Estonian Business School

Department of Marketing and Communication

CONSUMER ACCEPTANCE OF SELF-SERVICE TECHNOLOGIES IN ESTONIAN RETAIL MARKET

Master's Thesis

By

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I herewith declare that I have written the Master's Thesis independently. References have been indicated for all the publications, claims, opinions and different sources by other authors.

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TABLE OF CONTENTS

ABSTRACT

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CONSUMER, CONSUMER BEHAVIOUR, BUYING PROCESS, TECHNOLOGY ACCEPTANCE MODEL (TAM), SELF-SERVICE TECHNOLOGY (SST), SELF-CHECKOUT, SELF-SHOPPING, ESTONIA, RETAIL MARKET

Over the past 10 years several self-service technology systems have been implemented into Estonian retail market but the usage frequency has been lower than expected. Current research is taking this problem under investigation to see why consumers are not willing to use the self-service technology systems in retail stores as frequently as they are expected to. Qualitative research methods were used to gather data and perform content analysis. Semi-structured interviews were held among 10 active users of self-service technology systems to gather data to understand their motivation and reasons for choosing self-checkout systems instead of traditional cashier. Quasi-experiment was done among 5 non-user volunteers to encourage them to use self-service systems and understand their reasons for not using the systems before.

Research findings confirm the problem of consumers not using the self-service technologies as much as they are expected to. Reasons for not using are supporting the gathered literature review and justifying different theoretical frameworks presented in the thesis. Most of the volunteers found similar causes to the issue of low usage percentage. Research confirmed that most of the reasons for not using the systems are behind consumer's personal sceptics and fear of failing to use the system. It was also found that some interfaces take rather more time than save time due to being too complicated to use and push consumers away. This market research gave valuable feedback through consumer's eyes and can be used among retailers to improve their self-service technologies and become more user friendly.

INTRODUCTION

Today, we live in a constantly developing and complex environment, which changes almost every day. Due to technology and various innovations people have got used to the convenience and easy access to wide range of tasks and activities. A notable part of people's daily lives is occupied by shopping in retail stores. Consumers are spending a lot of time buying groceries daily without even noticing the time they spend standing in the checkout queue compared to the whole time spent in a store.

Over the years, more and more retail shops have implemented new innovative self-checkout systems to decrease the time spent in a queue for the customers and the workload of the cashiers. Retailers also see self-checkouts as a more convenient and faster way to provide service. Still, at times, consumers are not open to innovations when it comes to their ingrained routines and something that they are used to. It can commonly be seen that during the peak hours queues in regular checkouts reach tens of meters, while the self-checkout area stays almost empty. Only a few customers use the self-checkout system. This system would help to avoid standing in rather time-consuming lines and finish shopping faster.

The decision to either purchase the goods by using the regular checkout or self-checkout system is driven by consumer's acceptance of the innovative technology and willingness to use the self-checkout. Mirica (2018) has brought out that consumer behaviour is usually driven by an individual's subconsciousness, therefore, consumers often do not pay attention to their choices. This shows that consumer behaviour can be interpreted in different ways and there are several causes that drive consumers to make decisions.

Self-checkouts in retail shops are designed to provide a faster and more convenient opportunity to the consumer to purchase their goods. Today, there are two different designs of self-checkout systems. First one allows the purchaser to walk around in the store with a special remote and scan all the products on site by giving the opportunity to put the groceries directly into a shopping bag. The second option allows the customer

to scan the goods in an automated cashier station near the exit and collect the products into a shopping bag while scanning. Self-checkout systems can be considered as the innovative technologies. Years ago, it would not have been considered as an opportunity to let the consumers scan and purchase their goods on their own due to technology limitations and security concerns. Even though advances in technology have given the customer the opportunity to be modern, save time and have the advantage to not stand in long queues, purchasers still tend to stay in their routines and not choose the enhanced option to finalise purchases.

The aim of this master thesis is to find out why self-service technologies are not accepted as widely by consumers as expected in Estonian retail market. To reach the goal, following research tasks have been set:

1) to analyse the essence of consumer behaviour and its evaluation methods based on previous studies;
2) to analyse previous studies on innovation technologies' acceptance and self-checkout as innovation technology;
3) to analyse previous studies about the acceptance of self-checkouts in retail and its relationship with consumer behaviour;
4) to develop the basis of a quasi-experiment and interview plan based on the literature review and perform the empirical research;
5) to perform content analysis of collected data and compare the results with the theoretical background;
6) to provide the key results about the empirical study to justify the aim of the thesis.

The thesis has been divided into two major parts based on the research problem. First part of the thesis is a theoretical literature review, which has been divided into two subchapters. First, the essence of the consumer behaviour is analysed with different approaches described. Secondly, innovation technologies are given a description with analysis of their acceptance from the angle of self-checkouts in retail. Several different academical articles and journals from different times and authors will be used to give the literature review a more diversified content.

The second part of the thesis includes the empirical study conducted among a convenience sample of customers by looking into their relation to the self-checkout

systems. First, an overview of used methods and its limitations will be given. Also, the research sample is identified, which will be divided into two groups based on the checkout choices – non-users and active users of the self-checkouts. Non-users will participate in quasi-experiment and make two shopping tours together with the observer by using a different self-checkout system each time. In addition, two brief interviews will be held, one before the quasi-experiment and another shortly after. Active users will participate in a more thorough semi-structured interview to discover their relation to self-checkouts and why they are perceived beneficial by these customers.

Interview plan will be constructed based on the theoretical literature review. Shops will be distinguished after their self-checkout systems – self-shopping remote or self-checkout terminal. After collecting the empirical data similar patterns will be analysed with content analysis and generalizations made by comparing them with main theoretical approaches to map down the reasons for not using the self-checkouts to their maximum efficiency.

The topic for the thesis was inspired by the personal interest to find out why consumers are not using the time-efficient self-checkout systems and are willing to spend their time in the long queues waiting for the regular checkout. The results may come useful for the retail stores to improve their self-checkout systems and make them more user friendly by listening to consumers' thoughts. The main limitations of this research were using the convenience sample and not having enough male volunteers willing to participate in the study. Convenience sample was used to save time. Using the convenience sample took away the possibility to generalize the results for larger user groups. Not having enough male volunteers participating in the study did not give the opportunity to make gender comparisons. These limitations were taken into account when making conclusions.

Author likes to thank all the volunteers who contributed into the research. Each interview and quasi-experiment had a great meaning and given feedback helped along for thesis completion. Great appreciation also to the supervisor Katri Kerem for cooperation and valuable feedback.

1. LITERATURE REVIEW

1.1. Consumer behaviour and self-service

Consumer behaviour is most often associated with decision making and physical engagement of a consumer while purchasing goods or services (Jha, Sirohi, Madan, and Srora, 2011). Cetina *et al.* 2018 have also agreed that consumer behaviour can mainly be identified as an act of deciding, choosing and purchasing the goods, ideas or services that a consumer is interested in. Based on the previous definitions it can be seen, that usage of self-service technologies in the retail context fits into the domain of consumer behaviour as this is an enabling technology for completing the purchase. Chander and Raza (2015) have said that consumers and their needs differ from one another and are difficult to predict, meaning that understanding a consumer's behaviour is rather hard. Al Balushi (2018) has found, that consumer decision making and choosing is usually oriented towards maximisation, meaning a consumer analyses all the products subconsciously in the mind and chooses a product or a service that will maximise his perceived benefits. Still, often customers are settling with purely satisfying choice over the maximising choice because of the limitations of human memory. The following table 1 will give a comparative overview of the different consumer behaviour definitions.

Table 1. Consumer behaviour definitions. Source: compiled by author based on literature given in the table.

Author(s)	Definition
Owhal (2015, p. 531)	"Consumer behaviour is a decision-making process which starts in consumer's mind and results in finding products and their alternatives that either have advantages or disadvantages for the consumer."
Kulkarni & Bansod (2013, p. 1)	"Consumer behaviour can be defined as a complex act, which includes many aspects such as demographic, psychological and social factors, that are influencing the decision making while a consumer is engaged in a purchasing process."
Santpal & Pradeep (2015, p. 54)	"Consumer behaviour is a decision-making process during which a consumer decides what, why, when and where he is interested in buying and from whom."
Kumar (2014, p. 37)	"Consumer behaviour can be defined as a decision-making and a physical act, which includes evaluation, acquisition and usage of the purchased goods."

