Understanding Consumer Adoption of Self-Service Checkouts and Future Retail Technologies

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ABSTRACT

Title: Understanding Consumer Adoption of Self-Service Checkouts and Future Retail Technologies

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This dissertation examines which factors drive consumers' continuance intention to use supermarket self-service checkouts (SSCs) and whether these evaluations translate into openness to future in-store technologies such as mobile scan-and-go and checkout-free stores. This study is based on the Technology Acceptance Model and research on self-service technologies and integrates perceived usefulness, perceived ease of use, trust, satisfaction and experience with SSCs. Data were collected through an online survey (N = 101). After data screening, reliability assessment, and exploratory factor analysis, hypotheses were tested with multiple regression (N = 99 after removing two multivariate outliers). The findings show that perceived usefulness and trust are strong positive predictors of continuance intention. Perceived ease of use does not explain any additional variance when usefulness and trust are also considered. Openness to future retail technologies is primarily explained by satisfaction with SSCs. Although experience with SSCs is associated with openness at the bivariate level, it has no significant unique effect when satisfaction is also included.

Overall, the results suggest that consumers use their SSC evaluations as a reference point: a reliable and satisfactory checkout experience encourages continued use and readiness to adopt more advanced formats. For retailers, this implies that it is important to strengthen the reliability of the system, perceived security, and consistent service quality, rather than focusing solely on usability or trial.

Keywords: Self-service checkouts (SSCs), Continuance Intention, Technology Acceptance Model (TAM), Trust, Satisfaction, Future Retail Technologies

RESUMO

Título: Compreender a Adoção de Caixas de Autoatendimento e de Futuras Tecnologias de Retalho

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Esta dissertação analisa quais os fatores que impulsionam a intenção de continuidade dos consumidores em utilizar caixas de autoatendimento em supermercados e se essas avaliações se traduzem em abertura para futuras tecnologias em loja, como o scan-and-go móvel e as lojas sem checkout. O estudo baseia-se no Modelo de Aceitação da Tecnologia e na literatura sobre tecnologias de autoatendimento, integrando utilidade percebida, facilidade de utilização percebida, confiança, satisfação e experiência com caixas de autoatendimento. Os dados foram recolhidos através de um questionário online (N = 101). Após a triagem dos dados, avaliação da fiabilidade e análise fatorial exploratória, as hipóteses foram testadas por regressão múltipla (N = 99, após a remoção de dois outliers multivariados). Os resultados mostram que a utilidade percebida e a confiança são fortes preditores positivos da intenção de continuidade, enquanto a facilidade de utilização percebida não explica variância adicional quando as restantes variáveis são consideradas. A abertura a futuras tecnologias de retalho é explicada principalmente pela satisfação com as caixas de autoatendimento. Embora a experiência esteja associada à abertura ao nível bivariado, não apresenta um efeito único significativo quando a satisfação é incluída. Em suma, os consumidores usam as suas avaliações como referência: uma experiência fiável e satisfatória promove a continuidade de utilização e a predisposição para adotar formatos mais avançados. Para os retalhistas, isto implica reforçar a fiabilidade do sistema, a perceção de segurança e a consistência da qualidade do serviço, em vez de se focar apenas na usabilidade ou na experimentação.

Palavras-chave: Caixas de autoatendimento, Intenção de continuidade, Modelo de Aceitação da Tecnologia, Confiança, Satisfação, Tecnologias de retalho futuras

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Glossary

SSC – Self-Service Checkout

SST – Self-Service Technology

TAM – Technology Acceptance Model

PU – Perceived Usefulness

PEOU – Perceived Ease of Use

1. Introduction

Today, many routine services are delivered through self-service technologies (SSTs). From ATMs and airline check-in machines to ticket kiosks and supermarket self-service checkouts (SSCs), these systems allow customers to perform tasks that were once carried out by staff (Dabholkar et al., 2003; Meuter et al., 2000; Duarte et al., 2022). Retailers continue to invest in SSTs because they can improve transaction efficiency, reduce labor costs, and make staff allocation more efficient (Duarte et al., 2022; Nallapureddy et al., 2015).

In supermarkets, SSCs have become a routine part of the checkout process over the last two decades. Many retailers present them as a convenient option that can reduce waiting times and give shoppers more control over the checkout process (Duarte et al., 2022). Nevertheless, consumer acceptance remains mixed. Some see them as the faster option that also provides more autonomy. For others, the procedure is stressful. They have concerns about scanning errors and data security and therefore prefer traditional checkouts with staff (Ram & Sheth, 1989; Demirci Orel & Kara, 2014; Johnson et al., 2020).

This gap in consumer acceptance makes SSCs an interesting starting point for researching technology acceptance in physical retail. When the checkout process runs smoothly, consumers often feel more independent and in control. This can increase satisfaction (Meuter et al., 2000; Blut et al., 2016). Conversely, difficulties can arise. Issues like technical faults, lack of assistance or reduced personal interaction can cause frustration and anxiety and ultimately lead to resistance to this type of technology (Dabholkar et al., 2003; Ram & Sheth, 1989; Bulmer et al., 2018).

However, SSCs are just the beginning of a movement towards fully automated shopping experiences. Mobile scan-and-go and checkout-free stores operate on the same principle but go one step further. Even more tasks are being handed over to shoppers using tools such as smartphones, sensors and computer vision (Grewal et al., 2017; Nallapureddy et al., 2015). Retailers must therefore ask themselves: To what extent do shoppers' familiarity, confidence, and routinization in using SSCs influence their willingness to try these more advanced formats?

To explain and understand the adoption of SSCs, existing papers often refer to the Technology Acceptance Model (TAM). The model focuses on perceived usefulness (PU) and perceived ease of use (PEOU), which both influence attitude and intention (Dabholkar et al., 2003; Davis, 1989; Blut et al., 2016). In the context of SSCs, usefulness refers to benefits such as time

savings and avoiding queues. Ease of use refers to how effortless a system is to operate, for example, the scanning and payment process. However, research also includes other factors like satisfaction and trust. Trust exists when a system works reliably and securely, for instance, when it scans items correctly and manages payment data securely (Kaushik & Rahman, 2015; Johnson et al., 2020). Satisfaction refers to the general evaluation of the experience with the system and whether it met the expectations of shoppers (Demirci Orel & Kara, 2014). Evidence from a meta-analytic study shows that usefulness, ease of use and trust all promote satisfaction and use of SSTs (Blut et al., 2016).

Experience and general technology readiness also influence familiarity with SSCs. When shoppers become more familiar and confident with SSCs, the process often feels easier and less uncertain (Duarte et al., 2022). At the same time, innovation resistance theory states that new formats can cause resistance, especially if they are perceived as risky, complex, or restrictive and disrupt established routines (Ram & Sheth, 1989; Mani & Chouk, 2018).

Existing research mainly focuses on the initial adoption of SSTs, namely whether consumers start using this technology or plan to use it. Fewer studies focus on post-adoption outcomes, like continuance intention, and how these evaluations of SSCs relate to openness to more advanced in-store technologies. More specifically, there is not much data on how perceived usefulness, ease of use, trust and satisfaction together affect continuance intention and openness to new formats.

From a managerial perspective, this gap matters. Retailers continue to expand SSCs and invest in and test new technologies, while consumer acceptance is inconsistent. While it is an essential part of the purchasing process for some shoppers, others avoid it completely and only use it under specific conditions. In order to further develop system design and communication, a comprehensive understanding of the factors that support and limit continuance intention is required. This will also enable retailers to better assess whether their consumers are ready and open to advanced formats or not.

Taking these factors into account, the aim of this study is to investigate how consumers evaluate self-service checkouts and how this evaluation affects their openness to future in-store technologies. The study focuses on perceived usefulness, perceived ease of use, trust, and satisfaction. It analyses how perceived usefulness, perceived ease of use, and trust relate to

continuance intention to use SSCs, and how satisfaction and SSC experience relate to openness to adopt new in-store formats.

In this thesis, experience refers to perceived familiarity, confidence, and routinization in using self-service checkouts. Usage frequency is included for descriptive purposes. The empirical work is guided by the following research questions:

- **RQ1:** Which factors (perceived usefulness, perceived ease of use and trust) most strongly predict consumers' intention to continue using self-service checkouts?
- **RQ2:** How does satisfaction with self-service checkouts influence consumers' openness to adopt future in-store technologies such as mobile scan-and-go and checkout-free stores?
- **RQ3:** How does experience with self-service checkouts (perceived familiarity, confidence, and routinization) influence consumers' openness to adopt future in-store technologies such as mobile scan-and-go and checkout-free stores?

To answer these questions, the thesis uses a quantitative research design and tests five hypotheses based on TAM, research on trust and satisfaction in SSTs and innovation resistance theory. Data were collected through an online survey among supermarket shoppers who have already used SSCs.

The chapters are structured as follows: Chapter 2 presents the literature review. It introduces self-service technologies, describes how SSCs have developed over time and discusses their benefits and costs. It then examines drivers and barriers of SSC adoption with a focus on usefulness, ease of use, trust, satisfaction, experience, and innovation resistance, and develops the conceptual framework. Chapter 3 describes the methodology, including the research design, model and hypotheses, data collection and measurement of constructs. Chapter 4 presents and analyses the empirical results. Chapter 5 discusses the main conclusions, managerial implications, and suggestions for future research.

2. Literature Review

Chapter 2 reviews the development of self-service technologies and self-service checkouts and summarizes the main determinants of adoption and post-adoption outcomes with a focus on continuance intention. It then integrates these perspectives to build the conceptual framework for the empirical study.

2.1 Introduction to Self-Service Technologies (SSTs)

2.1.1 Historical Development of SSTs

Self-service technologies have been around for decades, but they only became widespread much more recently. In the mid-1960s and 1970s, retailers such as Kroger in the United States began testing automated checkout concepts using machine-readable codes. Around the same time, the retail industry agreed on the Uniform Product Code (UPC) in the early 1970s, and by the end of 1975 scanning equipment was already in use in roughly 40 supermarkets across the United States. These early steps helped establish the foundation for barcode-based checkout systems that later became standard in retail (Bloom, 1976).

Even though the technology was functional, adoption was slow. For many years, conventional staffed checkouts remained the norm, and early automated checkout solutions were mainly treated as pilot projects rather than a mainstream solution (Bloom, 1976).

SSCs started becoming more common in physical retail in the early 2000s. Large chains such as Walmart, Home Depot and Kroger expanded their installations and promoted SSCs as a way to speed up checkout and improve convenience (Larson, 2019). Many consumers were also already familiar with other self-service formats, including ATMs, airline check-in machines and hotel checkout kiosks. This prior exposure likely made automation in retail feel more familiar (Dabholkar et al., 2003).

Taken together, these developments mark the transition from early trials of automated checkout to consumer-facing systems used in everyday shopping. They also provide the basis for exploring how shoppers gradually adopted SSCs and learned to use them in practice (Bloom, 1976; Dabholkar et al., 2003; Larson, 2019).

