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Consumers motivations to use self-checkout

Beatriz Magalhães Guedes Novais

Universidade Católica Portuguesa | Católica Porto Business School
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by

Beatriz Magalhães Guedes Novais

Under the Orientation of:

Paulo Alexandre de Oliveira Duarte

Universidade Católica Portuguesa | Católica Porto Business School

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Resumo

Esta dissertação de mestrado tem como objetivo compreender a motivação dos consumidores para usar a opção de self-service checkout e entender o perfil dos seus usuários.

Para atingir o objetivo, foi desenvolvida uma profunda revisão da literatura e, com esses fundamentos, foi proposto um modelo. Para validar as hipóteses elaboradas, um questionário on-line foi realizado e testado com 251 participantes. Para analisar os resultados, foi criada um modelo de Partial Least Squares Structural Equation Modelling (PLS-SEM).

Os resultados revelaram que os benefícios Economias de Tempo e Controlo estão positivamente correlacionados com a intenção de uso de um self-service checkout. Mas que uma característica psicológica como Necessidade de Interação representa um impacto negativo na intenção de uso. Também foi possível concluir que os consumidores mais velhos tendem a ser menos propensos ao uso de tecnologias de self-checkout.

Habitualmente os self-checkouts estão mais presentes em supermercados. Contudo, estão a tornar-se numa tendência em diferentes tipos de retalho, como restaurantes, moda, lojas de desporto, beleza, entre outros. Para além da função típica de pagamento, algumas destas self-service checkouts têm funções adicionais e mais interativas. Quando bem aceites pelos consumidores e implementados corretamente, as caixas de self-checkout permitem que as empresas obtenham eficiência e reduzam custos. No entanto, embora, como regra geral, a aceitação de self-checkout esteja a aumentar, é importante ter em consideração que a implementação desta tecnologia representa: investimentos monetários, realocação de funções de funcionários, risco de roubo, e possível falta de aceitação por parte do cliente.

Esta dissertação oferece informações relevantes que podem ser usadas do ponto de vista empresarial, para quem tenciona implementar ou publicitar um serviço semelhante.

Palavras-chave: Tecnologia de self-checkout, Motivações, Retalho, Estratégia omnichannel

Abstract

This master thesis aims to understand the consumers' motivation to use self-checkout and understand the profile of its users.

To achieve the objective, a deep literature review was developed, and with those foundations, a model was proposed. In order to validate the designed hypotheses, an online survey was conducted and contended with 251 participants. To analyze its results, a Partial Least Squares Structural Equation Modelling (PLS-SEM) was created.

The research reveals that benefits such as Time-Saving and Control are positively correlated with the Intention of Usage of a self-service technology (SST). But that a trait such as Need for Interaction represents a negative impact on the intention of usage. It was also possible to conclude that older consumers tend to be less prone to the usage of self-service technologies.

Self-service checkouts were usually seen at supermarkets but are becoming a trend across different types of retails such as restaurants, fashion, sports, beauty, among others. As well as additional features, rather than the only common option to pay. When well accepted and correctly implemented, self-service checkouts allow companies to gain efficiency and reduce costs. However, even though, as a general rule, the self-service check-out acceptance by consumers, and use are increasing, it is important to take into account what the implementation of self-service technology (SST) represents: monetary investments, employee and employee's job function reallocation, risk of robbery and ultimately potential lack of customer acceptance.

This paper provides important insights that can be used from a managerial point of view when thinking of implementing or advertising it an SST. Understandings of the traits of these consumers, demographics and preferences.

Keywords: Self-Service Technology, Motivations, Retail, Omnichannel strategy

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Introduction

The landscape of retail is changing, and with the rise of digital technologies, shopping has changed from purchasing products, through obtaining services, to live new experiences and at length, to construct a lifestyle. Consequently, retailers are increasingly faced with the challenge of purposefully designing their offerings as digital interactive platforms (DIPs) for interactional value creation. This movement spans the retail landscape from omnichannel store environments, and smart-connected retailing to entire retail ecosystems and more complex and interactive self-service technologies (STTs) can contribute to that (Wei et al., 2017).

Due to the growth of recent advancements in technology, there was an increase of self-service technologies (SSTs). SSTs are a combination of technology and self-service and are defined as technological interfaces that allow customers to produce a service without being dependent of direct service employee involvement. (H.-J. Lee & Lyu, 2016; Meuter et al., 2000).

Among the various types of SST, retail self-checkouts have grown at a fast pace (Holman, L. and Buzek, 2007). Retail self-checkouts are computerized systems that allow shoppers to scan, bag, and pay for items either by themselves or with minimal assistance from a cashier at retail stores (Alpert, 2008; H.-J. Lee et al., 2010).

It has been acknowledged that using self-service kiosks brings significant benefits for both consumers and retailers. Retailers can be more efficient and flexible in the use of their labor. For example, with self-checkouts, one cashier can serve several consumers in a command, which allows retailers to redeploy their employees to areas where particular customer service is needed (Holman, L. and Buzek, 2007).

Despite the already recurrent use of SST by retailers and the interest in STT not being new, the evaluation and measurement of the value of SSTs are becoming critical.

A survey conducted for NCR (a software provider) shows that almost half of the shoppers under the age of 45 prefer to use self-services in supermarkets (Orel & Kara, 2014). As of 2018, there were an estimated 350 stores in the world that offered a fully autonomous checkout process. The number of stores providing autonomous checkouts was forecast to grow substantially over the coming years, with 10,000 stores with autonomous checkouts anticipated by 2024 (Statistica, 2019).

The Self Service Technology Market size was valued at USD 16,06 billion in 2015 and is forecasted to exceed USD 42 billion by 2023, at 13,2% CAGR (Compound Annual Growth Rate) from 2016 to 2023 (Preeti Wadhwani, 2016). Furthermore, it is expected that the growing shift towards mobile transactions, as well as the demand from the retail sector and the increased automation, will impact the SST significantly in the coming years (Ankita Bhutani, 2018)

Self-service technologies have traditionally been mainly deployed in big-box supermarkets; this continues to evolve, with similar concepts popping up in different retail sectors (Lesonsky, 2017).

Sports goods like Decathlon Scan & Go, Fashion from fast to premium like Zara, Urban Outfitters, and Rebecca Minkoff, and also beauty like the innovative self-checkouts of Sephora (Caroline Baldwin, 2019; Gilliland, 2016; David Marino-Nachison, 2018; Binns, 2017; *LVMH*, 2015) are invested in SSTs. Restaurants like McDonald's have in-store kiosks in about 45% of their restaurants in Europe, through which customers can place an order without interacting with a human cashier (Sozzi, 2016).

Meanwhile, while retailers are motivated by cost reductions, efficiency, flexibility, productivity and improved corporate performance when adopting, it is imperative

also to examine the customers' shopping experiences, motivations, and profiles, I order to enhanced retailer service performance, customer satisfaction and loyalty SSTs (H.-J. Lee et al., 2013; Meuter et al., 2005). Despite the enormous examples of SST acceptance and success, some do not go according to plan as the example of Puget Consumers Co-op (PCC Community Markets) that in 2018 removed their self-checkout machines, a move praised by some shoppers who said they found them frustrating and tedious. The same situation occurred with American Retailer Target (*Consumer Connectivity Insights 2018 survey*, 2018). Moreover, according to Demoulin & Djelassi (2016), in European countries such as France, the majority of customers view the installation of self-checkouts in all stores unfavorably, and half still prefer traditional checkouts. In essence, self-checkouts only attract 10–15% of French customers in hypermarkets (Demoulin & Djelassi, 2016). At the same time, Statista Research Department conducted a survey in 2014 among 2803 consumers to understand if there were possible ways to improve the self-checkouts experience, and only 17% replied that there were no conceivable upgrades to be done (Statistica, 2014).

On the other hand, when successfully accepted, STTs are being associated by retailers to efficiency and cost reduction. However, there is a growing problem of thefts in the self-checkout. A study of 1 million transactions in the United Kingdom found losses incurred through self-service technology payment systems totaled 3,97% of the stock, compared to just 1,47% otherwise. Research shows that the main driver of this discrepancy is that everyday customers – those who would not normally steal by any other means – disproportionately take at self-checkouts (Taylor, 2016).

Even though that, as a general rule, SST acceptance and use are increasing, it is important to take into account that the implementation of SST represents monetary investments, employee and employee's job function reallocation, risk of robberies, and ultimately lack of customer acceptance. To incur such a procedure, from a managerial point of view, retailers must first understand if the implementation of SST matches their customer needs, and ultimately how to maximize the investment

to the fullest in order to adapt to the new retail landscape. To encourage engagement, retailers need to consider consumers' preferences and intentions to use self-checkout. While the literature reflects the great interest among practitioners and scholars in both the motivations of consumers to use self-checkout and the importance of an omnichannel strategy. There is also a lack of research focusing on both combined. Accordingly, the primary objective for this study will be to understand the motivations of the consumers to use self-checkout, while also understanding if omnichannel strategies affect those same motivations. To fulfil this main purpose, two tasks need to be completed:

1- Understand the motivations behind the usage of self-service in retail

2- Try to establish different user profiles regarding SSTs acceptance and use

Literature Review

1.1. SST and its usage

The automation of retail transactions is exponentially becoming the norm. The automated teller machine (ATM) is believed to have started this trend some decades ago. And it continues to today, online purchase of goods, online banking, self-service checkouts, in-room hotel checkout, automated airline check-in, and ticketing, pay at the pump gasoline, are some of a list of various examples (Dean, 2008).

Companies adopt self-service technologies (SSTs) to enhance their productivity (Walker et al., 2002) while providing customer satisfaction by offering new and convenient service channels (Curran et al., 2003; Orel & Kara, 2014; Rust & Espinoza, 2006). SSTs are defined as: 'technological interfaces that enable customers to produce a service independent of direct service employee involvement' (Meuter et al., 2000, p. 5)
The Self Service Technology Market size was valued at USD 16,06 billion in 2015 and is forecasted to exceed USD 42 billion by 2023, at 13,2% CAGR (Compound Annual Growth Rate) from 2016 to 2023 (Preeti Wadhwani, 2016).

From all the different types of SST, retail self-checkouts have grown at a faster pace (Holman, L. and Buzek, 2007). Retail self-checkouts are systems that allow shoppers to scan, bag, and pay for items either by themselves or with minimal assistance from a cashier at retail stores (Alpert, 2008; H.-J. Lee et al., 2010). Self-checkout counters help retailers fight the daily demand fluctuations regarding the adjustment of employee levels since consumers take over the role of checking their purchases.

Enabling reductions in labor costs (Elliott et al., 2008; H.-J. Lee et al., 2013; Schliewe & Pezoldt, 2010; Weijters et al., 2007)

Long lines and lengthy waiting times at checkout are significant reasons that motivate customers to turn to online shopping. (Lesonsky, 2017). Self-checkout aims to improve checkout operations whilst decreasing customers' waiting experiences (Morimura & Nishioka, 2016).