As it can be seen from table 1 different authors describe consumer behaviour rather similarly. All the given examples show the decision-making process as the key factor of consumer behaviour. Decision-making process can be defined as the process that leads a consumer to gain satisfaction while purchasing (Hibic and Poturak, 2016). It is agreed by the authors that to understand how consumer is acting during the purchasing process, it is crucial to analyse their choices and different influence factors around the consumer. Consumer decision-making process can be divided into five steps that a consumer consciously or subconsciously follows to make the purchase (figure 1).

Figure 1. Consumer decision-making process. Source: Patwardhan, Flora and Gupta, 2010, p. 56; drawn by author.

Consumer behaviour starts with a consumer's acknowledgment of the fact that one has a need for some product or service. Before starting to purchase, consumer seeks information from different channels, such as internet, advertisements and forums, to learn more about the product he needs. Along with searching for information, consumer will have a chance to compare the alternatives and choose the product that is the most beneficial for him. After doing the research and deciding which alternative is the best, consumer will make the actual purchase. After receiving and using the product, consumer will gain a certain level of satisfaction dependant on the product itself and the level of effort the consumer has put into decision-making process. The level of satisfaction will influence the decision whether to purchase the same product in the future or not. It can be said that every consumer is going through the decision-making process depending on the level of consumer's engagement.

Consumer behaviour as a decision-making process has also been compared with the rational choice theory, where the consumer is not influenced by emotions and other psychological factors but focuses purely on rational maximisation of gained benefits (Drakopoulos 1990). De Palma, Myers, and Papageorgiou (1994) also agree, that a consumer will make a rational decision by using his limitless mind regardless of the complexity of the choice. On the other hand, they also argue that practice has shown: there still are limitations to the brain which influence consumer's ability to analyse alternatives and force the consumer to make emotional decisions instead of rational. Vale (2010) agrees, that when a consumer is aware of the alternatives and one's recourses, he will make a rational maximising choice for oneself. Still, it has not been considered, that a consumer can become dependent of one's habits and purchase behaviour by becoming an addict of one's own consumption. It can be concluded, that even if consumer behaviour is based on making beneficial choices, it is still formed by emotions and different influencers in the purchasing environment.

Consumer behaviour as the decision-making process is also known as one of the cognitive processes of human mind during which a preferred decision is made among the choice of alternatives (Wang and Ruhe, 2007). Heuristics has been said to be one type of the cognitive decision-making. It is explained as easily understandable form or a mental shortcut of cognitive decision making, where a consumer makes a practical, but not the optimal decision (Bilek, Nedoma, and Jirasek, 2018). It has been argued, that in some cases heuristics may bring even a positive outcome, meaning that analysing consumer behaviour through heuristic analyse model gives accurate and even better results than the rational theory models (Liu and Du, 2016).

Otuteye and Siddiquee (2015) have stated heuristics to be an efficient model to use in a complicated world for simplified decision-making process. However, they argue, that in many cases heuristic models lead to systematic and repeated errors called cognitive biases. These biases cloud consumer's analysing capabilities and may lead to poor decisions. Biases can be divided into different types based on the characteristics that influence the consumer into making decisions. Table 2 will give an overview of the relevant biases that characterize and justify consumer heuristic behaviour.

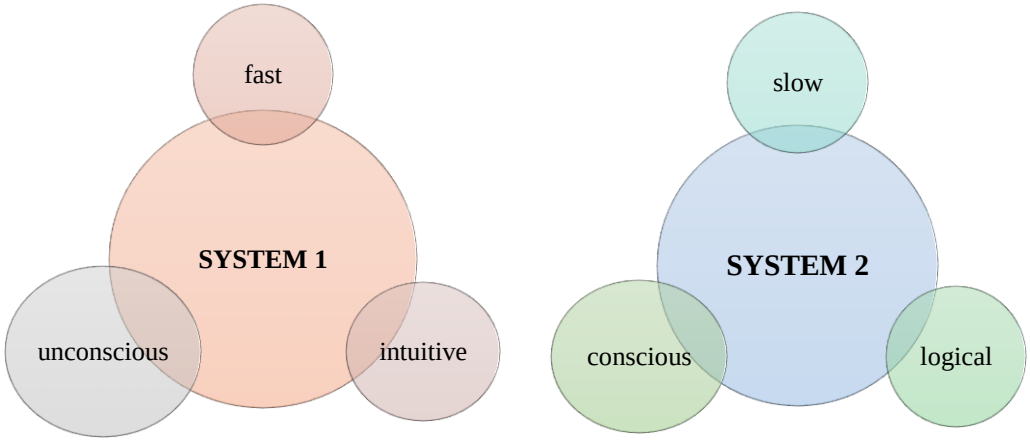
Table 2. Cognitive biases characteristic for consumer heuristic behaviour. Source: Jaiswal and Kamil (2012) and Jain *et al*. (2015); compiled by author.

Representativeness	Crowd following	Familiarity Bias	Anchoring	Availability Bias
Consumer tends to make future decisions based on the previous decisions' outcomes expecting similar result.	Consumer tends to act similarly to some influential larger group of people hoping to receive the similar result.	Consumer tends to make choices that are more familiar to oneself, therefore not considering all the available options.	Consumer tends to hold on from a specific characteristic (e.g. price) refusing to adjust together with changing environment.	Consumer tends to overestimate the choices that were once made and to repeat them without considering all the alternatives.

It can be seen from the table 2 that in all biases types, consumer behaviour or decision making is influenced by someone or something else and, therefore, affects consumer's own decision making. It can be concluded from these types of biases and overall heuristics that the reason, why they are called mental shortcuts, is that they are relying on past decisions and outcomes or other consumers' behaviour without forcing the consumer to think for himself while making decisions. This can be related with making the choice of using regular checkouts instead of self-checkouts because the purchaser has used regular checkout in the passed and is used to spending the time although it could be saved when making a new choice to use self-checkout.

Kahneman, Stanovich and West (2000) on the other hand have explained the cognitive process as two-system model (figure 2).

Figure 2. Two-system cognitive decision-making process. Source: Kahneman, Stanovich and West, 2000; drawn by author.



As it can be seen from the figure 2, system 1 acts fast, is intuitive and on an unconscious level. System 2, on the other hand, is slower, acts on the conscious level and uses logic while helping the consumer decide. Both systems work in symbiosis, meaning that one influences the other. System 1 is most commonly used when making easier decisions and system 2 is used when the system 1 has detected the decision to be complex. Still system 1 does not have the full capability to always define the complex situation and then the decision is made anyway. This could be defined as a heuristic decision making. To prevent such situations, it is needed to recognize the decision making beforehand, to slow down system 1 so that system 2 would lead to the most beneficial decision in the mind of the consumer. (Stanovich and West, 2000; Otuteye and Siddiquee, 2015)

All in all, it can be said, that consumer behaviour is a decision-making process mostly influenced by consumer's own habits and mind. The approaches presented above consider the level of engagement the consumer has while making the decision. It is agreed, that rational choice theory cannot be seen very often in practice today, but both heuristics and two-system model can be used to understand consumer behaviour.

Over the years, technology innovations have started to play a bigger role in consumers' lives. Many companies are changing from personal service channels to self-service technologies (SST from further on) by engaging the consumers as active participants into the service delivery process (Scherer, Wünderlich, and von Wangenheim, 2015). SST can be defined as the interface that gives a consumer opportunity to make the purchase from scanning to finalizing the purchase without having an employee involved (Otekhile and Zeleny, 2016). Meuter, Bitner Ostrom and Brown (2005) agree, that the SST is a marketplace transaction that allows the customer to be actively engaged in service delivery by performing the purchasing without the help of an employee. Kim, Lee and Park (2018) also agree, that consumer will efficiently become temporary employees themselves while using the SST.