This progression matters because SSC acceptance did not happen instantly. It developed over time. This makes post-adoption evaluations important for understanding continuance intention.

2.1.2 Applications of Self-Service Technologies Across Industries

Self-service technologies are now used in many industries and are no longer limited to retail. They appear in fast-food restaurants through ordering kiosks, in airports through check-in systems and in banking through ATMs (Duarte et al., 2022; Meuter et al., 2000). In retail, self-checkout systems follow the same idea and let customers scan and pay without direct employee involvement (Meuter et al., 2000; Duarte et al., 2022).

Research also shows that SSTs cover very different tasks, from financial services to travel and shopping. Across these settings, the common core idea is a shift in service work from employees to customers (Meuter et al., 2000). Companies are implementing these systems because they hope to achieve greater efficiency and cost savings, as customers now take on tasks that were originally intended for employees (Bitner et al., 2000). When comparing applications in different industries, it is noticeable that the complexity and level of customer involvement vary. Self-check-ins at airline kiosks are usually a short standardized one-time task. Checkouts in supermarkets or other physical retailers, on the other hand, require several steps, such as scanning items, weighing or specifying quantities, and paying (Bitner et al., 2000; Meuter et al., 2000).

This shift in control fundamentally changes the service process. Ideally, customers are able to complete tasks without difficulty while relying on a properly working system (Dabholkar et al., 2003; Demirci Orel & Kara, 2014). This increase in efficiency must therefore also take consumer needs into account and consider their comfort and desire for control (Bitner et al., 2000).

The following table provides selected examples of SST applications discussed in the reviewed literature:

Industry / Sector	**Typical SST Example**	**Task / Role**	**Main Benefit for Customer**	**Potential Challenge**
Grocery / Retail	Self-service checkouts	Scanning and payment	Speed, autonomy	Risk of errors, lack of assistance
Hospitality / Food	Ordering kiosks (e.g. McDonald´s)	Product selection, payment	Faster service, personalization	Overload

Banking / Finance	ATMs	Withdrawals, deposits	24/7 access, independence	Security concerns
Travel / Airports	Check-in kiosks, bag drop machines	Self-check-in, boarding	Efficiency, reduced queues	System anxiety, errors

Table 1: *Examples of self-service technology (SST) applications, including their main benefits and potential challenges.*

Note: The sector examples are drawn from Duarte et al. (2022), Meuter et al. (2000), and Dabholkar et al. (2003). The benefits and challenges listed reflect recurring themes discussed across these sources and serve as illustrative examples.

2.1.3 From Innovation to Mainstream: The Rise of SSCs

Although self-service technologies are not new, self-service checkouts have only recently moved from pilot projects to a standard feature in many supermarkets. This shift is linked to better technology, higher digital confidence among consumers, and more everyday contact with automated service touchpoints.

Nallapureddy et al. (2015) show how checkout evolved over time. They outline the journey from manual cash handling in the 1960s to barcode scanning in the 1970s and 1980s, followed by the start of self-checkout kiosks in the 2000s, and to today's shift towards even more advanced formats, which include mobile solutions and computer-vision systems. A key milestone in that evolution is the introduction of the Universal Product Code (UPC) in 1974. It made it possible to improve checkout speed and inventory management and laid the foundation for many automated retail processes that are used today.

Modern SSC systems still rely on barcode scanning, since it simplifies the transaction and keeps it standardized (Nallapureddy et al., 2015; Duarte et al., 2022). When SSCs became more common, many shoppers already knew similar self-service systems from other settings, for example ATMs, airline check-in machines and ticket kiosks. This familiarity helped make self-checkouts feel more intuitive and acceptable for many consumers (Dabholkar et al., 2003; Duarte et al., 2022). Over time, the practical advantages of SSCs have also been recognized, such as shorter queues and greater control during the checkout process (Duarte et al., 2022). For retailers, the advantages lie in labor savings and flexible deployment of staff on the shop floor (Nallapureddy et al., 2015).

But SSCs are just the beginning. Nallapureddy et al. (2015) describe them as a step towards fully automated shopping experiences. The paper lists technologies such as RFID, Digimarc digital watermarks and computer vision systems as examples that can reduce or even completely eliminate manual checkouts. Grewal et al. (2017) takes a similar view and mentions Amazon Go's checkout-free stores as an innovation that will revolutionize the retail world and consumer experiences. From this perspective, SSCs can be placed between traditional checkouts and fully automated stores.

This change brings not only new opportunities, but also new requirements. Although automation can enable cost efficiency and savings, investments must first be made in infrastructure, data systems and employee training (Nallapureddy et al., 2015). For consumers, these formats require new routines. Shoppers weigh up the advantages, such as speed and independence, against concerns such as privacy protection, functionality and reduced personal interaction (Dabholkar et al., 2003; Duarte et al., 2022).

In their research, Pantano and Gandini (2017) focus heavily on the social aspect of shopping. Digital touchpoints in physical retail can reduce interaction with staff and make the in-store experience feel rather impersonal. This also restrict retailers to some extent since they can no longer influence shopper behavior through personal contact. Retailers must therefore adopt new strategies to strengthen trust and deliver value in this new environment.

Summing up, the rise of SSCs is an important milestone in retail modernization, but only an intermediate step on the path to fully automated shopping experiences (Nallapureddy et al., 2015; Grewal et al., 2017).

2.1.4 Benefits and Costs of Self-Service Technologies

SSTs have transformed the way consumers interact with service providers. For customers, some of the key benefits include shorter waiting times and greater autonomy. Shoppers can carry out the process and transaction independently. This can lead to a greater sense of control and independence (Meuter et al., 2000). This sense of control can increase satisfaction when the checkout works smoothly (Blut et al., 2016). Some shoppers also like the feeling of successfully completing the task on their own. This can add a more hedonic element to the shopping experience (Demirci Orel & Kara, 2014; Duarte et al., 2022).

For retailers, SSCs can reduce pressure at the checkout. Shorter queues and faster transactions can free up staff for other tasks on the shop floor, which can lead to lower labor costs (Duarte et al., 2022; Nallapureddy et al., 2015). SSTs also provide data that can be used to monitor performance and identify bottlenecks at the checkout (Duarte et al., 2022).

From the customer's perspective, perceived usefulness, perceived ease of use and trust are crucial. Adoption is more likely when the system feels fast, convenient, and easy to handle (Dabholkar et al., 2003; Duarte et al., 2022; Blut et al., 2016). Evidence from a meta-analytic study shows that perceived usefulness, perceived ease of use, and trust are key predictors of SST outcomes, which include satisfaction and use (Blut et al., 2016). Trust shows whether consumers believe that the technology works securely and accurately. In this thesis, the comparable outcome is captured as continuance intention toward SSCs (Kaushik & Rahman, 2015; Blut et al., 2016).

However, these same features can also cause problems. Technical issues can quickly lead to frustration, especially when consumers are expected to solve these on their own (Meuter et al., 2000; Blut et al., 2016). Some shoppers also prefer traditional checkouts because of the perceived security, privacy concerns, and their desire for social interaction (Dabholkar et al., 2003; Duarte et al., 2022; Johnson et al., 2020).

Overall, SSTs offer functional benefits, such as speed, autonomy, and efficiency, but they can also involve psychological costs like reduced social contact and perceived effort. Whether customers accept or resist SSCs depends on how they weigh these benefits and costs. The next section discusses the key determinants of adoption and post-adoption outcomes in more detail.

2.2 Adoption of Self-Service Checkouts (SSCs)

2.2.1 Understanding SSC Adoption

When comparing the various self-service formats, self-service checkouts are currently the most widely used in retail. Their introduction has not only changed transactions, but also how consumers perceive the checkout process as a touchpoint in the store. The question of why consumers decide to adopt in-store technology or not is therefore a relevant field to study.

Adoption refers to the first use or intended use of this technology. Beyond initial adoption, studies in SSC environments suggest that satisfaction with service quality relates to loyalty outcomes, which can support continuance intention (Demirci Orel & Kara, 2014). In retail

settings, studies also show that trust, perceived usefulness, and ease of use increase attitudes towards SSCs and the motivation to use them (Kaushik & Rahman, 2015).

Duarte et al. (2022) also show that previous experience with SSTs influences how consumers rate usefulness and ease of use. They also show that technology readiness and the level of personal innovativeness are important factors influencing the intention to use these systems. Taken together, these findings suggest that previous experience with SSTs and general openness to such technologies influence how consumers interact with these new formats.

A common framework that can be used to explain this decision-making process is the Technology Acceptance Model (TAM) (Davis, 1989). TAM states that the intention to use new technologies depends mainly on two factors. The first is perceived usefulness, i.e. whether one believes that the system improves the shopping task, for example, through greater convenience and time savings. The second is perceived ease of use, i.e., how intuitive and effortless the system feels. Dabholkar et al. (2003) show that these two factors improve attitudes towards SSTs, which can also increase the intention to use them. Blut et al. (2016) also confirm this in their studies. They show that both PU and PEOU are among the strongest predictors of intention and satisfaction. In the retail sector, PU often reflects faster transactions and shorter waiting times, while PEOU refers to a simple and instinctive scanning and payment process.

Figure 1 shows the original Technology Acceptance Model and the relationships between its core constructs.

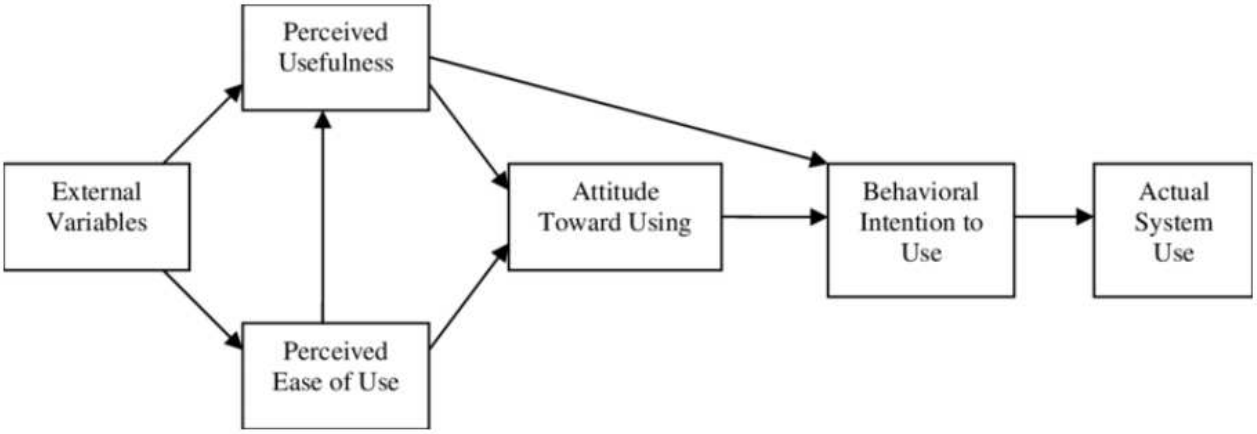

Figure 1: *The Technology Acceptance Model (TAM). Adapted from Davis (1989).*

Later studies are also based on TAM but complement it with psychological and experimental factors in order to better understand consumer behavior. Kaushik and Rahman (2015) for example, expanded the model and included trust and subjective norms. Their findings suggest

that attitudes towards SSTs are influenced not only by PU and PEOU, but also by trust in the technology and the environment in which it is used. Duarte et al. (2022) also show that psychological behavioral traits play a role. Consumers have different levels of self-confidence and anxiety during these interactions with SSCs. In the retail sector, these differences can expand the TAM by linking cognitive evaluations with perceived safety, comfort, and self-confidence during use.