Self-service technologies have traditionally been mainly deployed in big-box supermarkets; however, similar concepts are growing up in different retail sectors (Lesonsky, 2017). Sports goods like Decathlon Scan & Go, Fashion from fast to premium like Zara, Urban Outfitters, and Rebecca Minkoff, and also beauty like the innovative self-checkouts of Sephora (Binns, 2017; Caroline Baldwin, 2019; David Marino-Nachison, 2018; Gilliland, 2016; *LVMH*, 2015) are some examples. Restaurants like McDonald's have in-store kiosks in about 45% of their restaurants in Europe, through which customers can place an order without interacting with a human cashier (Sozzi, 2016).
Despite the diversification, an online survey by GPShopper finds that consumers are significantly more interested in SST in some retail environments than in others. Fifty percent of respondents said they would like it when grocery shopping. However, fewer want the option in home goods stores (30 percent), fashion stores (27 percent), and beauty and cosmetic retailers (25 percent). Only 21 percent said they would like to see scan-and-go in sports and outdoors stores. Nevertheless, it's crucial to take into consideration the age of the survey participants. Not surprisingly, 77 percent of shoppers aged 18 to 34 like the general SST idea, but only 42 percent of shoppers 55 and older do. (Alpert, 2008)

When talking about SST, it's also relevant to mention the risk of robbery. A study of 1 million transactions in the United Kingdom found losses incurred through self-service technology payment systems totaled 3,97% of the stock, compared to just 1,47% otherwise. Research shows that the main driver of this discrepancy is that

everyday customers – those who would not normally steal by any other means – disproportionately take at self-checkouts (Taylor, 2016).
One of the main reasons offenders leverage this theft option is because they feel self-checkout theft is easier to get away with, either through established rationales or prior experiences (Stephanie Lin, 2018)

1.2. Generic motivation to the use of technology

Prediction and explanation of user adoption of new technology have enjoyed a long history of attention in both practice and academia. (Lin et al., 2007)

Rooted in the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980), Davis (1989) developed the technology acceptance model (TAM) that identifies potential drivers and inhibitors of technology acceptance. TAM suggests that beliefs about computer systems influence attitudes, which then leads to intentions and, ultimately, to system usage (Venkatesh, 2000). Those attitudes are influenced by the users' beliefs about the system's perceived ease of use and perceived usefulness.
Perceived ease of use refers to the extent to which a person believes that using a particular system will be free of effort, while perceived usefulness is defined as the extent to which a person believes that using a particular system will enhance his or her performance.
TAM has been empirically extended and sometimes replicated to explain various behaviors related to the adoption of technology (Lin et al., 2007).

Research has shown that consumers who are "ready" to use self-service technology are more likely to try it. Parasuraman (2000) proposed a "Technology Readiness Index" (TRI), which measures the "propensity to embrace and use new technologies for accomplishing goals in home life and at work." (Ananthanarayanan Parasuraman, 2000, p. 2). It suggests that the consumer has 228 mental enablers

and inhibitors that together determine predisposition toward technology. The TRI identifies four dimensions of technology belief that impact an individual's level of techno-readiness. Two of the dimensions are contributors, and two are inhibitors of technology adoption. The contributors are:

- Optimism – the degree to which individuals believe that technology can benefit their lives and give them more control over their life
- Innovativeness – a natural desire to experiment with new technologies, as well as to be a thought leader.

The inhibitors are:

- Discomfort – a feeling of lacking both control over technology and the confidence in making the technology work
- Insecurity – a need for assurance that a technology-based product, service, or process will operate reliably and accurately.

Computer anxiety (Igbaria & Parasuraman, 1989; Kay, 1993), is related to TRI, and it can be defined as the feeling of apprehension and fear people experience when considering using computer technology (Cambre & Cook, 1985; Scott & Rockwell, 1997). This anxiety is characterized by excessive timidity using computers, which may lead to negative comments against its usage (Meuter et al., 2005).

Also, technological centric, the Cognitive Complexity Theory (Ziefle & Bay, 2005) hypothesizes that technology adoption is a function of the difficulty of learning the procedural steps necessary to interact with the device appropriately.

1.3. Consumer motivations to use SST

1.3.1 Technology and SST adoption

Dabholkar (1996) was among the first to explore service quality for SSTs, specifically on-site options (i.e., self-service food ordering kiosks) (Dabholkar,

1996). She proposed the overall affect model. This model suggests that evaluations of service quality are not based on the attributes of the SST but are driven by two general predispositions: the attitude towards using technological products and the need for interaction with the service employee (Dabholkar, 1996).

The technological models explored in section 1.2 were also adapted to examine the consumers' motivations to use self-service checkout specifically.

Later, Meuter et al. (2003), as TAM (Venkatesh, 2000), also defended two consumer predispositions to be extremely relevant to the usage of SST: the need for interaction, as proposed by Dabholkar (1996) and technology anxiety (Dabholkar, 1996; Meuter et al., 2000). Meuter defined Technological anxiety: "specifically focuses on the user's state of mind regarding their ability and willingness to use technology-related tools" (Meuter et al., 2000, p. 2).

Related with the technological predisposition of the users of SSTs, some authors (e.g., Dabholkar & Bagozzi, 2002; Kinard et al., 2009) go further and consider social anxiety as another relevant characteristic. Defending that social anxiety may cause a feeling of lack of control over the SSTs in the presence of other customers (Dabholkar & Bagozzi, 2002). Customers may become anxious when others are watching them, thus reducing their intention to use SSTs in the belief that they are not easy to use (Dabholkar & Bagozzi, 2002; Kinard et al., 2009). Consequently, social anxiety may disorient customers and make SST usage difficult.

1.3.2 STT and attributes

Besides the overall affect model, Dabholkar (1996) also proposed the attribute-based model. According to it, consumers evaluate service quality using attributes related to the SST. The five characteristics include:

- The speed of delivery
- Ease of use (effort and complexity), later corroborated by W. Lee et al.,(2012)

- Reliability (accuracy) (Bitner, 2001; Davis et al., 1989)
- Control (Bateson, 1985)
- Enjoyment

Focusing also on the attributes related to the SST, Bitner (2001), drawing from an analysis of 823 critical incident encounters with SST (Meuter et al., 2000), suggested that two significant attributes affect the success of SST, reliability, and advantage. Reliability (defined as dependability and user-friendliness), endorsing Dabholkar's attribute-based model, and advantage (meaning that the SST either saved time or money or delivered some other customer benefit).

Walker & Johnson (2006) synthesized based on previous research what they believe to be the factors influencing the adoption and use of SST. Their list includes:

- Personal capacity (self-belief that the user is capable of using the machine successfully)
- Perceived risk (the extent to which the device is believed to be reliable and personal information are believed to be secure)
- Relative advantage (the extent to which SST is considered to be more convenient and faster than a traditional face-to-face encounter)
- Preference for personal contact (the degree to which the consumer prefers human interaction over interaction with a machine) (Walker & Johnson, 2006).

1.3.3 STT users vs. non-users

Regarding the profile of the users versus. non-users, for SST research, has focused on gender, demographics, and age, and only the later revealed significant conclusions. The study conducted by Dean, (2008) ratified the one performed by Simon & Usunier (2007): the increasing age harms preference for SST over employee contact, elder participants preferred employee contact (Dean, 2008;

Simon & Usunier, 2007). There is a behavioral predisposition for older consumers to avoid SST. Elderly consumers tend to be associated with relatively diminished confidence in their ability to use SST, a desire for human interaction, and attribution that SST is there to benefit the company rather than the consumer. Not surprisingly, older consumers reported significantly less willing to pay a premium on their grocery bill for express checkout (Dean, 2008).

H.-J. Lee et al. (2010) empirically explored the relationships among demographic factors - Gender; Age; Education and Income, consumer traits - Technology Anxiety; Need for interaction; Technology innovativeness, and intention to use retail self-checkouts (H.-J. Lee et al., 2010). Their study did not show strong direct correlations between demographics and the purpose of use but showed indirect ones. It was concluded that demographic factors indirectly influence intention to use retail self-checkouts through consumer traits. The authors draw the inference that individual differences in the use of retail self-checkouts can be attributed to consumer traits, which can be determined by some of the demographic factors.

Later, by reanalyzing gender differences, H.-J. Lee et al. (2013) found that most of the process of perceived service quality and usage was found to be similar between males and females ((H.-J. Lee et al., 2013). Only differential effects on ease of use and need for interaction across gender were empirically proved.

1.3.4 SST, benefits and motivations

Cetto et al. (2015) analyze and organize motivations from a different yet insightful perspective (Cetto et al., 2015). Pointing out that SST has various perceived benefits that led to both utilitarian and hedonic motivations. The authors defend that human motivations can be differentiated by being cognitive (utilitarian) as well as affective (hedonic) and that they are aimed primarily at individual gratification and satisfaction, which ultimately provides the theoretical basis for explaining why people engage in SST (McGuire, 1974). Following this line of thought is pertinent to distinguish and acknowledge both. Reflecting on the literature, Cetto et al., (2015),

considered the essential utilitarian benefits of using SST include time savings (Dabholkar, 1996), control (Bateson, 1985), reliability (Davis et al., 1989), ease of use (W. Lee et al., 2012), and avoidance of service employees (Meuter et al., 2000).

SST, ideally, allows for the actual transaction to be performed more quickly than by a service employee, allowing the customer to save time. They were thus offering time savings (Dabholkar, 1996; Dabholkar et al., 2003). Using SST also gives the user the feeling of being in control of the process of service delivery. (Bateson, 1985; Dabholkar, 1996; Dabholkar et al., 2003; Sarel & Marmorstein, 2003). Reliability refers to how accurately the purpose of the usage of the STT will be fulfilled (Dabholkar, 1996). Naturally, a customer is more likely to use SST if they work correctly. Due to technological accuracy, SST is perceived, by some, as being able to prevent mistakes a service employee might make, as for example charging a wrong price (Dabholkar, 1996; Dabholkar et al., 2003).

Ease of use is comprised of the effort, and complexity one has to endure when using an STT. (Davis, 1989; Dabholkar and Bagozzi, 2002; Dabholkar et al., 2003; Lee et al., 2012; Meuter et al., 2000). Avoiding interactions with the service employee which may be inevitable at the traditional service counter, is also seen as a benefit (Dabholkar, 1996; Dabholkar and Bagozzi, 2002; Lee et al., 2012; Meuter et al., 2000). The avoidance of service employee by consumers seems to be an issue that retailers are starting to take into consideration. Beauty retailer Sephora introduced in 2015 two different color baskets. Customers now have a choice between using a red basket if they would like assistance or a black basket if they would prefer to shop interruption-free, thus avoiding the service employee (Feldman, 2015). Affordable luxury fashion lifestyle brand Rebecca Minkoff also introduced in stores self-checkout the technology. One of the central reasons that prompted the decision was to get to the type of customer that wants a private or anonymous experience and doesn't want to talk with anyone in store (Binns, 2017)

When it comes to purpose as hedonic benefits, Cetto et al.,(2015) proposes: enjoyment, inherent novelty seeking, and challenges (Baethge et al., 2016).