SST is constantly transforming different industries and economy sectors by significantly reducing company's costs and, on the other hand, engaging consumers even more into service delivery (Otekhile and Zeleny, 2016). Gunawardana, Kulathunga and Perera (2015) have also brought out that SST is giving the opportunity to increase the productivity through decreased number of employees, lower the labour costs, lengthen the opening hours and provide faster service delivery. Li, Choi,

Rabinovich and Crawford (2013) agree, that the SST is a rising trend by mostly increasing the service efficiency.

Robertson et al. (2012) claim that companies who are using SSTs, are often not taking the responsibility for failures, rather blame the consumers for the mistakes and do not take consumer feedback into account after using the SST. Oghazi, Mostaghel, Hultman and Parida (2012) and Heinonen (2004), on the other hand, have found that the time saved during the self service is seen as a new value for customer that again motivates the consumers to use the self-service instead of personal service.

Otekhile and Zeleny (2016) have stated that SSTs represent new trends and opportunities, but they also come with risks. Salomann, Kolbe and Brenner (2006) agree, that using SST may bring both - great success and great danger. They have found that consumers feel the SST to be non-personal, time consuming and difficult. Featherman and Hajli (2016) have stated that acknowledging the risk level is dependent on consumer's personality, purchasing environment and consumer segment in general. They add, that the main reasons for feeling the risk are 1) consumer's fear of gaining loss and therefore overestimating the actual loss if any is gained and 2) overall false expectation of loss while trying out SST. Table 3 will give an overview of possible perceived risks that a consumer might feel while using the SST.

Table 3. Possible perceived risks during the usage of SST. Source: Featherman and Hajli (2016) and Roselius (1971); compiled by author.

Risk type	Definition
Psychological risk	Consumer feels potential harm to self-esteem and ego due to failing in using SST.
Performance risk	Consumer is afraid of failing in performance, malfunction of the SST and therefore tries to avoid using the technology.
Privacy risk	Consumer is afraid of having to reveal one's identity due to struggling with using the SST.
Social risk	Consumer feels potential harm to one's social status among important people while using the SST and failing as expected.
Financial risk	Consumer is afraid of having financial losses due to no-succeeding in the usage of SST as efficiently as expected.
Time risk	Consumer has the assumption that using SST is more time consuming and therefore chooses the personal service.

It can be seen from table 3, that all the risk types are based on consumer's emotions and assumptions. It can be concluded, that a consumer is overestimating the possible risk without even trying to use the SST and therefore in many cases consumers are staying in their comfort zone by using the personal service.

Otekhile and Zeleny (2016) have brought out different types of SSTs that are being improved almost daily. The most common SST types are: internet applications, such as online stores, mobile payment applications like worldwide TransferWise, and electronic kiosks that can be found nowadays almost in every supermarket or gas station. Otekhile and Zeleny (2016) add that other economy sectors such as tourism and healthcare are also implementing SSTs to be more consumer friendly and reachable.

It can be concluded, that self-service technology is an innovative trend changing the whole service industry with its constantly changing solutions and opportunities. SST also helps to decrease labour costs and engage consumers as active participants into the service delivery. Even, if consumers are not as open to trying out SSTs, the main obstacles are their own emotions and assumptions that can be overcome when being open to new technologies in the service industry.

1.2. Consumer acceptance of technological innovations and self-services in retail

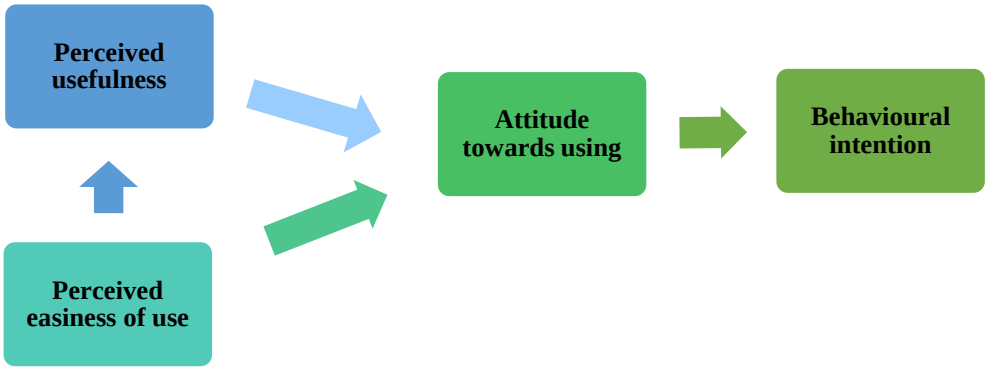
New innovative technologies are available for consumers in different economy sectors, but at times consumers are not as open to the new systems as it is assumed. Usually, when an innovation is introduced, people mostly think of a new application or a product that should make some process easier and more fun (Fador, 2014). Innovation has been found to be one fundamental value of economic growth that provides an input for economic benefits such as cost efficiency, business development and time saving (Foxona, Grossa, Chaseb, Howesb, Arnallc, and Anderson, 2005).

Fador (2014) has also stated that when including innovations in an organization, they have a risk, meaning that if an organization does not include innovations into their daily operations, there is a risk that other companies who do will push the first out from the market due to using aged organizational structures. This is the reason why companies need to adopt innovation technologies to stay competitive in the market.

Many researchers have thoroughly focused on the consumer's acceptance of technology innovations over the past decade to understand and predict the reasons why consumers are accepting or refusing the new innovations (Pantano and Di Pietro, 2012). Davis

(1989) has developed a Technology Acceptance Model (TAM) that illustrates the basic process of a consumer accepting an innovative technology (figure 3).

Figure 3. Technology Acceptance Model (TAM). Source: Davis (1989), Fador (2014) and Pantano and Di Pietro (2012); drawn by author.



The TAM is compiled by following the link between perceived usefulness and perceived easiness of use. The first stands for a consumer's belief that using an innovation technology will increase one's benefits while using the technology. Perceived easiness of use can be explained as a consumer's belief that using a certain innovation technology will be free from effort. They can also be explained as the consumer's willingness to use the innovative technology. Attitude towards the usage illustrates consumer's emotions and level of readiness to use the technology. Behavioural intention illustrates the actual act of using the innovative technology. If one or some of these factors do not have a positive result, it is highly possible that the consumer will not use the SST just because one does not see reasonable justification for choosing SST over personal service (Davis, 1989, Fador, 2014, and Pantano and Di Pietro, 2012).

Pantano and Di Pietro (2012) have brought out that TAM is also crucial to retail sector because it helps to enhance the possible technical solutions by including both the actual sales and technological applications (e.g. virtual sales person, automated cashier terminal). Ha and Stoel (2009) have stated that to understand consumer's acceptance of innovation technologies in retail, it is important to observe consumer's attitude towards the technology as is brought out also in TAM. Keeling, McGoldrick and Macaulay (2006) have said that self-services in retail are beneficial to both the company by

providing the opportunity to lower the in-store costs and to the customer by having the opportunity to get better customer service and experience. This also increases the possibility to gain permanent consumers.

Pasarnphanich and Gillenson (2003) have brought out that using self-services are replacing the staff intensive services in retail, help to decrease the waiting time in a regular checkout queue and attract also impulsive buyers into the store to try out self-service opportunities. Keeling et al. (2006) adds, that such solutions also give the opportunity to keep the stores open during the late hours due to not needing the cashiers for personal checkouts. Kleinman (2000) has additionally brought out that self-services could also be used as a part of customer relationship marketing strategy by providing personalised offers in return when using the self-service instead of the regular checkouts. Keeling et al. (2006) have brought out the main benefits to retailer that they gain from implementing self-service solutions into their stores (table 4).

Table 4. Retailer benefits for using self-service solutions. Source: Keeling, McGoldrick and Macaulay (2006); compiled by author.