The next sections examine the drivers and barriers that influence SSC adoption more closely. This is followed by a discussion of how satisfaction and trust impact continuance intention.

Overall, adoption is influenced both by technology-related decisions, like usefulness, ease of use and other behavioral factors, that stem from previous experience, satisfaction, and trust. These differences help explain why SSCs feel convenient for some shoppers but remain unattractive for others.

TAM is primarily used to explain the initial adoption. It becomes less relevant when it comes to post-adoption outcomes and factors such as satisfaction and trust come into play. This thesis therefore expands on the traditional TAM perspective and looks at how perceived usefulness, perceived ease of use, and trust relate to continuance intention toward SSCs. It also examines how satisfaction and SSC experience relate to openness to advanced formats such as scan-and-go and checkout-free stores.

2.2.2 Drivers of SSC Adoption

Several factors influence whether shoppers use SSCs for the first time and intend to continue using them. Some drivers are practical. Frequently cited reasons are time savings, simplification of the checkout process and convenience (Dabholkar et al., 2003; Curran & Meuter, 2005). This overlaps with the TAM, which is based on perceived usefulness and ease of use (Davis, 1989). When the process feels simple and shoppers feel in control, they are more likely to use SSCs (Dabholkar et al., 2003; Liu, 2012).

After consumers have tried SSCs for the first time, post-adoption evaluations that include emotional factors become more important. Demirci Orel and Kara (2014) link satisfaction with the service quality of SSCs to loyalty. Satisfaction occurs when the system performs as expected and shoppers experience a sense of accomplishment after using it independently (Meuter et al., 2000). But the opposite can also happen if the system breaks down. Interruptions and error

messages can lead to frustration and anxiety. This can reduce satisfaction and weaken continuance intention. Trust also has a positive effect on continuance intention, as it reduces uncertainty and increases perceived security and reliability (Liu, 2012; Johnson et al., 2020).

The checkout environment also plays a role. The use of SSCs can be normalized through social influence if the shopper´s social circle also uses them on a regular basis (Curran & Meuter, 2005). Practical assistance can achieve similar results. Clearly communicated steps on screens and helpful staff nearby can reduce barriers and mistakes may feel less severe.

It should also be mentioned that people differ in their readiness for technology (Technology Readiness), which reflects a general tendency to embrace or avoid new technologies. It includes four dimensions. The positive ones consist of optimism and innovativeness and can encourage use. The negative ones include discomfort and insecurity and acts as a barrier (Liljander et al., 2006; Lin & Hsieh, 2006). Shoppers who feel confident with technology, or who enjoy experimenting with new tools, tend to be more open to SSC use.

Overall, the reviewed literature suggests that SSC adoption and post-adoption outcomes depend on both cognitive evaluations and experience. This thesis therefore focuses on perceived usefulness, perceived ease of use, trust, satisfaction, and SSC experience. In combination, these constructs help explain why SSC use becomes a routine part for some shoppers but remains unattractive for others.

2.2.3 Barriers to SSC Adoption

Despite the drivers discussed above, many consumers still hesitate to use self-service checkouts. This hesitance can be understood through the Innovation Resistance Theory. Ram and Sheth (1989) argue that resistance becomes more likely when an innovation disrupts routines or clashes with existing habits and beliefs. They distinguish between functional barriers (usage, value and risk) and psychological barriers (tradition and image). If this change feels substantial or uncertain for shoppers, resistance increases. This perspective may explain why some consumers avoid SSCs, even though they objectively recognize the potential for greater convenience and other benefits.

Another form of research deals with the role of interpersonal interaction. Although there were no significant results in their three studies, Curran and Meuter (2005) suggest that consumers who value interpersonal exchange are more likely to reject SSTs. The authors argue that

reduced social contact remains important because it shapes comfort, expectations, and perceived service quality, even beyond the checkout area. Bulmer et al. (2018) report similar findings. They found that some shoppers only use SSCs because they feel obliged to do so, since this option is perceived as faster and more considerate to others. In this case, social expectations can create pressure to use SSCs, even if some would prefer to proceed with traditional checkouts. These findings suggest that resistance is not only a matter of efficiency, but that social norms and emotional comfort might outweigh these practical benefits.

Another frequently cited barrier is technology anxiety. This refers to negative emotions that discourage the use of technology. Liu (2012) shows that this anxiety arises, and confidence declines when consumers feel pressured to use SSTs. The results also indicate that higher anxiety leads to reduced satisfaction, which in turn weakens the intention to use. This response is often linked to fear of making mistakes in front of others and concerns about system failures. This pattern can be reinforced when one feels a loss of control, especially when errors are difficult to correct or there is insufficient support from staff. Lin and Hsieh (2006) report a similar effect. Lower technology readiness, expressed through discomfort and uncertainty, weakens the perceived service quality and satisfaction with SSTs. In summary, these results suggest that consumers who feel overwhelmed by the technology or do not trust it are more likely to view SSTs negatively, which can weaken intention to use and continuance intention.

When looking at technology readiness in a broader context, Liljander et al. (2006) describe discomfort and uncertainty as negative factors that can prevent consumers from using new technologies. These factors are driven by feelings of being overwhelmed and doubts about whether the system works well. However, in their study they did not find that these two factors had a significant influence. Nevertheless, the results show that these perceptions are still relevant and may have a different effect in other contexts.

Perceived risk is another relevant factor. Within the Innovation Resistance Theory, risk is a functional barrier that can delay or prevent adoption (Ram & Sheth, 1989). In self-service settings, functional or performance risks include scanning errors, payment problems and incorrect charges. Such concerns can weaken attitudes and intentions to use SSTs. Curran and Meuter (2005) observe this pattern in an online banking environment, where uncertainty and the consequences of errors are especially salient.

Overall, barriers to SSC adoption go further than technical performance. Social and emotional factors often play a key role in resistance. Preferences for interpersonal service, social pressure, technology anxiety, reduced control and perceived risk all shape whether shoppers avoid self-checkouts.

The next sections focus on satisfaction and trust and discuss how they may reduce some of these barriers. Section 2.2.5 Coproduction, Perceived Risk and Social Aspects adds further contextual influences, before the drivers and barriers are integrated into the conceptual framework.

2.2.4 The Role of Satisfaction and Trust

Davis's Technology Acceptance Model (1989) is based on two factors: perceived usefulness (PU) and perceived ease of use (PEOU), which are the key predictors of initial intention to use SSTs. However, further research suggests that these two factors alone may not fully explain adoption. Satisfaction and trust are also important, both for initial adoption and for post-adoption outcomes. Satisfaction refers to the overall evaluation of the user experience and indicates whether the system delivers the benefits that the customer expected (Meuter et al., 2000). Evidence from studies in supermarket settings also supports this. Demirci Orel and Kara (2014) show that the quality of self-service checkouts, measured by functionality, design and convenience, is associated with customer satisfaction and loyalty.

Trust refers to another aspect of the experience, namely whether users consider the system to be reliable and secure and believe that their information is protected. These concerns become even more relevant when the interaction is purely technology-based and contact with staff is limited (Belanche et al., 2012). A higher level of trust can reduce uncertainty and perceived risk, thereby strengthening confidence in the system and continuance intention.

Demirci Orel and Kara (2014) also note that service quality does not necessarily translate into customer loyalty. Instead, the effect is explained by satisfaction. Continuance intention depends on how satisfied customers are after use and not necessarily on service quality alone. Kaushik and Rahman (2015) report similar findings in their paper. They found that when a system is perceived as useful, easy to use and trustworthy, this is associated with post-use satisfaction and perceived value and increases the intention to use SSTs. In agreement with this, Demirci Orel and Kara (2014) show that the perceived quality of the experience influences how efficient and in control consumers perceive the experience to be.

Trust is important for both initial and continuance intention. Johnson et al. (2020) found that perceived privacy and accuracy increase perceived security. This in turn increases the intention to use mobile self-checkouts. Dhagarra et al. (2020) show that trust helps explain the link between perceived credibility and engagement with the technology. A higher level of trust can reduce perceived risk. Evidence from other technology settings also suggests that trust can shape how useful a system is perceived to be and how positively users evaluate it (Linh & Huyen, 2025). Together, these findings suggest that reliability and security make systems appear more beneficial and support continuance intention.

Several studies suggest that TAM best explains adoption when complemented with additional constructs. These play a role not only during initial use. Blut et al. (2016) provide meta-analytic evidence that trust, and satisfaction are among the strongest drivers of post-adoption outcomes in the SST context.

While these factors strengthen confidence in self-checkout systems, adoption also depends on how consumers perceive their own role in the service encounter. The next section therefore examines co-production, perceived risk, and social aspects in more detail.

2.2.5 Coproduction, Perceived Risk and Social Aspects

Beyond cognitive and emotional drivers, SSC adoption is also shaped by what the customer is expected to do and by the social setting in which checkout takes place. With self-service checkouts, part of the service work shifts from employees to shoppers. Customers take over tasks such as scanning items and completing payment. This trend is also known as co-production. Meuter et al. (2005) describe it as customer participation, which can increase perceived control and efficiency. But at the same time, it can also increase effort and uncertainty. For some shoppers, this autonomy feels empowering, while for others it creates pressure. This becomes more visible when the process requires attention, time, or technical self-confidence.

Perceived risk can also limit adoption. In SSC settings, these concerns often relate to errors, technical failures, and a perceived loss of control during the checkout process. As mentioned in earlier sections, Ram and Sheth's (1989) Innovation Resistance Theory can explain this pattern of behavior. Mani and Chouk (2018) build on this logic and distinguish between functional barriers, such as complexity and performance risk, and psychological barriers, such as fear and privacy concerns. Both types of barriers can reduce the willingness to adopt

technology-based services. Findings by Knezevic et al. (2020) also point in the same direction. In their study, Croatian shoppers reported discomfort with SSCs in connection with scanning errors, technical errors, and limited staff assistance.