Dabholkar (1996) states that customers are more likely to use SST if they enjoy it, and if the SST looks like being fun (Dabholkar, 1996). Langeard et al. (1981) also found that people who enjoy playing with machines prefer self-service options (Langeard, 1981). Similar to enjoyment is the novelty-seeking aspect of a technology that encourages and challenges customers to try new things. Customers with a higher inclination toward novelty-seeking are more willing to use technology-based products such as SST, have a stronger intrinsic motivation to use them, and enjoy the stimulation of trying new ways to approach old problems (Dabholkar & Bagozzi, 2002; Holbrook & Hirschman, 1982; Ananthanarayanan Parasuraman, 2000).

The last defended hedonic is the feeling of being challenged (Ghani et al., 1991; Koufaris, 2002; Novak et al., 2000). The challenges provided by an activity are the main core predictors of flow (Novak et al., 2000). The idea of flow was introduced by Csikszentmihalyi (1975) to "understand enjoyment […] as an ongoing process which provides rewarding experiences in the present" (Csikszentmihalyi, 1975) and is referred to as "a cognitive state" (Novak et al., 2000) derived from "activities which are enjoyable themselves" (Csikszentmihalyi, 1975). A feeling of satisfaction arises the person in question performs the activity successfully, approximately to a game (Koufaris, 2002). This positive technology experience affects both customer responses and the intention to return in the future positively (Koufaris, 2002).

The focus on benefits is sustained and justified on the means-end chain (MEC) theory. According to MEC theory (Gutman, 1997), customers perceive services and products in terms of attributes. Attributes are the means through which the desired outputs may be achieved. As positive feelings are only obtained from benefits, the desired ends can be seen as benefits (Woodside, 2004).

In other words, ultimately, customers use services and products because of their values and benefits. Therefore, whereas TAM explains how Perceived Usefulness and Perceived Enjoyment are linked to intentions to use and actual use, MEC theory mainly covers the relationships between attributes, benefits, and values and thus additionally provides the basis for the connection between utilitarian and hedonic benefits and values (Cetto et al.,2015).

1.3.5 Situational factors

Other authors defend that the analysis of the attitudes and motivation towards using SST is not complete without considering the situational factors. Collier et al., (2015) research focused on Location Convenience, Employee Presence, Tolerance to Wait, Order Size. The impact of these factors was translated in Perceived Time Pressure and Shopping Effectiveness, which ultimately impacts the attitude towards using and SST (Collier et al., 2015).

Later, Demoulin & Djelassi, (2016) analyzed the following situational variables: Time Pressure, Small basket, Coupons, Queue length SST, Queue length S.S. and were able to conclude that all of them affect the use of SST (Demoulin & Djelassi, 2016).

Morimura & Nishioka, (2016) analyzed the situational factors from a distinct and different angle, constructing three different categories: social injustice, unattractiveness, and distraction (Morimura & Nishioka, 2016). Social injustice refers to whether the customer's wait is explained and socially justified. The unattractiveness refers to the physically unattractive environment of a checkout counter and how it contributes to customers' negative evaluations and feelings such as anger and regret (Grewal et al., 2003; Pruyn & Smidts, 1998; Voorhees et al., 2009). Lastly, distraction is the degree of distraction perception during the customer's waiting period with facilities around the checkout counter offering information (Davis et al., 1992; Maister, 1985; Van Riel et al., 2012).

1.4. Omnichannel retail

In the past years, the digitalized technology revolution has transformed how retail works and its offerings. The omnichannel concept is perhaps one of the most important revolutions in the business strategy of recent years, with both practical and theoretical implications (Bell et al., 2014; Brynjolfsson et al., 2013; Verhoef et

al., 2015). Business experts apply the term omnichannel to narrate a form of retailing that gives customers the opportunity to not only shop across the channel but to connect with the brand anytime and anywhere. Offering them a complete, distinctive shopping experience that tears down the barriers that before existed between physical and virtual stores. (Beck & Rygl, 2015; Lazaris & Vrechopoulos, 2014; Melero et al., 2016; Rigby, 2011; Verhoef et al., 2015).

Commonly, shoppers and retailers were seen as having different roles and parts in the process of retail value creation. Retailers perceived shoppers as being mostly passive and recipients of their offers. With the rush of digital technologies, however, shopping has altered from purchasing products, through receiving services to living experiences and, ultimately, to transform. (Wei et al., 2017).
Retailing has morphed to a space of value co-creation. Upgraded technology solutions permit a coherence in the shopping experience and can leverage both the benefits of e-commerce and in-person, physical store shopping (Linzbach et al., 2019). Retailers must adapt to consumers' demands by incorporating new omnichannel technologies and practices to offer the best real-life and virtual purchasing options. In other words, physical stores should use a mixed model, combining the immediacy and multi-sensorial experience of a brick-and-mortar store with the access, interactivity, and convenience of an online one (Alexander & Alvarado, 2017).

The overall attempt of brick-and-mortar retailers is to digitally engage physical shoppers on their journey with a personalized shopping experience, thus creating a kind of 4.0 multichannel experience, an omnichannel one (Linzbach et al., 2019). This new reality has a disruptive impact on the retail sector, forcing companies to transform their business models and customer relationship management strategies. Over the past years, a wide variety of technological innovations have been implemented in retail, such as augmented reality, digital signals, quick response (Q.R.) codes, beacons, tablets, and free Wi-Fi (Piotrowicz & Cuthbertson, 2014).

Self-service technologies (STTs) can be too a crucial tool to create this so call and essential omnichannel strategy. Sephora, a French multinational chain of beauty stores and personal care opened in 2015 Sephora Flash, a multifunctional self-checkout technology, with features such as detailed information about all products via NFC (Near Field Communication), the possibility to add to physical shopping basket items that are not on stock and history of previous purchases ((LVMH, 2015).

2. Conceptual model, hypotheses and research questions

The objective of the research is to analyze and understand what drives consumers to utilize self-service checkout. To do it, a conceptual model will be drawn. This research will test, combine, and adapt variables and models from previous research while also adding new variables. These new variables will be the connection point of the previous research and the nowadays challenging retail world. They will be portraying some key aspects that help to create an omnichannel strategy.

The model will have as base the benefits division, proposed by Cetto et al.,(2015): Utilitarian Benefits and Hedonic Benefits. The rationale behind the choice lays in the fact that the reason customers adopt SST "depend upon the benefits they can receive from SST usage" (Yan et al., 2013, p. 3).
All the constructs that are going to be tested and their respective authors can be checked in Table 2. There are, however, two new proposed values: Information and History – Table 1.

2.1. Utilitarian Benefits

2.1.1 Time-Saving

According to Dabholkar, self-services technologies allow the process of performing the task to be quicker than when performed by a service employee, resulting in time savings for the customer. (Dabholkar, 1996; Dabholkar et al., 2003). When having in mind time saving, advantages include less time taken for the actual service and shorter waiting time (Cetto et al., 2015; Dabholkar, 1996)

H1: Time Saving is a benefit that positively affects the intention of usage Self-Checkout

2.1.2 Reliability

When the subject is technology, it is especially relevant to guarantee it's reliability to the customer, thus reducing the feeling of uncertainty (Walker et al., 2002).
A customer will be more likely to use an SST if it works properly. Reliability can be defined as how accurately the orders will be fulfilled by SST (Dabholkar, 1996) Given the technological accuracy, SST can be seen as prevention of mistakes that a service employee could incur (Cetto et al., 2015; Dabholkar, 1996; Dabholkar et al., 2003).

H2: Reliability is a benefit that positively affects the intention of usage Self-Checkout

2.1.3 Control

Since the SST is not performed by a service employee, it gives the user a feeling of being in control of the process, considering it is the user who is being responsible (Bateson, 1985; Dabholkar, 1996; Dabholkar et al., 2003; Sarel & Marmorstein, 2003).

H3: Control is a benefit that positively affects the intention of usage Self-Checkout

2.1.4 Ease of Use

The effort one employs when using technology, and the degree to which it is or is not complicated are of crucial relevance for the usage decision. Effort and complexity comprise the concept: Ease of Use (Cetto et al., 2015; Dabholkar, 1996).

This concept is exceptionally significant for customer adoption of SST (Cetto et al., 2015; Dabholkar & Bagozzi, 2002; Dabholkar et al., 2003; Davis, 1989; W. Lee et al., 2012; Meuter et al., 2000)

H4: Ease of Use is a benefit that positively affects the intention of usage Self-Checkout

2.1.5 Avoidance of Service employee

When choosing the traditional service counter, interacting with the service employee may be inevitable. However, when using SST, it is not, and this avoidance can also be seen as a benefit (Cetto et al., 2015; Dabholkar, 1996; Dabholkar & Bagozzi, 2002; W. Lee et al., 2012; Meuter et al., 2000).

H5: Avoidance of service employee a benefit that positively affects the intention of usage Self-Checkout

2.1.6 Information and History

Upgraded technology allows a coherence in the shopping experience and can offer both the benefits of e-commerce and in-person, physical store shopping (Linzbach et al., 2019). Physical stores should use a mixed model, combining the brick-and-mortar experience with the interactivity and convenience of an online one (Alexander & Alvarado, 2017).

Brands like Oasis U.K (fashion retailer), Guess (lifestyle apparel brand), Puma (sportswear's brand), McDonald's (food chain) are some of a list of various examples that allow consumers to visit and explore detail information about the products online while in-store, as per table 1 (Fontanella, 2016; Johnson, 2018; Salsberg, 2017; Vogue, 2017).

The beauty retailer Sephora creates an omnichannel feeling by connecting shoppers' online purchases to their in-store visits. Customers can use in-store tablets to access their "Beauty Bag" account while shopping. By integrating the client's history in its in-store communication channel, Sephora can help customers keep track of products of their previous purchases and of new desired products (Fontanella, 2016; *LVMH*, 2015)

H6: Information is a benefit that positively affects the intention of usage Self-Checkout

H7: History is a benefit that positively affects the intention of usage Self-Checkout

2.2. Hedonic Benefits

Previous research suggests that future work about SST usage should also analyze hedonic reasons (Bagozzi, 2007; Cetto et al., 2015; Venkatesh, 2000)

2.2.1 Enjoyment

Customers are more inclined to use SST if they appear to be fun (Cetto et al., 2015; Dabholkar, 1996). Langeard et al. (1981) concluded that people who enjoy playing with machines have a preference for using SST (Langeard, 1981). Besides, enjoyment benefit plays an essential role for customers when assessing technological alternatives like SST.