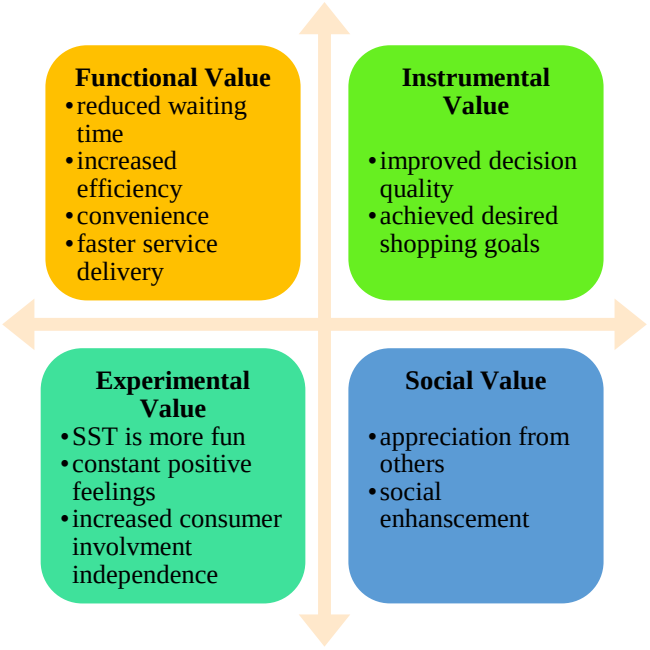
Information	**Cost Benefits**
• Number of consumers using the solution • Surveys and queries • Feedback	• Labour cost decreasing • More free space into stores • Paper usage reduction and digitalization • Solves the issue of cashier deficit
Accessibility	**Customer Relationship**
• Available to everybody • Easy to use • Late open hours	• Loyal customers • Pleasant shopping experience • Easy to use • Playful and fun
Operations	**Special offers**
• Easy payment • Encourages impulse purchases • Fast	• Customer based sales offers • Coupons • Personalised campaigns

It can be seen from table 4 that self-service solutions offer different options for the retailer. The self-checkouts will give an opportunity to keep the stores open during the late hours or even overnight, because it would solve the issue of not having a cashier ready to be present at late hours. In addition, self-checkouts are designed to be easy to use and provide a faster way for service delivery. From the cost point of view, self-checkouts help to decrease labour costs and solve the issue of not having enough cashiers in the shops. Active use of self-checkouts will provide statistical information about the usage sequence and such surveys will give feedback to the retailer what can

be done better. Self-service solutions also give the retailers the opportunity to put more effort into soft values, such as customer based personal offers, campaigns and coupons.

SST acceptance has been investigated for decades and earlier studies have shown that consumers who have higher education, are younger and have lower income, are more likely to use self-service solutions due to being more willing and enthusiastic (Jayasimha and Nargundkar, 2007). Lin and Hsieh (2006) have said, that it takes a general belief into the technology and consumer's expectation towards it to result in consumer using the SST. Jia, Wang, Ge, Shi and Yao (2012) have studied consumer desirability-feasibility framework and based on the findings developed four dimensions of SST desirability, as seen on figure 4.

Figure 4. Four dimensions of SST desirability. Source: Jia et al. (2012); drawn by author.



Values presented above (figure 4) illustrate rather soft values that are expected to be received when trying out the SST. These values are easily influenced by market offerings and purchase situations and, therefore, they are preliminary factors for adopting the SST. Wang (2017), on the other hand, has stated that using self-service technology (SST) does not only require willingness, confidence and desire from a consumer, but also a certain level of skills or the confidence to use the SST. Jia et al. (2012) agree, that even if their four dimensions of desirability are influencing the wish to use the SST, then feasibility helps the consumer to come to a decision whether to use

the SST or not. The following figure 5 will give an overview of the feasible factors affecting consumer's decision.

Figure 5. Factors of feasibility of using the SSTs. Source: Jia et al. (2012); Lin and Hsieh (2006) and Wang (2017); drawn by author.

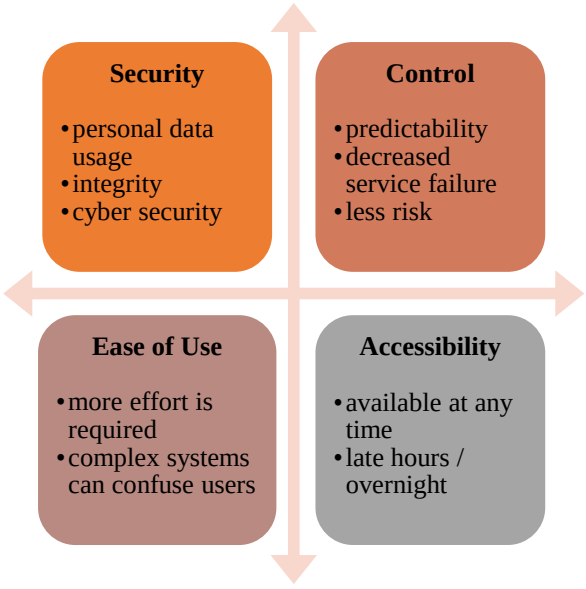


Figure 5 illustrates the feasibility of using SSTs. If desirability factors were driving the consumer to decide in favour of SSTs, then feasibility factors are considered when really using the technologies. Several SSTs in retail often require consumer's personal information to link the customer to the loyalty programme to make better offers for the consumer in the future. This, on the other hand, increases the risk of choosing the regular service over self-service due to uncertainty of the cyber security. Consumer also expects the SST usage to be easy and sometimes when it really requires more effort, then complex systems can drive the consumer to choose the regular checkout instead. If a consumer feels control over the SST, then it decreases the risk of complexity and service failure which again encourages the customer to choose SST. The technology also offers the accessibility at any time even during late hours or overnight.

Evanschitzky, Iyer, Pillai, Kenning and Schütte (2015) and Kourouthanassis and Roussos (2003) have stated, that before a consumer can even start using the SST, he must get over the negative prejudice and sceptics to see the value of technology innovations. Garry (2009) has explained, that choosing in favour of SST depends also on the situation, how many other consumers use the SST at the same time. It was added

that a consumer feels more uncomfortable while being in the self-checkout area with another user but feels better when all the self-services are occupied at the same time.

Bulmer, Elms and Moore (2018) have stated that often consumer feels social pressure to try out SSTs even if he is not ready and comfortable to make the decision on his own. Dabholkar and Bagozzi (2002) agree, that due to social pressure and decreasing social risk, consumer will rather choose already familiar personal checkout instead of SST to avoid the chance to look foolish and have unwanted attention. It has been found that sometimes when a consumer has the ability and willingness to use the self-checkout, he will judge the efficiency of the SST usage. Only these consumers, who believe to have the capability and self-efficacy to purchase through self-checkouts, will choose the SST instead of personal service (Al-Somali, Gholami and Clegg, 2009).

Lee, Fairhurst and Cho (2013) have stated that gender plays a role in the use of SSTs. Their study showed that women pay more attention to the ease of use and they do not want to struggle with something that feels unnecessarily complicated. This factor influenced their overall evaluation to the self-checkout quality. In addition, if retailers would lead consumer's attention to the self-checkout option while the consumer is standing in a long queue, it would help the consumer to decrease the waiting time and encourage one to choose self-checkouts instead of the personal checkout in the future (Lee et al., 2013).

Childers, Carr, Peck and Carson (2001) have brought out that a consumer chooses the self-checkout due to wishing to save time by avoiding long queues and seeing SST as a solution, which includes minimum complexity and offers enjoyable experience to one's problems. Altough, Oghazi et al. (2012) argue that a consumer chooses regular checkout over the SST just because they assume that self-checkout requires extra physical and mental effort when using it. Vuegen, Braak, Lamey and Ailawadi (2019) agree based on their survey that even if the consumer wins in time when using the self-shopping remote in general, they need to put extra effort into scanning the products during the shopping which decreases the total saved time.