The social environment can intensify these arguments. Self-checkouts take place in public, often under time pressure and in view of others. This can feel uncomfortable for many shoppers. However, some shoppers feel socially pressured to use SSCs because they are seen as a faster and more appropriate option, especially when there are long queues (Bulmer et al., 2018). In these settings, mistakes can quickly lead to embarrassment and anxiety. This pressure takes away the enjoyment and increases resistance, especially for customers who see shopping not only as a functional task but also as a social experience.

In summary, the evaluation of SSCs depends on more than usefulness and ease of use. Co-production, perceived risk, and social influence shape whether shoppers experience the system as controllable and socially acceptable during use. For retailers, this has clear practical implications: SSCs need to work reliably and efficiently, but they also need to feel comfortable to use in a public setting, with support that reduces the impact of mistakes.

2.3 Integrating Theoretical Perspectives

The reviewed literature has shown that SSC adoption does not depend on a single factor, but rather on a mix of cognitive evaluations, emotional reactions, and social and behavioral influences. To explain this effect, this study builds on the Technology Acceptance Model (TAM) (Davis, 1989). TAM focuses on two core beliefs as an explanation for the use of technologies: perceived usefulness and perceived ease of use. When looked at in the SSC context, these indicate whether consumers see SSCs as convenient and efficient and whether the operating process feels like it requires little effort.

Later studies have found that the TAM becomes more meaningful when supplemented with post-use factors. Belanche et al. (2012) supplement it with trust, and Demirci Orel and Kara (2014) also show a similar pattern in supermarket SSC settings. Their findings suggest that the system quality is linked to satisfaction and loyalty. These assessments depend on how users rate the experience post use. Based on this evidence, this study includes trust (alongside perceived usefulness and perceived ease of use) to explain continuance intention, and satisfaction to explain openness to future in-store technologies.

However, the framework conditions should not overlook why some shoppers hesitate to use SSCs, even if they recognize their potential benefits. For this reason, this study takes Innovation Resistance Theory (Ram & Sheth, 1989) into account as a complementary lens to interpret barriers, even though these barrier perceptions are not modeled as separate constructs.

In addition, the concept of co-production in SST research should be mentioned. Meuter et al. (2005) explain that technology-based services require users to take on tasks that were traditionally intended for staff. In the SSC context, this shift can lead to efficiency and a sense of control, but it can also increase effort and uncertainty. The latter are more likely when instructions are unclear, or errors occur.

Combining these perspectives, this study builds on a framework that covers both drivers and barriers to SSC use. TAM covers cognitive evaluations, while Innovation Resistance Theory and co-production cover psychological and experiential influences. Together, they form the basis for how consumers evaluate SSCs, whether they continue to use them or intend to do so, and how they respond to newer retail technologies.

3. Methodology

3.1 Research Design and Approach

This study follows a quantitative approach. The literature review served as an exploratory step to narrow down the topic, define the core structures, and formulate the research questions and hypotheses. These are presented in the next chapter.

Based on this foundation, the empirical part of the thesis uses a descriptive, cross-sectional design. It shows how consumers evaluate SSCs, which factors influence their continuance intention, and how open they are to future in-store technologies. The primary data was collected through an online survey.

A survey is appropriate for this study because it allows many participants to be reached in a short period of time and perceptions such as perceived usefulness, perceived ease of use, trust, satisfaction, experience, and openness to new technologies can be measured. The study is cross-sectional, meaning that the data was collected at a single point in time. This design is appropriate for analyzing the relationships between the constructs.

3.2 Research Model and Hypotheses

The literature review showed that the adoption and continued use of self-service checkouts are influenced by beliefs from the Technology Acceptance Model (perceived usefulness and perceived ease of use), as well as by trust, satisfaction, and prior experience with the technology. Based on these insights, the present study focuses on continued use of SSCs and on consumers' openness toward newer in-store formats such as mobile scan-and-go and checkout-free stores. The constructs and hypotheses are grounded in the literature on self-service technologies and technology acceptance discussed in Chapter 2.

Building on this, the empirical part of the thesis addresses the following research questions (In this thesis, experience refers to perceived familiarity and comfort with self-service checkouts. Usage frequency is reported descriptively.):

- **RQ1:** Which factors (perceived usefulness, perceived ease of use and trust) most strongly predict consumers intention to continue using self-service checkouts?
- **RQ2:** How does satisfaction with self-service checkouts influence consumers openness to adopt future in-store technologies such as mobile scan-and-go and checkout-free stores?

- **RQ3:** How does experience with self-service checkouts (perceived familiarity and comfort) influence consumers openness to adopt future in-store technologies such as mobile scan-and-go and checkout-free stores?

To answer these questions, the study tests the following hypotheses, which are derived from prior research on technology acceptance, self-service technologies, and innovation resistance:

- **H1:** Perceived usefulness of SSCs positively predicts consumers continuance intention to use SSCs.
- **H2:** Perceived ease of use of SSCs positively predicts consumers continuance intention to use SSCs.
- **H3:** Trust in SSCs positively predicts consumers continuance intention to use SSCs.
- **H4:** Satisfaction with SSCs positively predicts consumers openness to adopt future in-store technologies (e.g., scan-and-go, checkout-free stores).
- **H5:** SSC experience (perceived familiarity, confidence, and routinization) positively predicts consumers openness to adopt future in-store technologies (e.g., mobile scan-and-go, checkout-free stores).

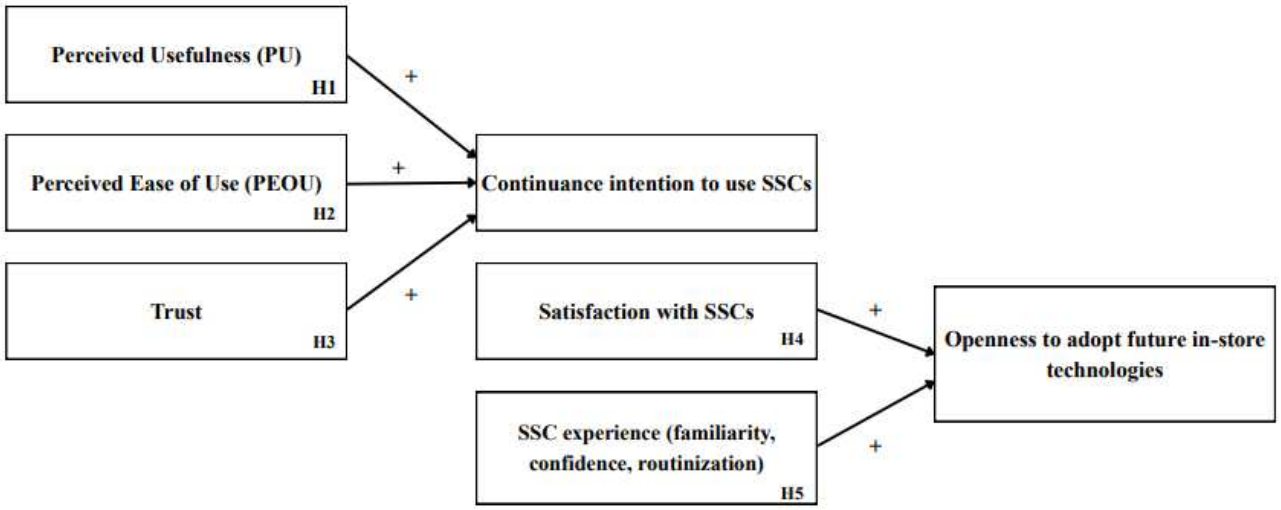

Figure 2: *Conceptual model of continuance intention and openness to future retail technologies.*

3.3 Primary Data

In addition to the secondary data discussed in the literature review, this study relies on primary data collected through an online survey. The survey is used to capture consumers' perceptions of self-service checkouts and their openness to future in-store technologies, and to test the

relationships proposed in the research model. The focus is on respondents who already have some experience with SSCs, so that they can evaluate the constructs based on actual use rather than hypothetical scenarios.

3.3.1 Data Collection

Primary data was collected through a structured online questionnaire designed in Qualtrics. The survey format allows responses to be gathered efficiently from a larger number of participants and gives respondents the flexibility to answer at their own pace and in a familiar environment.

The target population consists of adult supermarket shoppers who have used self-service checkouts at least once in the last 12 months. To reach this group, a non-probability sampling approach was used. The survey link was distributed through personal and professional networks, social media channels, and university contacts, which corresponds to a mix of convenience and snowball sampling. Because a convenience/snowball sample was used, the results are not statistically representative, but they are suitable for testing the proposed relationships. This approach is also in line with the time and resource constraints of a master's thesis.

At the beginning of the questionnaire, respondents were informed about the general purpose of the study, the approximate time needed to complete the survey, and the voluntary nature of participation. They were assured that their answers will be treated anonymously and used only for academic purposes.

Before launching the main data collection, the questionnaire was pre-tested with a small group of respondents who matched the target profile. The goal of the pre-test was to check the clarity of the questions, the length of the survey, and the functioning of the online format. Feedback from the pre-test confirmed the clarity and flow of the questionnaire. No adjustments were necessary.

3.3.2 Measurement of constructs

The following section explains how the key constructs in this study were measured in the online survey. For each construct, the table below lists the sources the items are based on, the number of items used, and an example of how the scale was adapted to the SSC context. Established TAM measures were used wherever possible, while a small number of items were newly

formulated when no direct scale was available in the thesis literature. All constructs were measured on 7-point Likert scales to allow reliability checks and hypothesis testing in SPSS.

Construct	**Items in the online survey**	**Main scale sources**
Experience with SSCs (familiarity/comfort)	4 Likert items (Block 2)	Self-developed based on the literature review / proposal
Perceived Usefulness (PU)	4 Likert items (Block 3)	Davis (1989) TAM PU scale
Perceived Ease of Use (PEOU)	4 Likert items (Block 4)	Davis (1989) TAM PEOU scale
Trust in SSCs	4 Likert items (Block 5)	Kaushik & Rahman (2015) + Belanche et al. (2012)
Satisfaction with SSCs	4 Likert items (Block 6)	Demirci Orel & Kara (2014)
Intention to continue using SSCs	3 Likert items (Block 7)	Belanche et al. (2012) behavioral/reuse intention items
Openness to adopt future in-store technologies (scan-and-go, checkout-free)	4 Likert items (Block 8)	Self-developed; concept grounded in Johnson et al. (2020)

Table 2: *Measurement model and scale sources.*

Note: *All Likert items are adapted to the supermarket SSC context. Higher values indicate stronger agreement. Frequency of SSC use was coded so that higher values reflect more frequent use.*

All constructs were measured with multi-item scales using a 7-point Likert format (1 = strongly disagree, 7 = strongly agree). The questionnaire is built around the conceptual model and, wherever possible, relies on established measures from earlier research. Perceived usefulness (PU) and perceived ease of use (PEOU) were taken from Davis (1989) and adjusted to fit the supermarket self-checkout setting. Trust and satisfaction were also measured with items adapted from prior SSC/SST studies.