H8: Enjoyment is a benefit that positively affects the intention of usage Self-Checkout

2.2.2 Inherent Novelty Seeking

Another interesting aspect is the novelty-seeking side of technology that motivates users to try new things. Customers with a higher inclination toward novelty-seeking are more willing to use self-service technologies, and consequently be more interested in using SST when it's presented with new features, valuing new ways to

approach new problems (A., 2000; Cetto et al., 2015; Dabholkar & Bagozzi, 2002; Holbrook & Hirschman, 1982).

H9: Inherent Novelty Seeking is a benefit that positively affects the intention of usage Self-Checkout

2.2.3 Challenges

The feeling of being challenged is another hedonic benefit (Cetto et al., 2015; Ghani et al., 1991; Koufaris, 2002; Novak et al., 2000).

According to Novak et al., (2000), the challenge an activity might present is the most relevant predictor of flow (Novak et al., 2000). The concept of flow was first introduced by Csikszentmihalyi, (1975) and is referred to as a cognitive state derived by the focus and amusement in performing an activity (Cetto et al., 2015; Csikszentmihalyi, 1975; Novak et al., 2000).

Using an SST properly can be a challenge, and the user may consider the activity as a demanding experience to go without failing, similar to a game where a feeling of the satisfaction arises with the successful completion of the task (Koufaris, 2002). This positive technology experience affects both the customers' response, the intention of usage and aim to return (Cetto et al., 2015; Koufaris, 2002)

H10: Challenges is a benefit that positively affects the intention of usage Self-Checkout

2.2.4 Attractiveness

Studies focusing on satisfaction and the physical store environment have already been done (Baker et al., 1994). Customers rely on appearance like the layout of the physical facilities, to develop expectations in order to make quality judgments (Wilson et al., 2016; Zeithaml et al., 1993).

Studies have also shown that aesthetics play an important role in human appreciation and attitudes towards technologies (Schenkman & Jönsson, 2000; Shin,

2012; Tractinsky, 2004). Shin (2012) concluded that the role of aesthetic is a significant determinant of smartphone using intention (Shin, 2012)

Morimura & Nishioka, (2016) analyzed the role of unattractiveness in SST. And concluded that it has negative effects on SST usage and SST usage experience (Morimura & Nishioka, 2016). The unattractiveness refers to the physically unattractive environment of a checkout counter and how it contributes to customers' negative evaluations and feelings such as anger and regret (Grewal et al., 2003; Pruyn & Smidts, 1998; Voorhees et al., 2009).

When thinking about user experience with technology, Sutcliffe (2009) defends that in order to expand interaction and engagement: design and aesthetics need to be taken into consideration. “Quality aesthetic design will evoke pleasure and mild arousal” (Sutcliffe, 2009, p. 7).

H11: Attractiveness is a benefit that positively affects the intention of usage Self-Checkout

2.3. Traits

As seen, the growth and implementation of new technologies are revolutionizing the retail environment. However, not all consumers choose or are interested in using them, nor do all see these changes as advances (Dabholkar, 1996; Igbaria & Parasuraman, 1989; Kay, 1993; Meuter et al., 2000; Venkatesh, 2000).

2.3.1 Technological Anxiety

One great predictor of SST interest in usage is technological anxiety (Dabholkar, 1996; H.-J. Lee et al., 2010; Meuter et al., 2000).

Similar to computer anxiety (Igbaria & Parasuraman, 1989; Kay, 1993), technological anxiety takes a broader scope. Meuter (2000) defined technological

anxiety: “specifically focuses on the user’s state of mind regarding their ability and willingness to use technology-related tools” (Meuter et al., 2000, p. 2).

Technology anxiety was found to be a better predictor of SST usage than demographic factors (Meuter et al., 2000). Oyedele and Simpson (2007) also demonstrated that they are more likely to use SST (Oyedele & Simpson, 2007)

H12: Consumers that have Technology Anxiety will be less inclined to use Self-Checkout

2.3.2 Need for Interaction

For many customers, human interaction is essential, especially to evaluate a service (Bitner, 2001; Dabholkar, 1996; Surprenant & Solomon, 1987). Some of them believe that the use of machines dehumanizes the shopping experience (Anantharanthan Parasuraman et al., 1985). Studies showcase that people have different perceptions of automated technologies based on how vital the human contact in retail is to them (Dabholkar, 1996; Forman & others, 1991; Meuter et al., 2003; Venkatesh, 2000). “Personal contact is important to consumers with a high need for interaction” (H.-J. Lee et al., 2010, p. 51).
The SST diminishes interpersonal interaction, due to that SST may not be considered as an option for these consumers (Dabholkar, 1996; H.-J. Lee et al., 2010; Meuter et al., 2000)

H13: Consumers that express Need for interaction will be less inclined to use Self-Checkout

2.3.3 Social Anxiety

Some authors also consider social anxiety as relevant to usage intention (Dabholkar & Bagozzi, 2002). Social anxiety is defined as the “discomfort in the presence of others” (Fenigstein et al., 1975, p. 523).
Accordingly, customers who have and experience social anxiety may become anxious when others are watching them, thus reducing their intention to use SSTs

in the belief that they are not easy to use. (Dabholkar & Bagozzi, 2002; Kinard et al., 2009). Consequently, social anxiety may disorient customers and make SST usage difficult (Dabholkar & Bagozzi, 2002).

H14: Consumers that express Social Anxiety will be less inclined to use Self-Checkout

2.4. Demographics

Research on STT has already focused on the development of profiles for its users having as criteria demographic characteristics (Bateson, 1985; Dabholkar et al., 2003; Eastlick, 1996; Greco & Fields, 1991; H.-J. Lee et al., 2010; Wilson et al., 2016).

However, studies found little or somewhat contradicting results (Dean, 2008; H.-J. Lee et al., 2010, 2013; Simon & Usunier, 2007). An analysis investigating the age and adoption of innovative technologies found that about half of the 228 studies established no relationship (H.-J. Lee et al., 2010; Rogers, 2003).

2.4.1 Age and Gender

In a study performed by Eastlick (1996) on the adoption of interactive teleshopping, it was determined that the non-users were older, less educated, and in lower-income brackets than adopters (Eastlick, 1996).

Some studies revealed that either directly or indirectly, an increase in age harms the preference for self-service technologies (Dean, 2008; Simon & Usunier, 2007). Dean (2008) found that there is a behavioral tendency for older consumers to be less inclined to use SST. Elderly consumers tend to be linked with lower technological confidence and, consequently, less self-assured of their capacity or willingness to use STT (Dean, 2008).

H15: Increase in Age impacts negatively the intention to use Self-Checkout

Females tend to experience higher anxiety than males in using technologies (Frenkel, 1990). H.-J. Lee et al., (2010) focused on gender differences in consumer evaluations of service quality in SST and concluded that help or personal attention from a store employee may still be crucial for females.

H16: Female are less inclined to use Self-Checkout

2.5. Hypotheses

UTILITARIAN BENEFITS	
H1	Time-Saving is a benefit that positively affects the intention of usage Self-Checkout
H2	Reliability is a benefit that positively affects the intention of usage Self-Checkout
H3	Control is a benefit that positively affects the intention of usage Self-Checkout
H4	Ease of Use is a benefit that positively affects the intention of usage Self-Checkout
H5	Avoidance of service employee a benefit that positively affects the intention of usage Self-Checkout
H6	Information is a benefit that positively affects the intention of usage Self-Checkout
H7	History is a benefit that positively affects the intention of usage Self-Checkout
HEDONIC BENEFITS	
H8	Enjoyment is a benefit that positively affects the intention of usage Self-Checkout
H9	Inherent Novelty Seeking is a benefit that positively affects the intention of usage Self-Checkout
H10	Challenges is a benefit that positively affects the intention of usage Self-Checkout

H11	Attractiveness is a benefit that positively affects the intention of usage Self-Checkout
TRAITS	
H12	Consumers that have Technology Anxiety will be less inclined to use Self-Checkout
H13	Consumers that express Need for interaction will be less inclined to use Self-Checkout
H14	Consumers that express Social Anxiety will be less inclined to use Self-Checkout
DEMOGRAPHICS	
H14	Increase in age impacts negatively the intention to use Self-Checkout
H16	Female are less inclined to use Self-Checkout

Table 1- Proposed hypotheses

2.6. Model

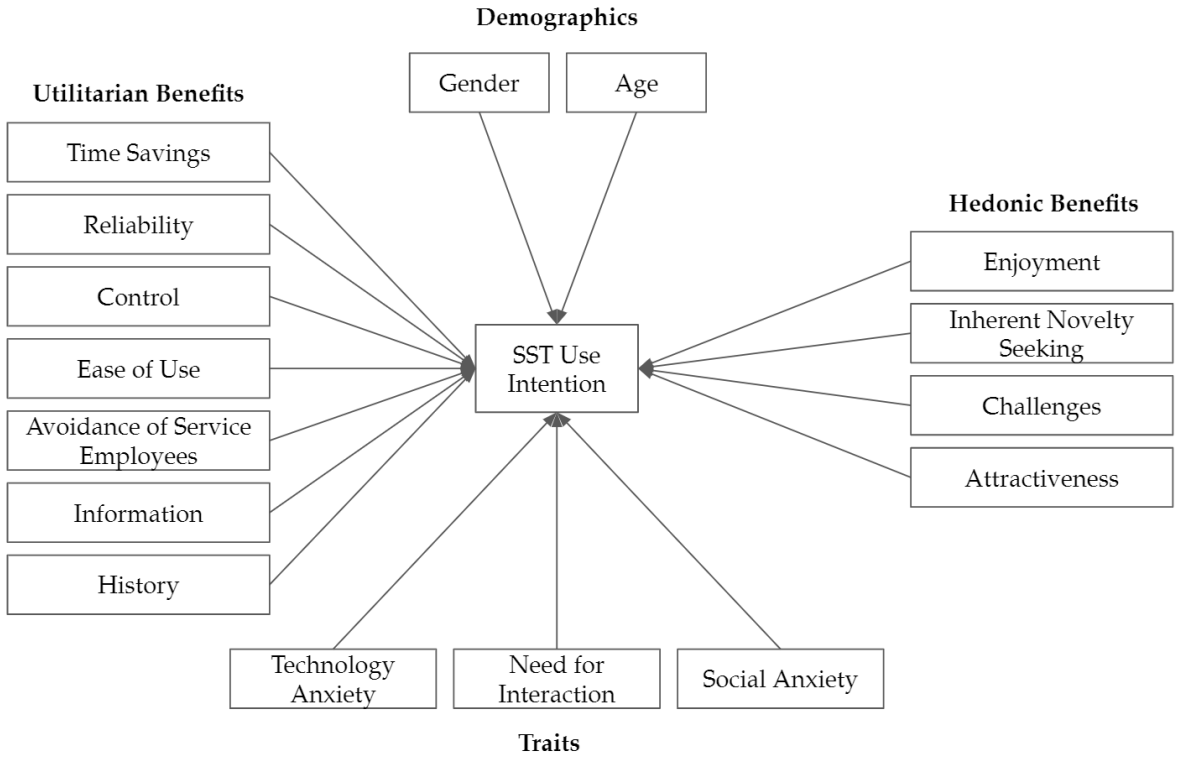

Figure 1 - Proposed Model

Variable	Definition	Examples of Companies
Information New Proposed Variable	Refers to the online information provided about the product on the SST as per the e-commerce website	Oasis U.K fashion retailer: iPad with on-the-spot, accurate, and up-to-date product information. The iPad also acts as a cash register (Fontanella, 2016) Guess lifestyle apparel brand: allows customers to browse "look books" (Salsberg, 2017) Puma sportswear brand: customers can design their own shoes online (Salsberg, 2017) Sephora beauty retailer: In addition to beauty workshops and complimentary makeovers, customers can use in-store tablets to access their "Beauty Bag" account while shopping. (Fontanella, 2016)