The SST acceptance can also vary among cultures. For example, Schliewe and Pezoldt (2010) conducted a survey, which analysed acceptance differences between Russia and Germany, and the results showed that Russians pay more attention to social risks and

pressure than Germans. In addition, it was detected that Russians are less self-efficient than Germans, meaning that Russians tend to stay in the comfort zone by using the regular checkout instead of the self-checkout. Still the study's results showed that both cultures, even if they are significantly different, are accepting innovative technologies and are willing to try out SSTs. Vashishta (2013), on the other hand, brings out that Indian people, even though they are widely visiting international retail shop brands, are having doubts in accepting SST in the stores. Indonesians also share the same feelings in general as Indians, but younger generations are more open to the SSTs than their ancestors.

All in all, it can be concluded from the literature review, that the main reason to the problem why people are not willing to use the SSTs as much as expected, is the fact that consumers are sceptical about the systems and have false assumptions. As many authors brought out - the main reason for not accepting SST is that consumers think the SST needs additional effort or is complicated to use. The authors also found that sometimes purchaser feel social pressure to use the SST even if they are not completely ready to do so by themselves, but because of the social pressure they are also afraid of asking some help from the retail store staff. This leads the consumers to stay in their comfort zone and not trying out the SST at all. Once overcoming these fears, regular users find the SST to be fun, offer faster service delivery and possibility to visit retail stores during the late hours. For retailers the main benefits for implementing the SST are to decrease labour costs and offer their customers innovative ways to purchase in the stores.

2. MATERIALS AND METHODS

2.1. Self-checkout services in Estonian retail market

Estonian economy has shown a steady growth for the past years and retail sector has increased its revenues by 2% compared to 2018 (Eesti Statistikaamet, 2019). Estonian retail market has developed in different areas over the years and one of the latest innovations has been implementing the self-service technology (SST) opportunities in different retail chains. Five of the biggest brands in Estonia that also use self-checkouts are Coop Eesti Keskühistu, Maxima Eesti OÜ, Selver AS, Rimi Eesti Food AS and Prisma Peremarket.

Coop Eesti Keskühistu (Coop from here onwards) as an association was established in 1917, when 19 independent regional consumer cooperatives joined. The name Coop was taken in use in 2015 and before that the association was called Eesti Tarbijateühistu Keskühistu. Coop is unique since it not only wants to earn revenues but has a purpose of improving Estonian living standards in smaller regions by bringing retail shops closer to customers in small-towns. Coop owns today 350 retail shops and offers jobs for 5500 people by being the biggest retail chain in Estonia. In 2017 the consolidated revenue of Coop was 551.4m euros with net profit 20.8m euros. Coop holds the biggest market share (22%) among others. (Coop, 2019; Eerme, 2018)

Maxima Eesti OÜ (Maxima from here onwards) belongs to a Lithuanian concern Maxima Grupe. The first store in Estonia was opened in 2004. Today Maxima owns around 80 stores in Estonia and is an employer for approximately 3700 people. In 2017 the total revenue of Maxima was 464.4m euros from which 8.2 m euros was net profit. In 2015 Maxima has also opened an e-Maxima, an online shop, which was renewed and renamed to Barbora in 2018. Maxima stands on the second place in the retail market with 18.5 per cent of market share (Maxima, 2016; Eerme, 2018).

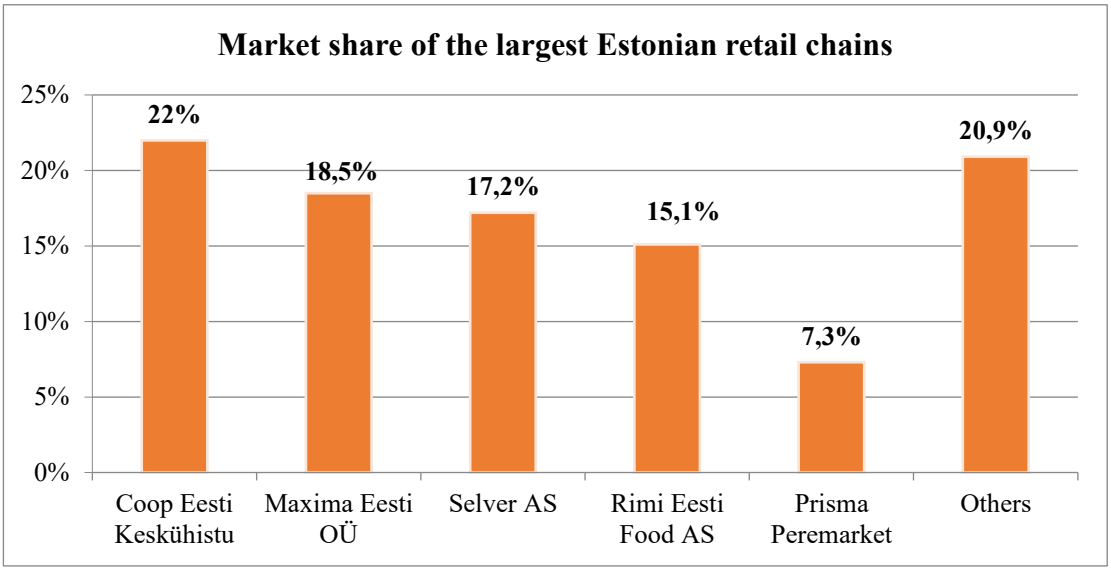
Selver AS (Selver from here onwards) was created in 1995 and is one of the oldest retail chains in Estonia. Selver AS is a subsidiary of Tallinna Kaubamaja Grupp AS. Selver

started out as one-shop brand, but soon developed the brand into a chain of retail shops that had common visions and purposes. Today Selver owns in total 53 shops all over Estonia and is an employer for more than 2800 people. Last year the consolidated revenue of Selver was 450.1m euros and net profit of 14.6m euros. Selver has shown a stable 1% increase in revenues throughout the years. The brand has 17.2 per cent of market share among others (Selver, 2019; Tallinna Kaubamaja Grupp AS, 2018).

Rimi Eesti Food AS (Rimi from here onwards) belongs to a Norwegian low-end retail brand called RIMI. In 2005, after several mergers, Rimi Baltic Group was established and now it owns all Rimi brands – Rimi hyper, Rimi super, Rimi mini and Supernetto shops. During the same year the concern was renamed to Rimi Eesti Food AS and started producing its own goods under the Rimi brand. Today Rimi owns 84 stores all over Estonia and offers jobs for approximately 3000 people. In 2017 Rimi earned 378m euros of revenue from which net profit was 1.3m euros (Rimi, 2019; Eerme, 2018).

Prisma Peremarket (Prisma from here onwards) belongs to a Scandinavian concern called SOK. First Prisma was opened in Estonia in 2000. Today Prisma has 8 hypermarkets in bigger Estonian towns. Prisma offer jobs for more than 700 persons. In 2017 Prisma's revenue was 182.2m euros from which net profit was 1.2m euros. Prisma has a 7.3 per cent of market share in Estonia (Prisma, 2018; Eerme, 2018).

Graph 1. Market share of the largest Estonian retail chains. Source: Eerme (2018); drawn by author.



Tänava (2011) has stated that for the first time the self-checkout system was introduced in Estonia in 2009. The first SST was implemented into Keila Rõõmu Kaubamaja. The

machine was ordered by the company called New Vision. Tänava (2011) added that research has shown that many people prefer communication with the computer instead of a person while making the purchase and it is expected that at least 20-30% of the customers will use the self-checkouts.

Soon after other retailers also started trying out the new technology. Selver was the first one to install the SST into their stores in 2011 and called the technology SelveExpress (Erilaid, 2016). Today SelveExpress technology can be seen in 48 out of 53 stores Selver has in Estonia (Tallinna Kaubamaja Grupp AS, 2018). The next one to implement SST was Prisma in 2013 and the technology was named Ekspresskassa (Logistika. Iseteenindus…, 2014). Third SST implementor was Maxima, who took the machines in use in 2014. Maxima has not given an original name to the technology but directs more attention to the ease of use (Eerme, 2015). Not long after, in 2015, Rimi retail chain decided to join SST user group as well and did not give the system an illustrative name (Rimi, 2019). Finally, Coop joined the other biggest retailers and installed SST into their stores in 2016. Coop renamed their SST and new name was Nutikassa. Coop has Nutikassa in about 20 stores all over Estonia (Coop…, 2016).

