D., Roggeveena, A.L., & Nordfäl, J. (2017). The future of retailing. *Journal of Retailing, 93*(1), 1–6. https://doi.org/10.1016/j.jretai.2016.12.008

Hair, J.F., & Anderson, R.E. (2010). *Multivariate data analysis* (7th Ed.). Prentice Hall.

Journal du Net. (2021). *Utiliser les écrans pour booster l'expérience client en magasin en temps de COVID*. Retrieved from https://www.journaldunet.com/ebusiness/commerce/1502723-utiliser-les-ecrans-pour-booster-l-experience-client-en-magasin-en-temps-de-covid/

Klein, J.F., Falk, T., Esch, F.R., & Gloukhovtsev, A. (2016). Linking pop-up brand stores to brand experience and word of mouth: The case of luxury retail. *Journal of Business Research, 69*, 5761–5767. https://doi.org/10.1016/j.jbusres.2016.04.172

Lazaris, C., Vrechopoulos, A., Doukidis, G., & Fraidaki, K. (2015). The interplay of omniretailing and store atmosphere on consumer's purchase intention towards the physical retail store. In *12th European, Mediterranean & Middle Eastern Conference on Information Systems* (pp. 1–2), Athens, Greece.

Lemon, K.N., & Verhoef, P.C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing, 80*(6), 69–96. https://doi.org/10.1509/jm.15.0420

Lin, J.S.C., & Hsieh, P.L. (2011). Assessing the self-service technology encounters: Development and validation of SSTQUAL scale. *Journal of Retailing, 87*(2), 194–206. https://doi.org/10.1016/j.jretai.2011.02.006

Lu, C., Geng, W., & Wang, I. (2015). The role of self-service mobile technologies in the creation of customer travel experiences. *Technology Management Review*, pp. 24–32. https://doi.org/10.22215/timreview871

Malhotra, N., Décaudin, J.M., Bouguerra, A., & Borries, D. (2011). *Études marketing* (6th Ed.). Pearson Education.

Matos, C., & Rossi, C. (2008). Word-of-mouth communications in marketing: A meta-analytic review of the antecedents and moderators. *Journal of the Academic Marketing Science*, *36*, 578–596. https://doi.org/10.1007/s11747-008-0121-1

Mele, C., Russo-Spena, T., Tregua, M., & Amitrano, C.C. (2021). The millennial customer journey: A phygital mapping of emotional, behavioural, and social experiences. *Journal of Consumer Marketing*, *38*(4), 420–433. https://doi.org/10.1108/JCM-03-2020-3701

Meyer, C., & Schwager, A. (2007). Understanding Customer Experience. *Harvard Business Review*, *85*, 1–12.

Mhaya, I., Najjar, H., & Jannet, I.B. (2013). Effet de l'expérience en ligne sur la fidélité au site du réseau social: Le rôle médiateur de la satisfaction des internautes. *Journal of Global Management Research*, pp. 5–14.

Montour-Brunet, I., Rajaobelina, L., & Ricard, L. (2015). Échelle de mesure de l'expérience client dans le secteur bancaire. Proceedings from *ASAC Administrative Sciences Association of Canada*, Halifax, Ca.

Moulins, J.L., & Roux, E. (2008). Un modèle tridimensionnel des relations à la marque: De l'image de marque à la fidélité et aux communications de bouche-à- oreille. Proceedings from *Congrès Marketing Trends*, Venise, It. 17–19.

Newman, A., Dennis, C., & Wright, L.T. (2010). Shoppers' experiences of digital signage-a cross-national qualitative study. *International Journal of Digital Content Technology and its Applications*, *4*(7), 50–57. https://doi.org/10.4156/jdcta.vol4.issue7.5

Nunnally, J.C. (1978). *Psychometric theory* (2nd Ed.). New York: McGraw-Hill.

Olivier, R.L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, *17*, 460–469. https://doi.org/10.2307/3150499

Pine, B.J., & Gilmore, J.H. (1998). Welcome to the experience economy. *Harvard Business Review*, *76*, 97–105.