		McDonald's food chain: has detailed product information as well as calories of each ingredient (Johnson, 2018) Massimo Dutti Highstreet fashion brand: provides trough "smart mirrors" access to look books and detailed information about the product such as color, size, and composition. (Vogue, 2017)
History New Proposed Variable	Refers to the history of both online and in-store purchases about the consumer, ensuring a cohesive strategy	Sephora beauty retailer: In addition to beauty workshops and complimentary makeovers, customers can use in-store tablets to access their "Beauty Bag" account while shopping. (Fontanella, 2016)

Table 2 - New Proposed Constructs

Variable	Definition	Author
Time-Saving	Refers to the time saved by using SST instead of the action being performed by the service employee	Dabholkar, 1996; Dabholkar & Bagozzi, 2002
Reliability	Reliability refers to how accurately the orders will be fulfilled by SST	Dabholkar, 1996
Control	Refers to the user's feeling of being in control of the process of service delivery when being responsible for the service him- or herself	Bateson, 1985; Dabholkar, 1996; Dabholkar et al., 2003; Sarel & Marmorstein, 2003
Ease of use	Refers to effort and complexity – these are related and comprised in the concept ease of use	Dabholkar, 1996
Avoidance of service employee	Avoiding social interactions with the service employee	Dabholkar, 1996; Dabholkar and Bagozzi, 2002; Lee et al., 2012; Meuter et al., 2000
Enjoyment	"the feeling arising intrinsically from interacting with […] or from the novelty aspect" of a technology	Dabholkar, 1996,p. 35
Inherent Novelty Seeking	The desire to seek out new stimuli	Hirschman, 1980, p. 284
Challenges	The benefit of the customer perceiving the SST as a demanding experience to go through the process without fail. "Comparable with a game, a feeling of the satisfaction arises if he or she succeeds in doing so	Koufaris, 2002
Attractiveness	Attractiveness will refer to the physically attractive environment of a checkout counter and how it contributes to customers' positive feelings and evaluations such as satisfaction and pleasure.	Voorhees et al., 2009 Morimura & Nishioka 2016

Technology Anxiety	The fear and apprehension about using all forms of technology	Meuter et al., 2003 Lee, Cho, Xu, and Fairhurst 2010
Need for interaction	The extent to which consumers importantly perceive human interaction during the experience	Dabholkar, 1996 Lee, Cho, Xu, and Fairhurst 2010
Social Anxiety	The anxious feeling of using incorrectly the STT in the presence of other	Dabholkar & Bagozzi, 2002 Kinard et al., 2009

Table 3 - Well Studied Constructs

3. Methodology

As previously mentioned, the objective of the study is to understand what motivates consumers to use SST and to draw profiles of those who use it. To test the hypotheses in the conceptual model, a survey was developed based on questions and scales adapted from previously validated multi-item scales to foster reliability and validity of measurement. And others, Information (IN), History (HI), and Attractiveness (AT), were created for the purpose of this experiment, but logical deducted from previous literature. Table 4 depicts in detail the scales used for each construct.

The software used for the survey[1] was Google Forms, presenting the questions in English with respective translation for Portuguese.
It was made clear to the participants what self-service checkout is, and the purpose of the survey. The survey was distributed only online, as it is more convenient and easier to spread. The link of the survey was shared via social media networks such as LinkedIn, Facebook, and Instagram. It was online for 11 days and counted with 253 participants.

The survey was organized in several parts, being the first devoted to assessing the demographic characteristics of the respondents, including age, gender, level of education, and monthly income.

After the demographics, followed questions regarding the traits. Those questions were chosen to be presented before the SST related questions, with the objective of trying to guarantee the best possible unbiased answers. To address Technological Anxiety (TA) (Meuter et al., 2003) and Need for Interaction (NI) (Dabholkar, 1996)

[1] Full survey in Appendix 1

seven Lickert scale from strongly disagree (1) to strongly agree (7) and for Social Anxiety (SA) (Fenigstein et al., 1975) from one to four.

Despite the focus of the present study being measured through the intention of use, it was also found relevant to understand the experience the participants had with SST. To that end, before questioning the benefits of the self-service checkout, it was asked to the participants if they had already had contact with SST. If the answer was yes, it was then questioned the frequency, from almost never to always, and then in which type of stores (supermarket, restaurants, beauty, fashion, sports).

Since the circumstances meant to be tested on the research are not, as a general rule, present in abundance in the retail world, the test of the hypotheses was done based on usage intention. Means end chain (MEC) theory does not explicitly link value to behavioral intention, but several empirical studies have confirmed their relationship (Jones et al., 2006; Parasuraman and Grewal, 2000). This benefit-value intention linkage forms the basis for the research model. To measure the dependent value, Intention of Usage (IU), two questions were used, U1 was directly retrieved from (Elliott et al., 2008), and U2 was constructed.

Subsequently, the last part of the survey was dedicated to the Hedonic and Utilitarian Benefits. Five Likert scale, scaled from strongly disagree (1) to strongly agree (5) was used, once again, the scale point was chosen to match the previous studies from where the scale was retrieved (Belk, 1974; Cetto et al., 2015; Dabholkar, 1996). For the Utilitarian Benefits, there were two new proposed variables, Information (IN) and History (HI), since they were never studied in such settings or similar contexts; the questions need to be created. They were logically deducted from previous research focused on omnichannel strategy (Linzbach et al., 2019)

Variable	Questions
UTILITARIAN BENEFITS	
Time-Saving (TS)	**Dabholkar (1996) & Cetto et al(2015)** TS1 I believe I would need a lot of time for using the Self-Service Checkout TS2 I believe the paying process with the Self-Checkout is very quick. TS3 I believe the waiting time for using the SST is very quick. TS4 Shopping with the SST would allow me to save time
Reliability (RE)	**Dabholkar (1996) & Cetto et al (2015)** RE1 I believe that using the SST is accurate (means I will get just what I ordered) RE2 I believe using the SST would result in errors in the order RE3 Using the SST is something I don't expect to work very well. RE4 I believe using the SST is reliable.
Control (CO)	**Dabholkar (1996) & Cetto et al (2015)** CO1 The usage of the SST gives me control. CO2 The usage of the SST lets me be in charge of the right result. CO3 The usage of the SST lets me be in charge of the right price.
Ease of use (EU)	**Dabholkar (1996) & Cetto et al (2015)** EU1 I believe the usage of the SST is complicated EU2 I believe the usage of the SST takes a lot of effort EU3 I believe the usage of the SST is slow and complex
Avoidance of service employee (AS)	**Dabholkar (1996) & Cetto et al (2015)** AS1 Personal attention by the service employee is not important to me. AS2 It does not bother me to use a machine when I could talk to a person instead.
Information (IN) New Proposed Variable	**Created by logical deduction of: Linzbach et al., (2019).** IN1 I would be more likely to use SST if it has detailed information about the product IN2 2 I would use the SST if they would display similar information like their website about a product
History (HI) New Proposed Variable	**Created by logical deduction of: (Linzbach et al., (2019).** HI1 I would be more likely to use an SST if it had access to my history of purchases H12 I would be more likely to use an SST if I could log in with the same user than website/app
HEDONIC BENEFITS	
Enjoyment (EN)	**Dabholkar (1996) & Cetto et al (2015)** EN1 I believe it would be enjoyable to use the SST. EN2 I believe it would be exciting to use the SST.

	EN3 I believe it would be pleasant to use the SST. EN4 I believe it would be interesting to use the SST.
Inherent Novelty Seeking (INS)	**Mehrabian and Russell (1974) & Cetto et al (2015)** INS1 I am always seeking new ideas and experiences. INS2 When things get bored I like to find new and unfamiliar experiences INS3 I prefer a routine way of doing things to experimenting with new things INS4 I like to experience novelty and change in my daily routine INS5 I would like to experience novelty and change in the SST
Challenges (CH)	**Novak et al., (1998) & Cetto et al (2015)** CH1 Using the SST challenged me to perform to the best of my ability CH2 Using the SST provided a good test of my skills
Attractiveness (AT)	**Created by logical deduction of: Morimura & Nishioka (2016)** AT1 If the SST is aesthetically appealing, I would be more likely to use it AT2 If the SST is physically pleasing it would give me satisfaction, thus increasing my likelihood of using it positively AT3 I would not use SST if it was not aesthetically appealing
TRAITS	
Technology Anxiety (TA)	**Meuter et. al (2003)** TA1 I am confident I can learn technology-related skills. TA2 I have difficulty understanding most technological matters TA3 I feel apprehensive about using technology TA4 When given the opportunity to use technology, I fear I might damage it in some way TA5 I am sure of my ability to interpret the technological output TA6 Technological terminology sounds like confusing jargon to me TA7 I have avoided technology because it is unfamiliar to me TA8 I am able to keep up with important technological advances TA9I hesitate to use technology for fear of making mistakes I cannot correct
Need for interaction (NI)	**Dabholkar (1996)** NI1 Human contact in providing services makes the process enjoyable for the customer NI2 I like interacting with the person who provides the service NI3 Personal attention by the service employee is not very important to me
Social Anxiety (SA)	**Fenigstein et al (1975)** SA1 It takes me time to overcome my shyness in new situations SA2 I have trouble working when someone is watching me SA3 I get embarrassed very easily

	SA4 I don't find it hard to talk to strangers SA5 I feel anxious when I speak in front of a group SA6 Large groups make me nervous
INTENTION OF USAGE	
Intention of Usage (IU)	IU1: In the future, how likely is it that you would use self-scanning technology if it were available at the store in which you are shopping? **Elliott, et all (2013)** IU2: If SST are available at the store, they are your first choice?

Table 4 - Scales

4. Results

4.1. Demographics

The survey yielded a total of 251 complete and valid responses. This sample consisted of 164 female (64,8%) and 89 male (35,2%). Participants age range between 15 and >61; however, the majority of the participants have an age between 19-30 (46,6%).