The retailers explain the choice to implement SSTs with reasons such as increased efficiency of the staff and giving the personnel a chance to direct their recourses into other activities as also Keeling et al. (2006) found. CEOs from different retail chains also confirm that SSTs help to solve the labour deficit and offer faster service delivery (Teder, 2018). Although time has shown that the self-checkouts have been rather accepted by purchasers, there still has not been an increase during the time SSTs have been implemented compared with the situation today. For example, Selver, Rimi and Coop claim that only 20-30% of the customers use self-checkout option today, meaning, that the usage frequency has not increased over the last years (ERR, 2017). As Tänava (2011) mentioned, the same usage percentage was expected shortly after the implementation of first machines.

Today two types of SSTs are widely used in Estonian retail market. First, automated teller machines (ATMs) are used, that give consumer an opportunity to perform the purchase process themselves by using the self-checkout terminal. The consumer enters the store and chooses the products he needs and likes. Once the choices are done and

goods are gathered into the shopping cart, the consumer enters the self-checkout area where he can choose the terminal by his liking.

Next, he will have a chance to choose whether he would like to use his own shopping bag, buy a new one or does not want a bag at all. After that, the consumer will scan the products through the terminal by using the scan code on the products. After scanning, goods are placed on a scale either inside the shopping bag if it will be used or without the bag when it is not needed. The scale will monitor the quantity and weight of the products and whether it will match with the products scanned through the terminal. This also minimalizes the risk to fraud due to giving instant alert when there are differences in the weights going through the scanner and ending up on a scale. If a discrepancy exists in weights or consumer is purchasing products that have age limitations (e.g. alcohol) then the terminal will give a sign to the supervisory cashier and situation will be solved with the cashier's help.

Once all the goods are scanned the consumer has the possibility to register a client card to gain bonus money and have additional discounts. After that the consumer will have an opportunity to choose whether the check would like to be paid via gift card, store bonus money or bank card/credit card. Next, card terminal instructions are followed, and the payment is made. The terminal will print out the purchase check and consumer will be ready to exit the store. Self-checkout terminal technology is used in Rimi, Prisma Peremarket, partially in Coop Nutikassa and in Maxima retail stores.

Second type of SST used in Estonian retail shops is so called self-shopping (Tänava, 2011). Self-shopping opportunity offers consumer a chance to move around the store and scan the products on site. First, consumer will register his client or loyalty programme card and gets in return a scanning remote. Next, the consumer can move around the store choosing the products and scanning them with the remote right away. This gives an opportunity to put the goods into one's shopping bag immediately and this again saves time during checkout. When customer purchases alcoholic beverages then a supervisory cashier will check the product in the terminal and resolve the alert on the scanning remote given to the purchaser.

Once everything is scanned and added into the shopping bag, the consumer will enter the checkout area, where he first places the scanning remote back to the socket and goes

to the checkout terminal. Next, consumer will once again register one's client or loyalty programme card and a list of chosen goods will appear to the terminal screen. After that, the consumer has an opportunity to choose whether to use the bonus money or pay with a bank card/credit card and then instructions from the card terminal will be followed. Once the payment is made, the terminal will print out the check and consumer will be ready to leave the store. This type of SST also uses random shopping checks meaning that when the consumer registers the client card in the checkout terminal, he will be re-directed into regular checkout to control if everything was scanned with the remote or not. This on the other hand minimalizes the risk to fraud and makes the SST even more trustworthy, because scanning remotes are connected to the customer data. Self-shopping remotes are used in SelveExpress and partially in Coop Nutikassa.

Some large retail marketers in Estonia have found that in general SSTs are welcomed positively, but as it is with every innovation, building a regular client base takes time. Consumers should have the opportunity to slowly get used to the new technology. Others have also found the acceptance to be greater than expected and it can be said that the investment made into the SSTs has already paid off. (Eerme, 2015) Rebane (2018) also mentioned in her article that using the SST helps consumer save time by avoiding long queues and gives the personnel the opportunity to help with needed tasks instead of sitting in the cashier booth. Even if the retailers are optimistic about the SSTs in their stores, it has occurred that in many cases during the first usage, when a consumer has faced some issues or obstacles, he is often not willing to use the self-checkout again and chooses the regular checkout. This leads to the aim of this research paper to find out which are the main influencers that affect a customer to choose the regular terminal instead of the optimized self-checkout technology.

2.2. Research design and sample

Main aim of this research is to find out, why self-service technologies are not accepted as widely by consumers as expected. Based on the research question and informed by the past studies in the area, it has been decided to use a semi-structured interview and quasi-experiment to collect the data. Later, content analysis is performed, and conclusions made.

Qu and Dumay (2011) have said that semi-structured interview is one of the most popular types of qualitative research methods that helps the researcher to understand the interviewee more thoroughly and get an overview of their feelings. Semi-structured interview includes pre-prepared main questions and the conversation can evolve further based on the interviewee's answers. Additional questions could be asked during the conversation depending on the interviewee's openness and interest in the topic. Lynn and Lynn (2003) state that quasi-experiment's principle is that at least one variable is manipulated, and participants are not chosen randomly into the study. Aussems, Boomsma and Snjiders (2009) add that in quasi-experiments usually two comparing groups of interest are formed before the study and groups will be affected by the same external influences during the research.

It was decided to use a convenience sample for the current study. A convenience sample is a group of people that are easy to reach and close to the researcher. In this thesis, the author chose her colleagues to be volunteers in the research. To increase variation in the sample the author recruited participants living in different areas of Tallinn and with different experience with the SST. It was decided to maintain participants' anonymity to provide the volunteers safe environment to speak openly about their opinions and experiences with the SST systems.

Author used email to recruit volunteers into the study. Research essence and purpose were shortly described. Potential participants had a chance to respond if they felt interested. 15 participants were included in the study in total. Volunteers were divided into two groups based on their shopping habits, which were specified by the participants themselves – non-users of SST (5 persons) and active users of SST (10 persons). Author decided to divide the group in this way, because quasi-experiment was more time-consuming and included visits into two different shops having different SST systems. Non-users are these participants who have either never used SST or who have tried it out once or twice but turned back to their old habit of using regular checkout counter. Active users are defined as users, who choose the SST in most of their visits to the retail stores that offer the SST possibilities.

Non-users participated in two interviews that had three questions about their demographics and six thematic questions. Non-users also took part in quasi-experiment held in two different retail stores. The timetable was discussed and compromised in the

favour of both parties – the researcher and the participant (table 5). First, demographical data was gathered to see whether Estonian consumers correspond to the findings of Jayasimha and Nargundkar (2007) on page 17, who postulated that education level, age and income influence consumer's choice of SSTs. The research plan for the quasi-experiment group was divided into three parts:

1) Collecting non-users' demographic data;
2) Discovering the main reasons for not using SSTs on daily bases;
   Non-user visits 2 retail stores to try out SST systems.
3) Evaluation of the SST's perceived usefulness and ease of use according to TAM model after the participant has experienced SST in real store setting

The essence of the quasi-experiment was that a non-user answers three of the interview questions before shopping trips to explain one's expectations and fears regarding SSTs. Next, he/she visits two types of retail shops that use SSTs – one time a shop, that uses self-checkout terminals and the other time a shop, that uses self-shopping remotes. It has been decided to take into scope five large retail chains in Estonian market that use one of the SST solutions. Non-user performs everyday shopping, but instead of using habitual regular checkout, non-user will use each time the SST. After each shopping, non-user will answer another three questions of the interview to give feedback about the used SST. They are asked to evaluate both, the ease of use and perceived usefulness of the SST on a scale from 1 to 5 to see how much the quasi-experiment influenced the non-user and whether they are likely to become an active user or not. These two factors are presented and explained on pages 15 and 18 by Jia et al. (2012), Davis (1989), Fador (2014) and Pantano and Di Pietro (2012). Author participates in both shopping and observes the volunteer. After, results are analysed, and conclusions are made. Interview plan for non-users is included in Appendix 1.