Trust in SSCs was captured with four items that reflect confidence in the system, including whether it works reliably, scans products correctly, and feels safe to use for payment. The wording follows how trust is typically operationalized in SST research and was translated to the SSC context.

Satisfaction with SSCs was measured through four overall evaluation items that focus on how positive and fulfilling the checkout experience is (for example, whether it meets expectations and leaves users satisfied). Intention to continue using SSCs was measured with three items that ask about plans and willingness to keep using self-checkouts in future shopping trips.

For experience with SSCs and openness to future in-store technologies, no ready-to-use validated scale was found in the thesis literature. Therefore, these items were developed based on the construct definitions from the literature review. Experience was operationalized as familiarity and comfort built through repeated SSC use, so the four items cover aspects such as routine, confidence, and feeling independent when using the system. Openness to future formats was measured with four intention-style items that ask about willingness to try mobile scan-and-go and checkout-free stores, phrased in line with common technology adoption intention measures.

Items were developed from the construct definitions in the literature review and designed to cover each construct's full domain (e.g., familiarity, confidence, and routinization for experience; willingness to try and regularly use future formats for openness). The pre-test confirmed that the items were clear and interpreted as intended.

The following section explains the data analysis procedures used to assess the reliability and validity of the scales and to test the hypotheses.

3.4 Data Analysis

After data collection, all cases that did not meet the screening criteria or that did not complete the questionnaire were removed from the dataset. Only fully completed surveys from respondents who had used a supermarket SSC in the last 12 months were kept for analysis. Descriptive results are reported for N = 101. After outlier removal, the hypothesis tests use N = 99.

The cleaned dataset was analyzed with SPSS. First, descriptive statistics (means, standard deviations, and frequencies) were calculated to describe the sample and to give an overview of the key constructs.

Next, the internal consistency of each multi-item scale was checked with Cronbach's alpha. Items were reviewed using item–total correlations and Cronbach's alpha. No items were

removed because all scales showed strong internal consistency. Construct validity was then explored with factor analysis in order to see whether the items load on the expected factors.

Finally, the hypotheses (H1–H5) were tested with multiple regression analyses. Predictors were entered simultaneously in standard multiple regression models. Intention to continue using SSCs was the dependent variable in the first set of models (H1–H3), while openness to future in-store technologies was the dependent variable in the models testing H4 and H5. All tests used a significance level of 5% ($p < .05$).

3.5 Method limitations

The chosen methodology also has some limitations. The sample is based on convenience and snowball sampling, so it is not statistically representative of all supermarket shoppers. The results therefore cannot be generalized to the whole population, but they are suitable for exploring the proposed relationships between the constructs.

The study is cross-sectional, which means that all data were collected at one point in time. As a result, the analyses can show associations between variables but cannot prove causal relationships.

In addition, the data were self-reported. Respondents may overstate or understate their use of SSCs or their attitudes due to social desirability or memory effects. Finally, some scales were adapted to the SSC context and two constructs (experience with SSCs and openness to future formats) were newly formulated based on the literature review. Although reliability and validity were assessed, these adaptations may influence comparability with earlier studies.

4. Results

4.1 Sample characteristics and basic SSC use

The final sample consists of 101 respondents. Most participants are female (63.4%), while 36.6% are male. The sample is rather young: the largest age group is 25–34 years (44.6%), and in total 63.4% of respondents are 34 years or younger. Only 6.0% are 55 years or older.

Most respondents live in Austria (72.3%), followed by Germany (18.8%). A smaller share lives in Portugal (5.0%) or in other European and non-European countries (4.0% in total). In terms of education, the sample is highly educated. About two thirds hold a higher education degree: 30.7% have a Bachelor's degree and 35.6% a Master's degree or equivalent, while only 3.0% report primary or lower secondary education.

With regard to employment status, 50.5% of respondents are employed full-time and 15.8% part-time. Around a quarter (26.7%) are students, and only a small share is self-employed, unemployed, or retired. Monthly net household income is spread fairly evenly across the income brackets. The largest single groups report 4,000–4,999 € (13.9%) and ≥ 6,000 € (14.9%), while 19.8% prefer not to state their income. The sociodemographic characteristics of the sample are summarized in Table 3**.**

Characteristic	Category	n	%
Gender	Male	37	*36,6*
	Female	64	*63,4*
Age group	18-24 years	19	*18,8*
	25-34 years	45	*44,6*
	35-44 years	14	*13,9*
	45-54 years	17	*16,8*
	55-64 years	4	*4,0*
	≥ 65 years	2	*2,0*
Country of residence	Austria	73	*72,3*
	Germany	19	*18,8*
	Portugal	5	*5,0*
	Other European country	3	*3,0*
	Other Non-European Country	1	*1,0*
Level of education	Primary education (Volksschule)	1	*1,0*
	Lower secondary education (e,g, Hauptschule, Neue Mittelschule)	2	*2,0*
	Upper secondary education (e.g., Matura, A-levels, Abitur)	24	*23,8*
	Vocational training / apprenticeship	6	*5,9*
	Bachelor's degree	31	*30,7*
	Master's degree or equivalent	36	*35,6*
	Doctoral degree (PhD)	1	*1,0*

Employment status	Student	27	*26,7*
	Employed full-time	51	*50,5*
	Employed part-time	16	*15,8*
	Self-employed / freelancer	4	*4,0*
	Unemployed and looking for work	1	*1,0*
	Retired	2	*2,0*
Monthly net household income	Less than 1,000 €	11	*10,9*
	1,000 € – 1,999 €	13	*12,9*
	2,000 € – 2,999 €	10	*9,9*
	3,000 € – 3,999 €	13	*12,9*
	4,000 € – 4,999 €	14	*13,9*
	5,000 € – 5,999 €	5	*5,0*
	≥ 6,000 €	15	*14,9*
	I do not know / Prefer not to say	20	*19,8*

Table 3: *Sociodemographic distribution.*

Supermarket shopping is a regular activity for almost all respondents. In total, 93.1% state that they shop in supermarkets or grocery stores at least once per week, with 52.5% doing so several times per week and 40.5% about once per week. Only a small minority shop less frequently.

Use of self-service checkouts is also common, but less universal. About 43.6% of respondents say they use SSCs frequently (13.9% almost always, 29.7% often), while 37.6% use them occasionally. 18.8% report that they rarely or almost never use SSCs. The distributions for supermarket shopping frequency and SSC use are shown in Figure 3 and Figure 4**.**

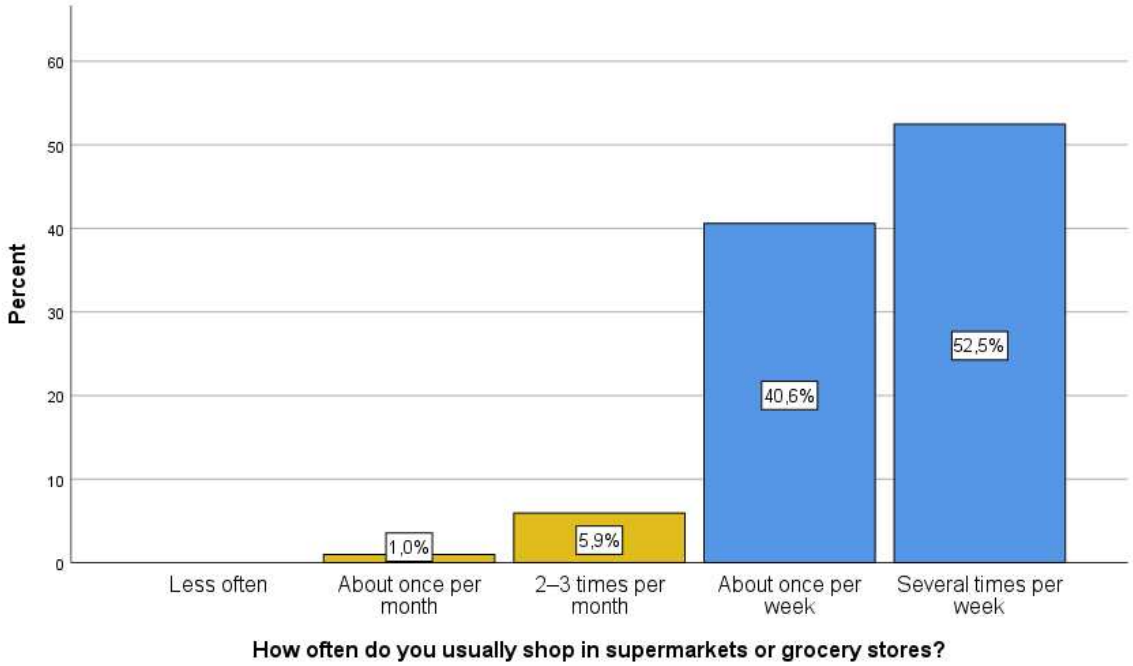

Figure 3: *Frequency of shopping in supermarkets or grocery stores.*

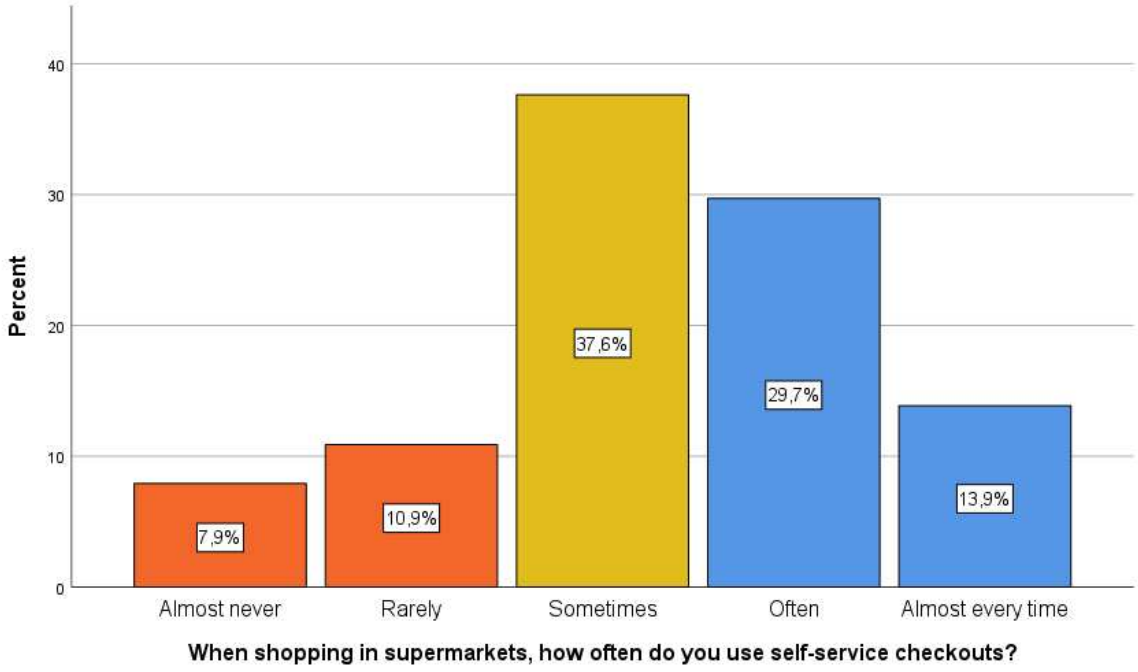

Figure 4: *Frequency of self-service checkout use in supermarkets.*

Note: Descriptive sample characteristics are reported for the full set of completed surveys (N = 101). Unless stated otherwise, construct-level analyses and the regression models use N = 99 after removing two multivariate outliers.