Measure	Items
Gender	Male (n=89; 35,2%)
	Female (n=164; 64,8%)
Age	15-18 (n=35; 13,8%)
	19-30 (n=118; 46,6%)
	31-40 (n=30; 11,9%)
	41-50 (n=39; 15,4%)
	51-60 (n=18; 7,1%)
	>61 (n=13; 5,1%)
Education	Secondary Education (n=72; 28,5%)
	University - Bachelor (n=94; 37,2%)
	University - Master (n=84; 33,2%)
	University - PhD (n=3; 1,2%)
Income	€ 0-700 (n=81; 32%)
	€ 701-1300 (n=87; 34,4%)
	€ 1301-2000 (n=61; 24,1%)
	€ 2001+ (n=24; 9,5%)

Table 5 - Demographic information about the respondents (n=251)

4.2. STT usage

Even though the survey and present study's methodology is to measure the intention of usage, to better analyze the sample, it was also considered relevant to analyze the actual usage of self-service technologies. To that end, three questions were asked; Table 6 presents the questions and respective results.

When it comes to having ever used self-checkout in retail, the majority answered – yes (79,4%). The types of retail where the self-checkout is most used are unsurprising: Groceries (87,2%) and Restaurants (47,8%), where traditionally, this technology is more present.

Regarding the periodicity of the usage, 36,1% of the participants replied that they use it "Often" and only 11,5% chose the "Always" option.

Measure	**Items**
Have you ever used the self-checkout in retail?	Yes (n=201; 79,4%) No (n=52; 20,6%)
If yes, in what type of retail?	Groceries (n=177; 87,2%) Fashion (n=62; 30,5%) Restaurants (n=97; 47,8%) Sport Stores (n=39; 15,4%) Department Stores (n=27; 13,3%) Beauty Stores (n=0; 0%)
If yes, how often do you use it?	Almost Never (n=49; 23,6%) Often (n=75; 36,1%) Very often (n=60; 28,8%) Always (n=24; 11,5%)

Table 6 - SST Usage (n=252)

4.3. Measurement quality

Before proceeding with the computation of the scale scores, it needs to be guaranteed that the validated scales hold reliability (internal consistency) and validity. For it, using the software PLS must be performed:

- Factor Loading
- Cronbach alpha
- Composite Reliability
- Average Variance
- Variance inflation factor (VIF)
- Fornell-Larcker Criterion

In PLS, individual item reliability is assessed by examining the loadings of the measures with their respective construct. Many researchers accept items with loadings equal or above 0,7; this entails that there is a more shared variance between the construct and its measure than error variance (Carmines & Zeller, 1979). Other researchers, however, only removed the loadings when they are below 0,4 (Hulland, 1999). For the present analysis, loadings below 0,4 will not be considered, and loadings between 0,4 and 0,7 will be carefully analyzed.
Table 7 illustrates all the approved factor loadings; it's possible to see that as a general rule, they are all above 0,7, and the few ones that are below 0,7 are greater than 0,4.

The second test is the Cronbach alpha. This index calculates the internal consistency between items (Pallant, 2013). Ideally, the Cronbach alpha coefficient of a scale should be above (α>0,7). Cronbach is sensitive, and with shorter scales (e.g., scales with less than ten items) is normal to find low Cronbach values (e.g., 0,5) (Pallant, 2013). All construct passed the test, except for Avoidance of Service Employee (AS), with a Cronbach alpha of ,554. Avoidance of Service Employee (AS) is a construct with only two items, so the low result is not surprising. However, to guarantee the

reliability of the model, AS will not be used further in the model, as such, Hypotheses 4 cannot be tested.

The criterion of Fornell-Larcker (1981) has been commonly used to assess the degree of shared variance between the latent variables of the model. According to this criterion, the convergent validity of the measurement model can be assessed by the Average Variance Extracted (AVE) and Composite Reliability (CR) (Fornell & Larcker, 1981). AVE measures the internal consistency; it measures the level of variance captured by a construct versus the level due to measurement error. This value should be above 0,5 to be considered acceptable (Fornell & Larcker, 1981; Memon & Rahman, 2013)
The Composite Reliability (CR), on the other hand, is similar to Chronbach Alpha, to the extent that it also measures the internal consistency. However, it takes into consideration the factor loadings of the items. To pass the test, it should also be higher than 0,7 (Memon & Rahman, 2013).

Another important test to guarantee the correct analysis of results it to analyze the VIF, the occurrence of a VIF greater than 3,3 is an indicator that the model may be contaminated by common method bias (Kock, 2015). Some items presented a VIF higher than 3,3. Consequently, they needed to be deleted. Therefore, it will not be possible to test: H6 Information (IN) and H11 Attractiveness (AT), Table 9.

Table 7 presents all the approved items, constructs, and individual results.

Construct	Item	Factor Loading	VIF	Cronbach's Alpha	Average Variance Extracted	Composite Reliability	Nº of items
UTILITARIAN BENEFITS							
Time-Saving (TS)	**TS1**	0,748	1,437	0,825	0,657	0,884	4
	TS2	0,883	2,459				
	TS3	0,726	1,677				

	TS4	0,873	2,265				
Reliability (RE)	**RE1**	0,776	1,524	0,766	0,587	0,85	4
	RE2	0,665	1,375				
	RE3	0,783	1,554				
	RE4	0,83	1,737				
Control (CO)	**CO1**	0,875	1,912	0,809	0,723	0,886	3
	CO2	0,905	2,318				
	CO3	0,765	1,573				
Ease of use (EU)	**EU2**	0,945	2,756	0,888	0,899	0,947	2
	EU3	0,951	2,756				
History (HI) New Proposed Variable	**HI1**	0,927	2,077	0,837	0,86	0,925	2
	HI2	0,928	2,077				
HEDONIC BENEFITS							
Enjoyment (EN)	**EN2**	0,929	2,756	0,941	0,66	0,88	2
	EN3	0,953	2,756				
Inherent Novelty Seeking (INS)	**INS1**	0,87	2,83	0,866	0,5	0,8	4
	INS2	0,864	3,011				
	INS4	0,839	2,094				
	INS5	0,815	1,739				
Challenges (CH)	**CH1**	0,978	2,864	0,872	0,885	0,939	2
	CH2	0,912	2,864				
TRAITS							
Technology Anxiety (TA)	**TA1**	0,798	2,759	0,904	0,568	0,922	9
	TA2	0,749	2,085				
	TA3	0,703	1,995				
	TA4	0,809	2,649				
	TA5	0,734	2,325				
	TA6	0,627	1,637				
	TA7	0,79	2,518				
	TA8	0,718	2,241				
	TA9	0,831	3,222				

Need for interaction (NI)	**NI1**	0,86	2,075	0,847	0,765	0,907	3
	NI2	0,925	2,625				
	NI3	0,837	1,875				
Social Anxiety (SA)	**SA1**	0,807	2,223	0,878	0,606	0,902	6
	SA2	0,755	1,683				
	SA3	0,834	2,499				
	SA4	0,636	1,62				
	SA5	0,77	2,493				
	SA6	0,85	2,239				
INTENTION OF USAGE							
Intention of usage (IU)	IU1	0,905	2,042	0,833	0,855	0,922	2
	IU2	0,944	2,042				

Table 7- Model Reliability

For a better and more complete analysis, a discriminant validity must also be done. Discriminant validity refers to: "the extent in which the construct is actually differing from one another empirically" (Ab Hamid et al., 2017, p. 3). To perform it, the cross-loadings must be considered. The model is valid if the value of the square root is higher than the correlation with other constructs; it can be confirmed in Table 8.

	CH	CO	EN	EU	HI	INS	IU	NI	RE	SA	TA	TS
CH	**,95**											
CO	,39	**,85**										
EN	,61	,55	**,94**									
EU	,19	,49	,47	**,95**								
HI	,40	,34	,54	,38	**,93**							
INS	,49	,48	,72	,52	,52	**,85**						
IU	,22	,50	,55	,54	,43	,50	**,93**					
NI	,06	-,12	-,17	-,19	-,24	-,10	-,50	**,88**				

RE	,19	,61	,52	,67	,32	,51	,55	-,19	**,77**			
SA	-,10	-,16	-,04	-,15	-,04	-,24	-,11	-,16	-,28	**,78**		
TA	-,08	-,37	-,41	-,55	-,33	-,60	-,48	,19	-,54	,11	**,75**	
TS	,26	,53	,61	,65	,43	,62	,60	-,15	,67	-,22	-,60	**,81**

Table 8 - Fornell-Larcker criterion

All the measures and present constructs, presented in Table 8, are now proved to be suitable for analysis. The next set consists of testing the explanatory power of the model (Memon & Rahman, 2013). To do it, it is necessary to analyze the dependent variable, Intention of Usage (IU), and calculate its square multiple correlations - R^2. The R^2 represents to what extent the dependent variable is explained by the model, it goes from 0 to 1, and the closer to 1, the better (Steel et al., 1960). For the current model, R^2= 0,637, which means that 63,7% of the Intention of Usage is explained by the dependent variables. The results can be considered satisfactory.

Removed Constructs and Items		
Construct	**Item**	**Cause**
H4: Avoidance of service employee (AS)	AS1	Cronbach's Alpha
	AS2	
EN	EN1	VIF
	EN4	VIF
EU	EU1	VIF
H6: Information (IN)	IN1	VIF
	IN2	
H11: Attractiveness (AT)	AT1	VIF
	AT2	
	AT3	

Table 9 - Removed Constructs

4.4. Model Fit

According to Hair et al., (2017), there should be careful consideration when reporting and using the Model fit for PLS-SEM. Some criteria is not agreed nor is fully understood, as for example, the critical threshold values, who do not sometimes apply for PLS-SEM (J. Hair et al., 2017). However, others believe that the model fit holds relevance (Henseler et al., 2016).

For the present study, the model fit will be taken into consideration and analyzed, but contrary to section 4.3, the model fit criteria will not be a deal-breaker.
For PLS, the model testing reckons on bootstrap to estimate the probability of finding differences between the model implied correlation matrix and the empirical (Henseler et al., 2016).

	Saturated Model	Estimated Model	Criteria
SRMR	0,075	0,075	<0,08
NFI	0,69	0,69	>0,9
Rms Theta		0,132	<0,12

Table 10 - Model Fit

SRMR can be used to avoid model misspecification (J. F. Hair et al., 2014), and it is the primary model fit criteria (Henseler et al., 2016). The SRMR is defined as the difference between the observed correlation, and the model implied correlation matrix. The closer to 0 the better. A value of less than 0,10 or of 0,08 is considered a good fit (Henseler et al., 2016; Hu & Bentler, 1998). The present model SRMR (table 10) is of 0,075, which is smaller than 0,08, so it can be considered approved.

One of the first fit measures proposed was the Normed Fit Index (NFI) (Bentler & Bonett, 1980). NFI goes from 0 to 1, the closer to 1, the better the fit. The literature considers NFI values above 0,9 acceptable (Lohmöller, 1989). The present model only achieved 0,69.