Active users participated in a longer semi-structured interview about their experience with SSTs and opinions about the different SST systems were discussed. The interview plan was composed in two languages, English and Estonian, to provide the interviewee a chance so choose which language is more comfortable to use. The timetable for the interviews was negotiated and set to be convenient for both the interviewer and the interviewee (table 5). Interviewer sent the interview plan to the interviewee one day in

advance to provide an opportunity to prepare and feel more relaxed during the interview. Conversations were also recorded and transcribed to have better overview of the gathered data. One interview took approximately 20-30 minutes.

Interview plan for active users was developed based on the theoretical literature review and author's experience to get better overview of the market situation today. Interview plan is included in Appendix 2 and was devised in four parts:

1) Background information about becoming and being an active user;
2) Information how SSTs influence consumer's everyday life;
3) Data about the main benefits and shortcomings of SSTs;
4) Active users' demographic data.

Questions 1-4 aim to gather background information about the active user to see how they became a user at first. The questions also aim to find out how technology based active user is today and do they have overall readiness to try out new things. Information gathered in the first part can be explained through TAM presented by Davis (1989), Fador (2014) and Pantano and Di Pietro (2012), which explains the overall technology acceptance among consumers on page 15. Question 4 includes different aspects to understand why an active user made the choice to use the SST and which factors, according to Jia et al. (2012) on page 17, influenced the consumer to make such a choice.

Second part of the interview plan focuses on active user's usage of SSTs in his/her everyday life. Questions 5-10 aim to find out which emotions SSTs create for the active users and how the surrounding environment around the SST influences the active users. The researcher aimed finding out to which extent would the participants pay attention to environmental and social factors discussed on page 18 by Lin and Hsieh (2006) and Wang (2017). Question 6 gathers information about consumer's time management and how SST systems influence consumer's time as is discussed on page 19 by Vuegen (2019). One of the main factors that influences the decision to use the SST according to Jia et al. (2012) factors of feasibility on page 18 is the ease of use of the systems. Question 7 aims to find out how interviewees evaluate the ease of use of different types of SSTs. Question 9 aims to find out how the active-user evaluates one of the key factors of TAM presented on page 15 – perceived usefulness. Sometimes consumers can feel

social pressure to use SSTs just to feel part of a community, even if they are not ready to try out the system only by themselves as discussed by Bulmer et al. (2018) on page 19. Question 9 gathers the information about active user's situations regarding social pressure and how it has affected them. As reviewed by Garry (2009) on page 18 – the consumer usage of SSTs depends on how many other customers are in the SST area at the same time. Question 10 tries to find out if this factor influences the active user's decision or not.

Third part of the interview plan mainly focuses on the benefits and shortcomings that SST systems has today through consumer's eyes. Questions 11-15 can help map down the main areas for the retailers that need improvement as reviewed on page 15 by Keeling et. al (2006). Question 14 gathers the information about active user's thoughts on the SST usage situation today and what might be the main reasons through their minds that hold back non-users to try out innovative technologies. This is again crucial information to retailers to understand their customers better and take actions to lure more consumers to use SSTs. This again can help optimize human recourses in the stores. Last issue was brought out by the retailers' interviews to local news channels and are described on page 25.

Last part of the interview plan gathers demographic information about the active users. This data is gathered to analyse whether there is a relation between age, education and income level and SST systems usage as discussed on page 17 by Jayasimha and Nargundkar (2007).

Table 5. Timetable for quasi-experiment and semi-structured interview; compiled by author.

Non-users					
PARTICIPANT	**GENDER**	**AGE** *(y)*	**EDUCATION**	**PROFESSION**	**TIME**
Non-user 1	Female	36	Higher	Mid-level specialist	4.04.2019
Non-user 2	Female	41	Applied higher	Mid-level specialist	4.04.2019
Non-user 3	Male	20	Secondary	Student	7.04.2019
Non-user 4	Female	24	Higher	Mid-level specialist	8.04.2019
Non-user 5	Male	45	Higher	High-level manager	9.04.2019
Active users					
PARTICIPANT	**GENDER**	**AGE** *(y)*	**EDUCATION**	**PROFESSION**	**TIME**
Active user 1	Female	29	Applied higher	Mid-level specialist	26.03.2019
Active user 2	Female	27	Secondary	Mid-level specialist	26.03.2019
Active user 3	Female	34	Higher	Mid-level specialist	28.03.2019
Active user 4	Female	29	Higher	Mid-level specialist	28.03.2019
Active user 5	Female	28	Higher	Mid-level specialist	2.04.2019
Active user 6	Female	35	Higher	Lower-level manager	3.04.2019
Active user 7	Female	24	Higher	Teacher	8.04.2019
Active user 8	Female	28	Higher	Mid-level specialist	9.04.2019
Active user 9	Female	52	Higher	High-level specialist	10.04.2019
Active user 10	Female	34	Higher	Mid-level manager	11.04.2019

Research was done during two and a half weeks by negotiating suitable times with the participants. Non-user quasi-experiment together with the interviews took approximately 35-45 minutes per volunteer. Time spent on the quasi-experiment and interview depended on the facts how many goods was decided to be bought, how crowded the shop was, how long it took for the volunteer to use the system and how much information non-user wanted to share before and after the shopping. Active user semi-structured interviews took approximately 20-30 minutes per interviewee depending on how well interviewee felt speaking about this topic and how many different situations they had had during their shopping. The average age of the participants was 30.1 years old. Youngest participant in the research was 20 years old and the oldest 52 years old.

The author did not see any strong obstacles to perform the research. The only difficulties that might have occurred were finding common times for the quasi-experiments and interviews, but this was solved with compromise. Second obstacle that has occurred was the fact that volunteers live in Tallinn, which is known for the relatively higher usage of SST systems than other parts of Estonia. Still, it can be said, that both interest groups were gathered based on their previous experiences of using and not using the SST.

3. RESEARCH RESULTS

3.1. The experiences and opinions related to self-service technology among active users

This subchapter gives an overview of collected material from the semi-structured interviews where active users shared their experiences with the SSTs and presented opinions about the systems in general. Results will be compared with the past research presented in chapter 1 and finally conclusions are made. Following the tradition of the qualitative research the results are presented side by side with discussion.

The youngest active user participating in the research was 24 years old and the oldest 52. Seven active users out of ten had higher education, two had applied higher education and one secondary education. Six active users (age 28-34) work as mid-level specialists by earning above the Estonian average salary (1310 €/per month, Eesti Statistika 2019) and five out of six mid-level specialists have higher or applier higher education. Only one has secondary education. One active user (age 52) works as higher-level specialist also earning above Estonian average salary and has higher education.

One active user (age 35) works as lower-level manager having higher education and one (age 34) as a mid-level manager having applied higher education and earning more than average Estonian salary. Last active user (age 24) is a teacher with higher education and earning slightly below Estonian average salary. It can be concluded that Jayasimha and Nargundkar (2007, see chapter 1.2, p. 17) claim that younger age, higher education and lower income influences SST systems' usage is not applicable in this exploratory research because all the active users regardless of their age, education level and income use self-checkouts on daily basis.

3.1.1. Background information of becoming and being an active user

Current part of the semi-structured interview focused mainly on the background information of the active users' overall technology usage level and innovativeness. It was also asked how they became active users and why. Most of the active users evaluated their level of technology usage and innovativeness to be medium to good by justifying their assessments with the fact that technological solutions usually make their life easier and more convenient. One of them mentioned that following expert feedback gives them better overview of the market situation and technology applications:

> I do not like to download useless, half-finished applications to then try out whether it is good or not. I usually follow expert feedback on innovative solutions, so I would know which solution is worth trying and which is not. Then I can only choose the ones I find beneficial to myself. (Active user 9, age 52)

Two active users considered their technology usage level not that developed. They said that they are in favour of technological innovations, but they are not using all of them, only common ones such as identification solutions (Smart ID and Mobile ID) and self-checkouts.

All active users expressed their readiness to use new solutions. Here, the interviewer provided an example based on which active users could evaluate their readiness to try out new things. They were asked to put themselves into a situation, where a new solution had been launched into the market and the interviewer wanted to know, are active SST users the ones who always go and try out the new solution among the first users, or they first observe the technology from a far, search for more information and if the solution seems to fit with their lifestyle they start to use the system.