Rivet, C., Reghem, J., & Fornerino, M. (2018). Explorer l'expérience de shopping dans un magasin phygital. *Décisions Marketing*, (9), 45–60. http://dx.doi.org/10.7193/DM.091.45.60

Robier, J. (2015). *Das einfache und emotionale Kauferlebnis: Mit Usability, User experience und customer experience anspruchsvolle Kunden gewinnen*. Springer.

San-Martin, J., Prodanova, J., & Jiménez, N. (2015). The impact of age in the generation of satisfaction and WOM in mobile shopping. *Journal of Retailing and Consumer Services*, *23*, 1–8. https://doi.org/10.1016/j.jretconser.2014.11.001

Schmitt, B. (1999). Experiential marketing. *Journal of Marketing Management*, *15*, 53–67. https://doi.org/10.1362/026725799784870496

Shankar, V., Kalyanam, K., Setia, P., Golmohammadi, A., Tirunillai, S., Douglass, T., Hennessey, J., Bull, J.S., & Waddoups, R. (2021). How technology is changing retail. *Journal of Retailing*, *97*, 13–27. https://doi.org/10.1016/j.jretai.2020.10.006

Shi, S., Wang, Y., Chen, Z., & Zhang, Q. (2020). Conceptualization of omnichannel customer experience and its impact on shopping intention: A mixed-method approach. *International Journal of Information Management*, *50*, 325–336. https://doi.org/10.1016/j.ijinfomgt.2019.09.001

Thiesse, F., Al-Kassab, J., & Fleisch, E. (2009). Understanding the value of integrated RFID systems: A case study from apparel retail. *European Journal of Information Systems*, *18*(6), 592–614. https://doi.org/10.1057/ejis.2009.33

Triantafillidou, A., & Siomkos, G. (2014). Consumption experience outcomes: Satisfaction, nostalgia intensity, word-of-mouth communication and behavioural intentions. *Journal of Consumer Marketing*, *31*(6), 526–540. https://doi.org/10.1108/JCM-05-2014-0982

Tsaur, S.H., Chiu, Y., & Wang, C. (2006). The visitors behavioral consequences of experiential marketing: An empirical study on Taipei zoo. *Journal of Travel & Tourism Marketing*, *21*(1), 47–64. https://doi.org/10.1300/J073v21n01_04

Van De Sand, F., Frison, A.K., Zotz, P., Riener, A., & Holl, K. (2019). *User experience is brand experience: The psychology behind successful digital products and services*. https://doi.org/10.1007/978-3-030-29868-5

Venkatesh, V., Morris, M.G., Davis, G.B., & Davis, F.D. (2003). User acceptance of information technology: toward a unified view. *MIS Quarterly*, pp. 425–478. Management for Professionals. Springer.

Verhoef, P.C., Kannan, P.K., & Inman, J.J. (2015). From multi-channel retailing to omni-channel retailing introduction to the special issue on multi-channel retailing. *Journal of Retailing*, *91*(2), 174–181. https://doi.org/10.1016/j.jretai.2015.02.005

Verhoef, P.C., Lemon, K.N., Parasuraman, A., Roggeven, A., Tsiros, M., & Schlesinger, L.A. (2009). Customer experience creation: Determinants, dynamics and management strategies. *Journal of Retailing*, *85*, 31–41. https://doi.org/10.1016/j.jretai.2008.11.001

Yi, Y., & Gong, T. (2009). An integrated model of customer social exchange relationship: The moderating role of customer experience. *The Service Industries Journal*, *29*(11), 1513–1528. https://doi.org/10.1080/02642060902793474.

Zhu, Z., Nakata, C., Sivakumar, K., & Grewal, D. (2013). Fix it or leave it? Customer recovery from self-service technology failures. *Journal of Retailing*, *89*(1), 15–29. https://doi.org/10.1016/j.jretai.2012.10.004