The RMS_theta evaluates the degree to which the outer model residuals correlate. RMS_theta values below 0,12 indicate a well-fitting model, whereas higher values indicate a lack of fit (J. F. Hair et al., 2014). The present model scores 0,132, which is close to 0,12.

4.5. Hypotheses test: Intention of Usage Self-Checkout

After assessing the quality of the measurement model, Section 4.3, and the model fit, section 4.4, the next step will be to test the proposed Hypotheses.

It is important to remember that due to the model depuration, three hypotheses will not be tested: H4 Avoidance of service employee (AS), H6 Information (IN), and H11 Attractiveness (AT).

The SEM model was created and tested on SmartPLS, which is a path modeling software for Partial Least Squares Structural Equation Modelling (PLS-SEM). The model was tested conducting 1000 bootstrap runs.

To understand if the constructs studied actually impact the usage intention, the t-statistics and p-value must be examined. The t-statistic must be higher than 1,96 for a confidence level of 95%, and consequently, the p-value needs to be lower than 0,005.

Table 11 illustrates all hypotheses tested and individual results. It can be seen that not all of the hypotheses were valid for the 95% confidence level.

	Original Sample	Sample Mean	sd	t-statistics	p-value
UTILITARIAN BENEFITS					
Time-Saving -> Intention of Usage	0,18	0,178	0,069	2,602	**0,009**
Reliability-> Intention of Usage	0,101	0,1	0,076	1,332	0,183
Control -> Intention of Usage	0,124	0,126	0,056	2,224	**0,026**
Ease of use -> Intention of Usage	0,046	0,048	0,06	0,763	0,446
History -> Intention of Usage	0,008	0,008	0,051	0,159	0,874
HEDONIC BENEFITS					
Enjoyment -> Intention of Usage	0,125	0,119	0,076	1,634	0,102
Inherent Novelty Seeking -> Intention of Usage	-0,013	-0,008	0,073	0,185	0,853
Challenges -> Intention of Usage	0,02	0,022	0,061	0,333	0,739
TRAITS					
Technology Anxiety -> Intention of Usage	-0,043	-0,041	0,071	0,613	0,54
Need for interaction -> Intention of Usage	-0,386	-0,385	0,045	8,608	**0,000**
Social Anxiety -> Intention of Usage	-0,101	-0,101	0,057	1,761	0,078
DEMOGRAPHICS					
Age -> Intention of Usage	-0,155	-0,155	0,058	2,693	**0,007**
Gender -> Intention of Usage	-0,11	-0,109	0,037	2,933	**0,003**

Table 11 - Analysis of significance

However, the hypotheses in the present study intended to not only focus on the meaningfulness of the relation but also the direction of its impact. So, to test the

hypotheses, the center of attention must be on the regression weights, expressed in the original sample. Since the results have several hypotheses with no significant p-value, for a better reading of the relevant regression weights, please take into consideration Table 12.

	Original Sample	Sample Mean	sd	t-statistics	*p*-value
UTILITARIAN BENEFITS					
Time-Saving -> Intention of Usage (H1)	0,18	0,178	0,069	2,602	**0,009**
Control -> Intention of Usage (H3)	0,124	0,126	0,056	2,224	**0,026**
TRAITS					
Need for interaction -> Intention of Usage (H13)	-0,386	-0,385	0,045	8,608	**0,000**
DEMOGRAPHICS					
Age -> Intention of Usage	-0,155	-0,155	0,058	2,693	**0,007**
Gender -> Intention of Usage	-0,11	-0,109	0,037	2,933	**0,003**

Table 12 - Relevant level of significance

Observing the Utilitarian Benefits, two benefits were considered relevant and positively correlated with usage intention: Time-Saving and Control, validating H1 and H3.

When it comes to Hedonic Benefits, there was no construct considered statistically relevant.

For Traits, Need for Interaction was the only constructed endorsed in the present study, and with the most strong relation in the model, H13 is supported.

When it comes to demographics, studies found little or somewhat contradicting results (Dean, 2008; H.-J. Lee et al., 2010, 2013; Simon & Usunier, 2007). In spite of

that, two demographics factors seem to impact the intention of usage: Age and Gender. Not surprisingly, the increase in age seems to be negatively correlated with the intention of usage; H15 is supported. Gender exhibits the weakest correlation when in comparison with the others, and it is the only one that does not match previous research, indicating that females tend to have more intention of using SST, H16 is not supported.

Figure 2, summarizes the models' results and Table 12 of the hypothesis evaluation.

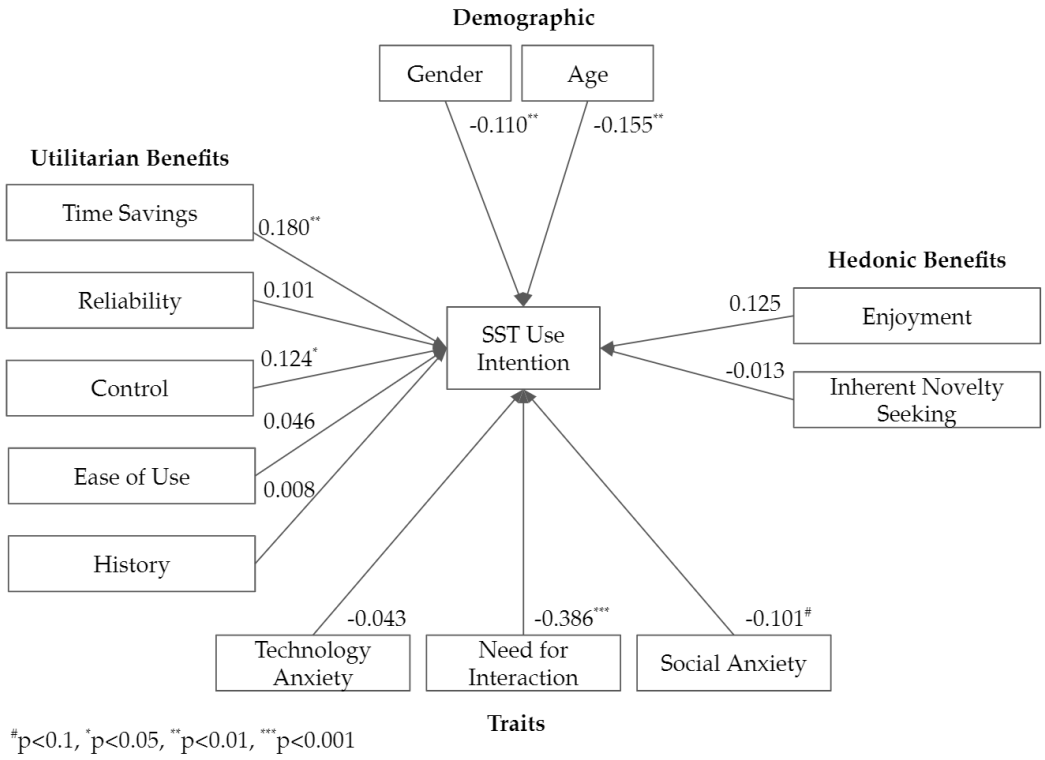

Figure 2- Model Results

Utilitarian Benefits		Support
H1	Time-Saving is a benefit that positively affects the intention of usage Self-Checkout	Yes
H2	Reliability is a benefit that positively affects the intention of usage Self-Checkout	No

H3	Control is a benefit that positively affects the intention of usage Self-Checkout	Yes
H4	Ease of Use is a benefit that positively affects the intention of usage Self-Checkout	No
H5	Avoidance of service employee a benefit that positively affects the intention of usage Self-Checkout	No
H6	Information is a benefit that positively affects the intention of usage Self-Checkout	No
H7	History is a benefit that positively affects the intention of usage Self-Checkout	No
HEDONIC BENEFITS		
H8	Enjoyment is a benefit that positively affects the intention of usage Self Self-Checkout	No
H9	Inherent Novelty Seeking is a benefit that positively affects the intention of usage Self-Checkout	No
H10	Challenges are a benefit that positively affects the intention of usage Self-Checkout	No
H11	Attractiveness is a benefit that positively affects the intention of usage Self-Checkout	No
TRAITS		
H12	Consumers that have Technology Anxiety will be less inclined to use Self-Checkout	No
H13	Consumers that express Need for interaction will be less inclined to use Self-Checkout	Yes
H14	Consumers that express Social Anxiety will be less inclined to use Self-Checkout	No
DEMOGRAPHICS		
H15	Increase in age impacts negatively the intention to use Self-Checkout	Yes
H16	Female are less inclined to use Self-Checkout	No

Table 13 - Hypotheses outcome

5. Discussion

Not all groups were considered relevant only - Utilitarian Benefits, Traits, and Demographics - had at least one relevant construct affecting the intention of SST usage.

Leaning over the results of Utilitarian and Hedonic Benefits, when making weight comparisons based on Johnson et al. (1987), the results are quite familiar to Cetto et al., 2015 (Cetto et al., 2015; Johnson Jr et al., 1987). As so:

- Cetto et al., (2015) considered as Utilitarian Benefits: Time-Saving, Reliability, Control, Ease of Use, and Avoidance of Service Employee. Contrarily to the present research, all of the constructs revealed themselves important. However, the construct that showed the most impact when compared to the others was Time-Saving (Cetto et al., 2015), and on the present results, Time-Saving, on the utilitarian category, was also the strongest one. The relevance of TS does not come as a surprise in the today's fast-paced world, "customers may fear that traditional counters are too slow due to inefficiencies of service employees or inescapable interactions" (Cetto et al., 2015, p. 10)
- For the Hedonic values, none of them was considered relevant. An interesting aspect worth mentioning it the fact that 79,4% of the participants had already tried SST (Table 6). And from those who have tried, 76,4% said that they often, very often or even always use. These results tie together with the rationale of Cetto et al., (2015). In the study, it was examined how the experience with SST affects the perception and importance of hedonic vs. utilitarian benefits. It was concluded that users with low experience with SST value more hedonic values than utilitarian ones. "The reason may be that they do not entirely realize the utilitarian benefits because they are focused on the fun factor. Consequently, for them, hedonic reasons prevail" (Cetto et

al., 2015, p. 10). And for users with more experience, the result was reversed: for them, the utilitarian value was more important.

On the model, besides the already deeply studied variables, a linkage between self-service checkouts and the omnichannel strategies was also proposed. Companies must take into account these strategies to remain competitive in the demanding and ever-changing retail world (Alexander & Alvarado, 2017). The constructs chosen to portrait it were: Information (IN) and History (HI). Unfortunately, Information (IN) did not pass the model tests. History (HI) did not reveal a statistically significant correlation with Intention of Usage (IU). It is relevant to consider that the survey diffusion, despite being also translated to English, was mostly spread to Portuguese participants. Omnichannel strategies build a bridge between brick and mortar and online, logically that for them to be valued by consumers, consumers must use both channels. In this sense, it is important to expose that the usage of E-Commerce in Portugal is below the European's Union average (57% in 2017) (Instituto Nacional de Estatística, 2018).