4.2 Data screening and measurement model

4.2.1 Data screening

Before the analysis, the raw data from Qualtrics were screened and cleaned. In total, 118 respondents started the survey.

First, 6 cases were removed because the respondents did not complete the questionnaire and only answered between 2% and 55% of the items. Second, 10 cases were excluded because the respondents indicated “no” or “I can’t remember” when asked whether they had used a supermarket self-service checkout in the last 12 months (Q1). Third, 1 case was removed because the respondent selected the wrong answer option in the attention-check item (Q20).

After these steps, the data set contained 101 fully completed questionnaires from respondents who matched the screening criteria, with no item-level missing values because all questions in the main blocks required a response.

4.2.2 Internal consistency (Cronbach's alpha)

To assess the internal consistency of the multi-item scales, Cronbach's alpha, and corrected item–total correlations were calculated for each construct. The results are shown in Table 4**.**

Constructs and correspondent items	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
EXPERIENCE (4 items)			**0,840**
Q4 I'm familiar with how to use self-service checkouts.	0,754	0,777	
Q5 I feel confident using self-service checkouts.	0,827	0,733	
Q6 Using self-service checkouts is part of my usual shopping routine.	0,712	0,820	
Q7 I can use self-service checkouts without help from staff.	0,537	0,853	
PU (4 items)			**0,903**
Q8 Using self-service checkouts makes my shopping trip quicker.	0,860	0,848	
Q9 Self-service checkouts make paying for my groceries more efficient.	0,775	0,879	
Q10 Compared to staffed checkouts, self-service checkouts save me time.	0,827	0,859	
Q11 Overall, I find self-service checkouts useful for grocery shopping.	0,680	0,909	
PEOU (4 items)			**0,931**
Q12 I find self-service checkouts easy to use.	0,858	0,904	
Q13 Learning to use self-service checkouts is easy for me.	0,847	0,911	
Q14 The steps at self-service checkouts are clear and easy to understand.	0,808	0,925	
Q15 I can complete a self-service checkout without much effort.	0,862	0,902	
TRUST (4 items)			**0,926**
Q16 I trust self-service checkouts to scan items correctly.	0,891	0,885	
Q17 I trust the payment process at self-service checkouts.	0,878	0,891	
Q18 Self-service checkouts usually work reliably.	0,803	0,930	
Q19 I feel safe using self-service checkouts.	0,806	0,911	
SATISFACTION (4 items)			**0,936**
Q21 Overall, I'm satisfied with self-service checkouts.	0,849	0,916	
Q22 Self-service checkouts generally meet my expectations.	0,909	0,902	
Q23 I'm happy with how self-service checkouts work in the supermarkets…	0,865	0,912	
Q24 Using self-service checkouts is a positive part of my shopping trip.	0,790	0,935	
INTENTION (3 items)			**0,924**
Q25 I plan to keep using self-service checkouts in the future.	0,880	0,862	
Q26 When I have the choice, I'll use a self-service checkout.	0,801	0,928	
Q27 I expect to use self-service checkouts regularly on future supermarket…	0,858	0,880	
OPENNESS (4 items)			**0,902**
Q28 I would be willing to try mobile scan-and-go in supermarkets.	0,753	0,886	
Q29 I would be willing to try checkout-free supermarkets.	0,808	0,864	
Q30 I'm open to new in-store technologies if they make shopping easier.	0,755	0,887	
Q31 I can imagine using scan-and-go or checkout-free stores regularly ….	0,832	0,855	

Table 4: *Constructs internal consistency (N=101).*

Note: Reliability is reported for N = 101 completed surveys. Construct-level analyses use N = 99 after outlier removal.

All constructs reach high reliability values. Experience with SSCs shows a Cronbach's alpha of 0.840, while all other constructs have alpha values above 0.90: perceived usefulness (PU) $\alpha = 0.903$, perceived ease of use (PEOU) $\alpha = 0.931$, trust $\alpha = 0.926$, satisfaction $\alpha = 0.936$, intention $\alpha = 0.924$ and openness $\alpha = 0.902$. These values indicate good to excellent internal consistency for all scales.

For some constructs, Cronbach's alpha would increase slightly if one item were deleted (Q7 for experience, Q11 for PU, Q18 for trust and Q26 for intention). However, all items show corrected item–total correlations above 0.40, which indicates a good discrimination index. The potential gain in alpha would be very small (between 0.004 and 0.013 points), so all items were kept in their original scales to preserve content coverage.

Based on these results, all seven constructs are considered internally consistent, and construct scores were computed as the mean of the corresponding items for each respondent.

4.2.3 Exploratory factor analysis

An exploratory factor analysis (EFA) was carried out to check whether the items group in a way that is consistent with the conceptual model. Principal Axis Factoring with Varimax rotation was used. The sample shows very good adequacy for factor analysis (KMO = 0.947; Bartlett's test of sphericity $\chi^2(351) = 3034.43$, $p < .001$).

The analysis identified four factors with eigenvalues above 1, which together explain 75.54% of the total variance. The first factor combines the items for trust, satisfaction, and continuance intention (Q16–Q19, Q21–Q26). The second factor includes the experience and perceived ease of use items (Q4, Q5, Q7, Q12–Q15). The third factor groups the perceived usefulness items together with Q6 and Q27 (Q6, Q8–Q11, Q27). The fourth factor contains all openness items (Q28–Q31). All retained items load above 0.50 on their main factor.

	Factor			
Items	1	2	3	4
Q16 I trust self-service checkouts to scan items correctly.	,764			
Q17 I trust the payment process at self-service checkouts.	,763			
Q18 Self-service checkouts usually work reliably.	,734			
Q19 I feel safe using self-service checkouts.	,557			
Q21 Overall, I'm satisfied with self-service checkouts.	,654			
Q22 Self-service checkouts generally meet my expectations.	,650			
Q23 I'm happy with how self-service checkouts work in the supermarkets I visit.	,736			
Q24 Using self-service checkouts is a positive part of my shopping trip.	,625			
Q25 I plan to keep using self-service checkouts in the future.	,593			
Q26 When I have the choice, I'll use a self-service checkout.	,592			

Q4 I'm familiar with how to use self-service checkouts.	,606			
Q5 I feel confident using self-service checkouts.	,610			
Q7 I can use self-service checkouts without help from staff.	,636			
Q12 I find self-service checkouts easy to use.	,768			
Q13 Learning to use self-service checkouts is easy for me.	,786			
Q14 The steps at self-service checkouts are clear and easy to understand.	,692			
Q15 I can complete a self-service checkout without much effort.	,758			
Q6 Using self-service checkouts is part of my usual shopping routine.		,570		
Q8 Using self-service checkouts makes my shopping trip quicker.		,741		
Q9 Self-service checkouts make paying for my groceries more efficient.		,755		
Q10 Compared to staffed checkouts, self-service checkouts save me time.		,690		
Q11 Overall, I find self-service checkouts useful for grocery shopping.		,591		
Q27 I expect to use self-service checkouts regularly on future supermarket visits.		,575		
Q28 I would be willing to try mobile scan-and-go in supermarkets.				,762
Q29 I would be willing to try checkout-free supermarkets.				,811
Q30 I'm open to new in-store technologies if they make shopping easier.				,637
Q31 I can imagine using scan-and-go or checkout-free stores regularly in the future.				,760
% Variance Explained (Total=75,54%)	23,97	19,91	18,11	13,54
Eigen Value	6,47	5,38	4,89	3,66

KMO=0,947, Bartlett's $X^2_{(351)}$=3034,431, p<.001, Extraction Method: Principal Axis Factoring.
Rotation Method: Varimax with Kaiser Normalization.[a]

Table 5: *Exploratory factor analysis.*

The factor loadings and explained variance are presented in Table 5**.** As the table shows, the items have clear primary loadings on the four factors and only minor cross-loadings.

Overall, the factor solution is broadly in line with the measurement approach used in this study, but it also shows overlap between some constructs. Trust, satisfaction, and continuance intention load on one common evaluative factor, and experience is closely linked to perceived ease of use. Perceived usefulness and openness to future in-store technologies form separate factors, as expected. Given the high sampling adequacy and the strong primary loadings, the constructs were computed as planned and used in the regression analyses. However, results should be interpreted with caution because the overlap between constructs may reduce their distinctiveness and weaken unique effects.

4.2.4 Descriptives and correlations of constructs

Descriptive statistics for the seven constructs (based on N = 99) are shown in Table 6. All constructs have mean values above 5 on the 7-point scale (1 = strongly disagree, 7 = strongly agree). Satisfaction shows the lowest mean (M = 5.04), followed by perceived usefulness (M = 5.17), intention (M = 5.23) and openness (M = 5.30). The highest means are found for perceived ease of use (M = 5.78), trust (M = 5.61) and experience with SSCs (M = 5.55).