When concentrating on traits, only the Need for Interaction (NI) revealed conclusive results, validating H13. Former studies infer that people have different perceptions of automated technologies based on how important the human contact in retail is to them (Dabholkar, 1996; Forman & others, 1991; Meuter et al., 2003; Venkatesh, 2000). So, it is within reason that, in the present study, participants that revealed preference and/or valued employee service feel less inclined to use self-service checkout.

H12, Technological Anxiety (TA) was not proved statically relevant, even though studies such as Meuter et al., (2000) found technological anxiety to be a better predictor of the intention of usage than demographics. On the other hand, it is quite pertinent to keep in mind that Technological Anxiety is more associated with older participants (H.-J. Lee et al., 2010; Meuter et al., 2005). Looking into the demographics data in the present study, 60,4% of the respondents were between the ages of 15 and 30, possibly justifying a low attribute of TA.

Even though in the present study, Enjoyment (EN) was not considered statically relevant, Need for Interaction (NI) had the most substantial weight., so it is still worth to mention what some literate thinks of the relation between the two (Demoulin & Djelassi, 2016; Venkatesh et al., 2012). Studies had already focused on the indirect importance between the two and how Enjoyment (EN) can play a moderate role in replacing the Need for Interaction (NI) (Demoulin & Djelassi, 2016; Venkatesh et al., 2012). Interaction with service employee while shopping can be impactful since social interaction is considered an important motivation for customers' store loyalty (Noble et al., 2006). In the process of shopping, consumers may experience different types of emotions such excitement and joy (Machleit & Eroglu, 2000; Menon & Dubé, 2000), and contact with the service-employee - especially when friendly, smiling, and polite - leads to more positive emotions (S. Lee & Dubinsky, 2003). The same can happen with technologies if enjoyable it increases the intention of usage: customers who view SSTs as fun may be willing to give up their interaction with the service-employee for that experience. (Demoulin & Djelassi, 2016; Venkatesh et al., 2012).

Finally, by examining the demographic impacts, it is possible to observe that the two tested demographics have statistical relevance. Yet, whereas the effect of the Age H15 was held to have the predicted negative relation, the same did not happen with Gender H16. Once more, it is important to keep in mind that despite several studies having a focus on demographics, several of them did not establish any relationship. Even so, in those who did reveal, the increase in age has a negative impact, meeting H15 results. However, H16 outcomes do not match the previous research that found a correlation between gender and usage, since, in those studies, females tend to be less inclined to SST usage.

6. Conclusion

The landscape of retail is evolving and changing at an extremely fast rate. The same can be said about technology and the different possible ways of its implementation and role in retail. Self-service technologies have been used for several years across different types of business, starting from an automated teller machine (ATM) to a self-service checkout. The latter was usually seen at supermarkets but is becoming a trend across different types of retail, such as restaurants, fashion, sports, beauty, among others. When well accepted and implemented, self-service checkouts allow companies to gain efficiency and reduce costs. However, even though, as a general rule, the self-service checkout acceptance by consumers, and use are increasing, it is important to take into account what the implementation of self-service technology (SST) represents: monetary investments, employee and employee's job function reallocation, risk of robbery and ultimately potential lack of customer acceptance.

The present master thesis has helped to understand the weight and impact of different benefits in the consumers' intention of using self-service checkout. While at the same time addressing how SST can also be a tool to help companies to create an omnichannel strategy.

It tested 16 hypotheses, that put-on trial: Demographics, Traits, Hedonic, and Utilitarian Benefits. It counted with 251 complete and valid responses for data analysis, and 79,9% of the participants had already used self-service checkouts.

It was possible to conclude that the most important utilitarian benefit remains to be Time-Saving (TS), but that the feeling of Control (CO) also holds significance. It is also pertinent to analyze these benefits' results form a managerial point of view. When thinking of implementing or advertising self-service technologies in retail, one must think and take into consideration what the consumers want and value.

Unsurprisingly, Time Saving (TS) and Control (CO) had relevant statistical importance. In a fast-paced world as the one we live today, gaining time - or at least owning it in the process of shopping - clearly comes as an advantage.

Retailers must guarantee that these desired benefits are well implemented, by, for example, certifying that the usage of an SST actually saves its users' time. Retailers could also take advantage of the present results for advertising, by ensuring meaningful communication when promoting self-service checkouts, appealing to what consumers must value.

When it comes to hedonic benefits, there was no relevant outcome, however, to some degree, they go into accordance with previous studies. Those suggest that when consumers are more experienced with SST, they tend to value more the Utilitarian Benefits that the SST provides rather than Hedonic. This represents an interesting takeaway from a managerial point of view, confirming, even if indirectly, that when companies wish to attract new users for their SST, they should try to address the hedonic benefits of it.

Need for interaction (NI), was concluded to be an important predictor of SST rejection. According to the literature, age also plays a role in the need for interaction; older consumers tend to need more this contact. Observing the results was possible to conclude that age plays a negative effect on the intention of usage. When companies are analyzing the cost-benefit of the implementation of an SST, they should first understand who their target is; one key take away of the present study, it that they should look carefully at the demographics, in special, to the age.

The present study also addresses the omnichannel strategy, its importance, and how some companies are successfully implementing it with the help of SST. However, the constructs created to symbolize the omnichannel strategy were not deemed relevant in the analysis. Nevertheless, it is still important to start the discussion and to build a bridge between such pertinent topics.

6.1. Limitations & suggestions for Future Research

There were some limitations to the present study. The first being the sample size (n=251) and the lack of age diversity. The study targets all age groups; however, the majority of the respondents were between the age of 19-30 (46,6%). Since the survey was mostly diffused through social media, it's somewhat predictable the absence of a more varied sample.

Unfortunately, some of the already profoundly studied constructs did not pass the validity tests. As a consequence, it was not possible to observe the impact of H2 Reliability (RE), H4 Avoidance of service employee (AS), and H11 Attractiveness (AT). Future studies should be performed to take into consideration these constructs, with the purpose of creating deeper and meaningful conclusions.

The study also addressed the relevance of the omnichannel strategy. However, one of the new proposed constructs: H6 Information (IN) – did not pass the validity test. The other proposed construct, History (HI), was possible to take into account, but it did not reveal statically relevant results. This outcome does not take away the relevance to examine such subjects. For future research, it is suggested to either find a better way to investigate this theme and/or also to consider a more significant sample, in a country with a more diffused e-commerce and with more established STT across different types of retail.

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Appendix

Appendix 1 – Survey

Section 1: Survey presentation

Section 2: Demographics

1- Age:
   15-18
   19-30
   31-40
   41-50
   51-60
   60+

2- Gender: F M

3- Income monthly:
   0-700
   701-1300
   1301-2300
   +2000

4- Education:
   High School
   Bachelor
   Master
   Phd

Section 3: General personal questions – to test traits

Rate from 1 to 7, 1-strongly agree and 7-strongly disagree

1- I am confident I can learn technology-related skills.
2- I have difficulty understanding most technological matters
3- I feel apprehensive about using technology
4- When given the opportunity to use technology, I fear I might damage it in some way
5- I am sure of my ability to interpret technological output
6- Technological terminology sounds like confusing jargon to me
7- - I have avoided technology because it is unfamiliar to me
8- I am able to keep up with important technological advances
9- I hesitate to use technology for fear of making mistakes I cannot correct
10- Human contact in providing services makes the process enjoyable for the customer
11- I like interacting with the person who provides the service
12- Personal attention by the service employee is not very important to me

Please rate from 0 (extremely uncharacteristic) to 4 (extremely characteristic).

1- It takes me time to overcome my shyness in new situations
2- I have trouble working when someone is watching me
3- I get embarrassed very easily
4- I don't find it hard to talk to strangers
5- I feel anxious when I speak in front of a group
6- Large groups make me nervous

Section 4: General Questions SST usage and intention of Usage

1- Have you ever used the self-checkout in retail?

Yes_ No_

2- If yes, in what type of retail?

Groceries_ Fashion_ Restaurants_ Beauty_ Sports store_ Department Store_

3- If yes, how often do you use SST?

Almost never_ Often_ Very Often_ Always_

4- If SST are available at your store, they are your first/primary choice?

Yes_ No_

5- In the future, how likely is it that you would use self-scanning technology if it were available at the store in which you are shopping?"

Not likely_ Likely_ Very Liely_ For sure_

Section 5 - Utilitarian and Hedonic benefits

For the next questions please take into consideration all forms of retail – Groceries, Fashion, Restaurants, Beauty, Sports store and Department Store. Please note that these self-check outs could be located in every part of the store and not necessarily on the traditional groceries store' location.
Even if you never encounter a self-checkout in such settings, please imagine if so.

From a scale from 1 to 5, 1- Strongly disagree & 5- I Strongly agree

Time Savings (TS) (adapted from Dabholkar, 1996)

1- 1 - I believe I would need a lot of time for using the Self Service Check Out

2- I believe the paying process with the Self Service Check is very quick.

3- I believe the waiting time for using the SST is very quick.

4- Shopping with the SST would allow me to save time.

5- I believe that using the SST is accurate (means I will get just what I ordered)

6- I believe using the SST would result in errors in the order

7- Using the SST is something I don't expect to work very well.

8- believe using the SST is reliable.

9- The usage of the SST gives me control.

10- The usage of the SST lets me be in charge of the right result.

11- The usage of the SST lets me be in charge of the right price.

12- I believe the usage of the SST is complicated

13- I believe the usage of the SST takes a lot of effort

14- believe the usage of the SST is slow and complex

15- Personal attention by the service employee is not important to me.

16- It does not bother me to use a machine when I could talk to a person instead.

17- I would be more likely to use a self-checkout machine if in the machine has detailed information about the product (eg. Lipstick at a beauty store; Ingredients of the hamburger in a fast food chain)

18- I would use the self-checkout machine if they would display similar information as their website about a product (eg. Decathlon and a technical product; eg. Pair of Jeans – and showcase of similar products)

19- I would be more likely to use a self-check out machine if it had access to my history of purchases (eg. specific color of skin foundation; specific supermarket order; specific fast food order)

20- I would be more likely to use a self-check out machine if it I could log in with the same user than E-commerce website/app

21- I believe it would be is enjoyable to use the SST.

22- I believe it would be exciting to use the SST.

23- I believe it would be pleasant to use the SST.

24- I believe it would be interesting to use the SST.

25- I am always seeking new ideas and experiences.

26- When things get bored, I like to find new and unfamiliar experiences.

27- I prefer a routine way of doing things to experimenting with new things.

28- I like to experience novelty and change in my daily routine.

29- Using the SST challenged me to perform to the best of my ability.

30- Using the SST provided a good test of my skills

31- If the self-check-out is aesthetically appealing I would be more likely to use it

32- If the self-checkout is physically pleasing it would give me satisfaction, thus increasing positively my likelihood of using it