Constructs	Min. – Máx.	Mean	Std. Deviation
EXPERIENCE with SSCs	3,00 – 7,00	5,55	1,025
Perceived usefulness of SSCs (PU)	2,50 – 7,00	5,17	1,084
Perceived ease of use (PEOU)	3,00 – 7,00	5,78	0,881
TRUST in SSCs	1,75 – 7,00	5,61	1,158
SATISFACTION with SSCs	1,00 – 7,00	5,04	1,228
INTENTION to continue use of SSCs	1,00 – 7,00	5,23	1,321
OPENNESS to future in-store technologies	1,75 – 7,00	5,30	1,292

Table 6: *Descriptive statistics of constructs (N = 99).*

Standard deviations range between 0.881 (PEOU) and 1.321 (intention), which indicates that there is enough variation in responses while still showing reasonable agreement within the sample. A bar chart with the construct means is presented in Figure 5**.**

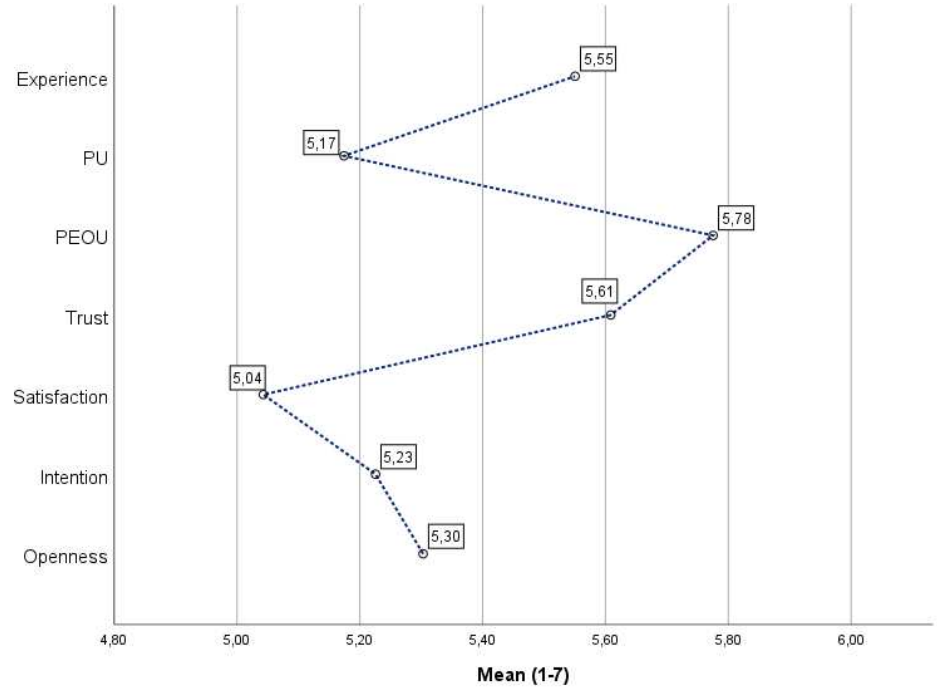

Figure 5: *Construct means.*

Normality was assessed with Kolmogorov–Smirnov tests and by inspecting skewness and kurtosis (Table 7). The Kolmogorov–Smirnov tests are significant for all constructs, which is common with larger samples. At the same time, all skewness values are below |3| and all

kurtosis values are below |7|. The constructs can therefore be treated as approximately normally distributed and are suitable for the use of parametric tests.

	Tests of Normality Kolmogorov-Smirnov[a]				
Constructs	Statistic	df	Sig.	Skewness	Kurtosis
EXPERIENCE Experience with SSCs	,107	99	,007	-,460	-,529
PU Perceived usefulness of SSCs (PU)	,144	99	<,001	-,583	-,167
PEOU Perceived ease of use (PEOU)	,165	99	<,001	-,815	,547
TRUST Trust in SSCs	,155	99	<,001	-1,324	1,834
SATISFACTION Satisfaction with SSCs	,153	99	<,001	-1,329	2,153
INTENTION Intention to continue use of SSCs	,190	99	<,001	-1,312	1,700
OPENNESS Openness to future in-store technologies	,145	99	<,001	-,660	-,235

a. Lilliefors Significance Correction

Table 7: *Normality analysis of constructs (N=99).*

Pearson correlations between the constructs are reported in Table 8**.** All correlations are positive and highly significant ($p < .001$). Openness is moderately related to all other constructs, with correlations between $r = 0.516$ (experience–openness) and $r = 0.641$ (intention–openness). Intention shows high positive correlations with experience ($r = 0.784$), PU ($r = 0.805$), PEOU ($r = 0.742$) and trust ($r = 0.818$), and a very high correlation with satisfaction ($r = 0.917$). Satisfaction itself is strongly related to experience, PU, PEOU and trust (r between 0.735 and 0.890).

	PU	PEOU	Trust	Satisfaction	Intention	Openness
Experience	,703***	,791***	,767***	,803***	,784***	,516***
PU		,690***	,667***	,790***	,805***	,550***
PEOU			,751***	,735***	,742***	,554***
Trust				,890***	,818***	,593***
Satisfaction					,917***	,619***
Intention						,641***

*** significant for p-value ≤ 0,001

Table 8: *Correlations between constructs (N=99).*

These patterns are consistent with the theoretical expectations and support the use of multiple regression analyses to test the hypotheses.

4.3 Hypothesis testing

4.3.1 Predictors of intention to continue using SSCs (H1–H3)

Multicollinearity was assessed using tolerance and variance inflation factors (VIF). All predictors met common thresholds (tolerance > .10; VIF < 5).

A multiple regression with intention to continue using SSCs as the dependent variable and PU, PEOU and trust as predictors resulted in a significant model, $F(3, 95) = 122.51$, $p < .001$, explaining 79.5% of the variance in intention **(**$R^2 = .795$; $R^2adj = .788$**).**

Perceived usefulness and trust both have a positive and statistically significant effect on intention.
PU shows a regression coefficient of B = 0.524 (β = 0.430, p < .001), while trust has B = 0.515 (β = 0.451, p < .001). This confirms H1 and H3: respondents who perceive SSCs as more useful and more trustworthy report a stronger intention to continue using them.

Perceived ease of use does not emerge as a significant predictor once usefulness and trust are included in the model (B = 0.160; β = 0.107; p = .164). Therefore, H2 is not confirmed. In relative terms, trust shows the strongest standardized effect (β = 0.451), closely followed by perceived usefulness (β = 0.430).

Predictors	B	Beta	t	sig
(Constant)	-1,299		-3,182	0,002
Perceived usefulness of SSCs (PU)	0,524	0,430	6,361	<0,001
Perceived ease of use of SSCs (PEOU)	0,160	0,107	1,403	0,164
Trust in SSCs	0,515	0,451	6,092	<0,001
$F_{(3, 95)}$=122,509, p<0.001; R=0,891, R^2=0,795, R^2_{adj}=0,788				

a. Dependent Variable: Intention to continue use of SSCs

Table 9: *Multiple regression of PU, PEOU and trust on intention to continue using SSCs (N = 99) (H1-H3).*

4.3.2 Predictors of openness to future in-store technologies (H4–H5)

The second regression model includes satisfaction with SSCs and experience with SSCs as predictors of openness to future in-store technologies. The model is significant, $F(2, 96) = 29.98$, $p < .001$, and explains 38.4% of the variance in openness ($R^2 = .384$; $R^2adj = .372$). Collinearity diagnostics did not indicate multicollinearity problems.

Satisfaction with SSCs has a clear positive and significant effect on openness (B = 0.607; β = 0.577; p < .001). This supports H4: respondents who are more satisfied with SSCs are more willing to try formats such as mobile scan-and-go and checkout-free stores.

Experience with SSCs, however, does not have a significant unique effect on openness once satisfaction is controlled for (B = 0.066; β = 0.052; p = .699). Thus, H5 is not confirmed. While experience correlates positively with openness at the bivariate level, it does not add explanatory power beyond satisfaction in the regression model. This pattern suggests that experience overlaps strongly with satisfaction, so its effect on openness is mainly captured through satisfaction rather than appearing as an independent predictor.

Predictors	B	Beta	t	sig
(Constant)	1,875		3,280	0,001
Satisfaction with SSCs	0,607	0,577	4,298	<0,001
Experience with SSCs	0,066	0,052	0,388	0,699
$F_{(2, 96)}$=29,978, p<0.001; R=0,620, R^2=0,384, R^2_{adj}=0,372				

a. Dependent Variable: Openness to future in-store technologies

Table 10: *Multiple regression of satisfaction and experience on openness to future in-store technologies (N = 99).*

5. Discussion

5.1 Overview and purpose of the study

This thesis examined how consumers evaluate self-service checkouts in supermarkets and how this evaluation affects two aspects: the continuance intention to use SSCs and openness to more advanced in-store technologies, such as mobile scan-and-go and checkout-free stores. The model combined core TAM constructs with trust and satisfaction and included experience with SSCs as a factor. The analyses were based on an online survey with 101 completed questionnaires. The regression analyses were conducted with N = 99 after excluding two multivariate outliers.

5.2 Summary of key findings

The results show a clear split between the factors that predict continuance intention and those that predict openness to future formats. Perceived usefulness and trust have a strong positive effect on continuance intention. Although perceived ease of use is positively correlated with continuance intention, it has no significant unique effect in the regression model when usefulness and trust are included.

Satisfaction is the strongest predictor of openness to future in-store technologies. It has a strong positive effect. Although SSC experience is positively correlated with openness, it has no significant unique effect when satisfaction is taken into account. This suggests that consumers' overall assessment of SSCs is more important for openness than experience alone.

In summary, these results show that trust and functional values are important for the continued use of SSCs, while satisfaction is the strongest predictor of openness to future retail technologies. Overall, the results support H1 and H3 but not H2, and they support H4 but not H5.

5.3 Discussion of results by research question

5.3.1 Predictors of continuance intention (RQ1)

The first part of the analysis focused on which factors best predict consumers' intention to continue using SSCs. The model accounts for a large share of the variance in continuance intention, suggesting that these constructs reflect the main drivers of post-adoption use here.

Perceived usefulness has a clear positive effect, which reinforces the idea that shoppers will continue to use SSCs if they perceive their advantages, such as speed, efficiency and convenience. Trust also has a strong positive effect. From this, it can be concluded that SSC use is not just a question of convenience. It also depends on whether consumers see the system as reliable and secure, especially in relation to scanning accuracy and the payment process.

Perceived ease of use has no significant unique effect in the model. However, this does not mean that it is irrelevant. The bivariate correlation between perceived ease of use and continuance intention is strongly positive. This means that this factor overlaps with other evaluations in the model.

When perceived usefulness and trust are also taken into account, ease of use no longer has a significant effect. This is not unlikely in the SSC context, as many shoppers are already familiar with the general process and further use therefore depends more on whether value is generated through use and whether it feels trustworthy than how easy it is. The exploratory factor analysis also shows a close connection between perceived ease of use and experience, from which it can be concluded that ease is primarily expressed through familiarity and confidence.

5.3.2 Predictors of openness to future in-store technologies (RQ2+RQ3)

The second regression model examined whether satisfaction with SSCs and SSC experience affect openness to more advanced in-store technologies. The model shows strong explanatory power for openness. Satisfaction is a strong positive predictor, which supports the idea that positive post-use evaluations of SSCs are associated with greater willingness to try such formats. These findings suggest that consumers use their SSC experiences as a basis for broader judgment. When they are seen as a positive and reliable touchpoint, consumers are more willing to accept technologies that require them to perform even more tasks.

SSC experience has no significant unique effect when satisfaction is included. Experience is positively correlated with openness at the bivariate level. This means that consumers who are more familiar and confident with SSCs are more open to new formats. In the regression model, however, experience has no explanatory power beyond satisfaction. From this, it can be concluded that experience seems to matter mainly when it translates into a positive overall evaluation (satisfaction). Familiarity alone is not significant. What is more significant is whether repeated use of SSCs leads to a satisfactory experience. This may also explain how

consumers perceive these advanced formats, as they can raise additional concerns such as reliability, privacy, consequences of errors, etc., which are not yet an issue with standard SSCs.

5.4 Theoretical implications

These findings support the view that TAM is a useful starting point for understanding SSC use. However, they also emphasize that relying solely on perceived usefulness and perceived ease of use in a post-adoption context is limiting. Perceived usefulness remains an important driver for continuance intention. However, trust also has a strong effect. This further reinforces the fact that use is influenced not only by convenience but also by reliability and perceived security. In the checkout environment, where consumers complete payment transactions and mistakes feel costly or embarrassing, trust is crucial for continued use.

These results also reinforce the role of post-adoption evaluations. Satisfaction is a key predictor of openness to future technologies. The adoption of such technologies is therefore strongly linked to the evaluation of existing technology-based services. This reinforces the view in SST research that trust and satisfaction play a major role after initial adoption. The measurement results indicate that the evaluations of SSCs are closely interrelated. Since some constructs cluster at the factor level, this suggests that consumers may not draw a strict line between satisfaction, trust, and intention in practice. This helps to explain why some predictors no longer have a unique significant effect when other constructs are included in the model.

5.5 Managerial implications

From a managerial perspective, these results suggest that increasing SSC adoption is not just a matter of encouraging trial. The more important goal is to strengthen continuance intention and create a consistently positive experience, since satisfaction is also linked to openness to future formats.

Retailers must incorporate trust as a central element in design and communication. Trust can be strengthened by improving perceived reliability and security. This can be achieved by reducing scanning and payment errors and making the process feel secure and transparent. Perceived risk and uncertainty can be reduced through clear on-screen guidance, confirmation messages and prompt assistance from staff.

Furthermore, retailers must ensure the usefulness of SSCs and design them in such a way that they really are the faster and more convenient option. SSCs are most useful when they clearly

stand out from traditional checkouts. This can be achieved through queue management, fast payment options and user-friendly operation. If SSCs feel slow or complicated, their perceived usefulness is quickly lost.

Finally, satisfaction with SSCs is also important, especially because it is linked to openness to future formats. Retailers planning to invest in such advanced formats should assume that SSCs will shape expectations for them. If SSCs cause frustration, uncertainty or embarrassment, this can limit the willingness to adapt to new formats. It is therefore recommended to invest in error correction, clear descriptions and employee support in order to increase not only the intention to continue using the system, but also the willingness to adopt future technologies.

5.6 Limitations and directions for future research

This study has several limitations that must be taken into account when interpreting the results. First, the study was conducted using a cross-sectional design and the results are self-reported. Therefore, no causal conclusions can be drawn. The results reflect correlations between perceptions and intentions at a single point in time. Furthermore, some constructs are highly correlated, and exploratory factor analysis shows that some items are strongly clustered at the measurement level. This may indicate an overlap between some perceptions, which thereby reduces the unique effect of individual predictors.

The sample consists of respondents who have used SSCs before. The results therefore reflect post-adoption evaluations by users rather than barriers identified by non-users. Future research should compare users and non-users in order to better understand the differences between resistance and adoption. In addition, future work could test the mechanism in more detail. For example, mediation models could be used to investigate whether experience indirectly influences openness through satisfaction or trust. More long-term studies that examine SSC use over a period of time would also provide a better understanding of whether repeated experience shapes satisfaction and willingness to use future formats.

5.7 Conclusion

Overall, the study shows that continuance intention to use SSCs is primarily driven by trust and perceived usefulness. Although perceived ease of use is positively related to intention, it has no unique significant effect when usefulness and trust are taken into account together. Openness to future in-store technologies is primarily explained by satisfaction with SSCs. Although

experience is linked to openness on a bivariate level, it has no significant effect in the regression model. In conclusion, this study suggests that retailers can encourage continued use of SSCs and readiness to use future formats by focusing on reliability, security and a consistently satisfactory checkout experience.

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Appendices

Appendix 1: Questionnaire

Start of Block: Introduction

Hi! I'm a Master's student at Católica Lisbon School of Business & Economics and I'm currently writing my thesis on how consumers use and perceive self-service checkouts in supermarkets, and how this relates to openness towards newer in-store technologies. The survey takes about 5–7 minutes. Your answers will be treated fully anonymous and used only for academic purposes. Participation is voluntary and you can stop at any time. If you have any questions about the study, feel free to reach out at: s-nachter@ucp.pt. Thank you for your help! Natalie Achter

End of Block: Introduction

Start of Block: Block 1 – Screening & basic SSC use

This part asks about your grocery shopping and your use of self-service checkouts in supermarkets. Please choose the answer that best describes your usual behaviour.

Q1 Have you used a self-service checkout in a supermarket in the last 12 months?

- ○ Yes (1)
- ○ No (2)
- ○ I can´t remember (3)

Q2 How often do you usually shop in supermarkets or grocery stores?

- ○ Several times per week (1)
- ○ About once per week (2)
- ○ 2–3 times per month (3)
- ○ About once per month (4)
- ○ Less often (5)

Q3 When shopping in supermarkets, how often do you use self-service checkouts?

- ○ Almost never (1)
- ○ Rarely (2)
- ○ Sometimes (3)
- ○ Often (4)
- ○ Almost every time (5)

End of Block: Block 1 – Screening & basic SSC use

Start of Block: Block 2 – Experience with SSCs (perceived familiarity/comfort)

Please think about your experiences with self-service checkouts in supermarkets. How much do you agree or disagree with the following statements?

Q4 I'm familiar with how to use self-service checkouts.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q5 I feel confident using self-service checkouts.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q6 Using self-service checkouts is part of my usual shopping routine.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q7 I can use self-service checkouts without help from staff.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

End of Block: Block 2 – Experience with SSCs (perceived familiarity/comfort)

Start of Block: Block 3 – Perceived usefulness (PU)

Now please think about self-service checkouts in general. To what extent do you agree or disagree with the following statements?

Q8 Using self-service checkouts makes my shopping trip quicker.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q9 Self-service checkouts make paying for my groceries more efficient.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q10 Compared to staffed checkouts, self-service checkouts save me time.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q11 Overall, I find self-service checkouts useful for grocery shopping.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

End of Block: Block 3 – Perceived usefulness (PU)

Start of Block: Block 4 – Perceived ease of use (PEOU)

Now think about self-service checkouts in supermarkets that you normally use. Please indicate how much you agree or disagree with the following statements.

Q12 I find self-service checkouts easy to use.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q13 Learning to use self-service checkouts is easy for me.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q14 The steps at self-service checkouts are clear and easy to understand.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q15 I can complete a self-service checkout without much effort.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

End of Block: Block 4 – Perceived ease of use (PEOU)

Start of Block: Block 5 – Trust in SSCs

Now think about the self-service checkouts you usually use. Please indicate how much you agree or disagree with the following statements about how reliable and safe they feel.

Q16 I trust self-service checkouts to scan items correctly.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q17 I trust the payment process at self-service checkouts.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q18 Self-service checkouts usually work reliably.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q19 I feel safe using self-service checkouts.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

End of Block: Block 5 – Trust in SSCs

Start of Block:

Q20 To ensure data quality, please select "Option 2".

- ○ Option 1 (1)
- ○ Option 2 (2)
- ○ Option 3 (3)
- ○ Option 4 (4)

End of Block:

Start of Block: Block 6 – Satisfaction with SSCs

The next statements refer to your overall experience with self-service checkouts in supermarkets. Please indicate how much you agree or disagree with each one.

Q21 Overall, I’m satisfied with self-service checkouts.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q22 Self-service checkouts generally meet my expectations.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q23 I'm happy with how self-service checkouts work in the supermarkets I visit.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q24 Using self-service checkouts is a positive part of my shopping trip.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

End of Block: Block 6 – Satisfaction with SSCs

Start of Block: Block 7 – Intention to continue using SSCs

The next statements refer to your future use of self-service checkouts in supermarkets. Please indicate how much you agree or disagree with each one.

Q25 I plan to keep using self-service checkouts in the future.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q26 When I have the choice, I'll use a self-service checkout.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q27 I expect to use self-service checkouts regularly on future supermarket visits.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

End of Block: Block 7 – Intention to continue using SSCs

Start of Block: Block 8 – Openness to future in-store technologies

In recent years, new in-store technologies have been introduced, such as: – Mobile scan-and-go (customers scan items with their smartphone and pay via the app) – Checkout-free stores (items are automatically detected, and payment happens in the background without a traditional checkout). The following questions ask about your openness to these kinds of technologies.

Q28 I would be willing to try mobile scan-and-go in supermarkets.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q29 I would be willing to try checkout-free supermarkets.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q30 I'm open to new in-store technologies if they make shopping easier.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q31 I can imagine using scan-and-go or checkout-free stores regularly in the future.

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

End of Block: Block 8 – Openness to future in-store technologies

Start of Block: Block 9 – Socio-demographic questions

Finally, I would like to ask a few general questions about yourself. Your answers are anonymous and will only be used for research purposes.

Q32 What gender do you identify with?

- ○ Male (1)
- ○ Female (2)
- ○ Non-binary / third gender (3)
- ○ Prefer not to say (4)

Q33 What's your age?

- Younger than 18 (1)
- 18-24 (2)
- 25-34 (3)
- 35-44 (4)
- 45-54 (5)
- 55-64 (6)
- 65 years or older (7)
- Prefer not to say (8)

Q34 What's your current country of residence?

- Austria (1)
- Germany (2)
- Portugal (3)
- Other European country (4)
- Other Non-European Country (5)

Q35 What is the highest level of education you have completed?

- ○ Primary education (Volksschule) (1)
- ○ Lower secondary education (e,g, Hauptschule, Neue Mittelschule) (2)
- ○ Upper secondary education (e.g., Matura, A-levels, Abitur) (3)
- ○ Vocational training / apprenticeship (4)
- ○ Bachelor's degree (5)
- ○ Master's degree or equivalent (6)
- ○ Doctoral degree (PhD) (7)
- ○ Prefer not to say (8)

Q36 What is your main current employment status? (If you both work and study, please select the option that best describes your main activity.)

- ○ Employed full-time (1)
- ○ Employed part-time (2)
- ○ Self-employed / freelancer (3)
- ○ Student (4)
- ○ Unemployed and looking for work (5)
- ○ Unemployed and not looking for work (6)
- ○ Retired (7)
- ○ Homemaker / caring for family (8)
- ○ Other, please specify: (9) _____
- ○ Prefer not to say (10)

Q37 What is your approximate monthly net household income (after taxes), in total for all people in your household?

- ○ Less than 1,000 € (1)
- ○ 1,000 € – 1,999 € (2)
- ○ 2,000 € – 2,999 € (3)
- ○ 3,000 € – 3,999 € (4)
- ○ 4,000 € – 4,999 € (5)
- ○ 5,000 € – 5,999 € (6)
- ○ 6,000 € or more (7)
- ○ I do not know / Prefer not to say (8)

End of Block: Block 9 – Socio-demographic questions