Most of the active users said to be the ones evaluating the new solution first from a far and then trying it out. Only one said to be among the first ones to try out the solution right away when it seems attractive and learn through trial whether they like the system or not.

> Everything depends how these things are presented. If the system seems attractive and easy and there is an instructor who can help me, then of course I am one of the first ones to try it out. I do not feel scared to ask for help if needed. Still, if the system seems difficult and hard to understand then I will not try it and remain using the traditional way. (Active user 1, age 29)

It can be concluded from this, that all the active users are open to innovations and start using new solutions sooner or later. This is in line with Ha and Stoel (2009, see page 15) who also stated that to understand customer's choice to use SST systems it is needed to understand their overall acceptance of technology. Lin and Hsieh (2006, see page 17) agree with other authors that general belief into technology is needed for using the SST.

Next, active users were asked to recall how they became an active user of SST system. The researcher wanted to find out if a recommendation by someone was involved or had they discovered the solution themselves. Most of the active users discovered the systems by themselves and decided to give it a try. Three active users got a recommendation from a friend or they were trying it out first time with someone they knew and who was already using the system.

> There was this self-checkout machine that my friend was quite used to using and soon after I discovered that I have the systems in my home shop, too. First, they seemed confusing but after some time I decided to try them out anyway. The first system to try was in Maxima. (Active user 5, age 28)

The main reasons for starting to use the SST systems were first to save time due to having long queues in the regular checkouts. Second reason for trying out the system was because it seemed easy, convenient and interesting so the active users decided to give the system a try. One of the active users brought out that it took her a while before making the first step of trying the self-checkout:

> I did not use the self-checkouts for a long time because they seemed too difficult. After some time, I gave self-shopping remote a try and discovered otherwise. For me it seemed that the self-shopping remote requires some time to learn and more focus is needed while shopping with the remote. This is also the reason why I was sceptical at first but then after trying became an active user due to seeing its benefits. (Active user 3, age 34)

Three active users highlighted that Estonian self-checkout systems seemed at first weird and did not seem attractive to them after trying out the system abroad at first:

> I started using the self-checkouts in Australia five years ago already. In Estonia at first, they seemed awkward and rather hard to understand so I did not have the courage to try them out. I also did not have the time as well to focus on the system's technology because it seemed complicated. (Active user 6, age 35)

> I first saw my friend in United Kingdom to use self-checkout systems. They seemed cool and fun to use. Soon after I got back to Estonia and I discovered that we have the systems here as well. Still, they seemed weird at first and difficult to understand. They made funny noises and I saw people struggling with the machines. After some time, I gave the self-checkout terminal a try myself and discovered that it was not that bad after all. (Active user 5, age 28)

> First time trying the self-checkouts was in Turkey where they are called JetKassa. When thinking of my home country Turkey it is really crowded and self-checkouts provide great time saving. When I first came to Estonia it took me time before I tried out self-checkouts here because they are different from my home country systems and seemed weird. Also, in Estonia for me the regular queue is not that long as well comparing to Turkey, but still I am using the self-checkouts just out of habit. (Active user 4, age 29)

These reasons are in line with Jia et al. (2012, see chapter 1.2 figure 4) four factors of desirability that included functional value such as reduced waiting time, increased efficiency, convenience and faster service delivery and experimental value such as the fun in using the SST, receiving positive feelings from using and having greater independence.

Five active users first tried out the self-shopping remotes in Selver and mainly because it was the first one in Estonian market. It also seemed interesting and fun to use as also Childers et al. (2001) have discussed on page19. Two active users tried out the self-checkout terminal during their first time due to not having time to wait in the regular queue and because the system seemed easy. Lee et al. (2013) on page 19 also discussed that the main reason for choosing the SST systems is to decrease the waiting time in the regular queues. One of active users discovered that she does not like the terminal in Maxima and have not used it ever since.

> I first tried out the self-checkout terminal in Maxima and I disliked it due to poor setup of the machine and additional need for assistance. Machine started to hallucinate by giving me an error that the weight on the counter is not correct. Then I needed to take off my products and put them back on the counter several times. Finally, it still did not help, and I had to wait quite long time before the cashier came and helped. I have not used this system ever since. (Active user 7, age 24)

It can be concluded that most of the active users discovered the systems themselves by following expert feedback and keeping themselves up to date with the newest solutions. They were also not afraid to admit that it took them time and the machines seemed weird at first but after several tries, they started to see the value SSTs provide them.

Main reasons for active users to start using the solutions were convenience and saving time by not having to stand in long queues.

3.1.2. Self-service technology influence on active users' daily lives

Next part of the semi-structured interview aimed to find out, how SST system influences active users' daily life. In addition, interviewer asked to evaluate the ease of use and perceived usefulness of self-checkout terminal and self-shopping remote according to TAM presented in chapter 1.2 on figure 3.

Interviewees were asked how often they use SST systems on their regular shopping. Eight active users said to choose the SST every possible occasion when they visit the stores. One of the active users said that she even makes the choice of a shop based on the possibility to use the SST system. The other brought out that sometimes when she has a lot of goods in her shopping cart only then she chooses regular checkout. One active user stated that she only uses self-shopping remote because she hates self-checkout terminal and do not see any benefit of using the terminal. This is in line with heuristics by Bilek et al. (2018) on page 10 that active user takes the mental shortcut to only use either SST or regular checkout without considering the alternative.

One active user highlighted that she considers her options before making the choice to choose the SST over the regular checkout. She claimed that it depends on which shop she visits and which groceries are bought at the time which is in line with two-system thinking process by Kahneman et al. (2000) where active user decision is driven by intuition (system 1) and reasoning (system 2) on page 11.

> It depends on the market and it depends what I am buying. If everything is packed and with the scanning code or I have only my debit card with me then I will always choose the self-checkout. There are times where I have many different fruits and vegetables that are not weighted and then I prefer the traditional cashier because the person in the checkout is professional and does this faster. (Active user 4, age 29)

The other active user also considers options before deciding. For this active user self-checkout is very easy and is used almost each time. Although she finds self-shopping remote to be more complicated and needs extra effort. This is in line with Vuegen et al. (2019, see page 19) that at times SSTs seem to need extra effort to use and user will choose the regular checkout.

Active users were asked to comment how using SST systems influences their time management. Some active users found that using the SST does not save time for them. One of them even highlighted that self-shopping remote is more time consuming but still convenient which is in line with the findings by Vuegen et al. (2019, see page 19). Other two users also use the SST systems mainly due to convenience and independence that is in accordance with factors of desirability by Jia et al. (2012, see chapter 1.2 figure 4).

Seven active users found the self-checkout systems to have a positive effect on their time management. They said that SSTs save them time and give them independence which in line with Jia et al. (2012, see chapter 1.2 figure 4) factors of desirability. In addition, one of them even brought out that due to using the SSTs one can avoid communicating with the cashier and interact with the machine instead which is also discussed in study by Tänava (2011, see page 23).

One active user highlighted that self-checkouts are usually less crowded which saves time and when she makes a mistake then there is nobody else to blame but herself.

> In example, if the cashier starts to be stupid about something, then I get nervous and upset together with everybody else that need to wait in the queue longer just because of me, but if I get stupid about the machine, then I can take my time and handle the situation calmly without social pressure from others. This way it will get solved in a calmer way without irritating other consumers. (Active user 5, age 28)

According to TAM (see page 15) consumer will evaluate first the usefulness one will get when deciding to choose the self-checkout instead of regular checkout. Active users of the survey were asked to evaluate perceived usefulness on a 5-point scale (very low to very high) then most of the active users evaluated the perceived usefulness at 4 meaning active users feel the usefulness they gain from using the SSTs be high.

It is also in line with Ha and Stoel (2009, see page 15) that it is important to observe and understand consumer's behaviour to see their readiness to use the SSTs. From this research it can be concluded, that active users are in favour of SSTs and see the benefit of using it to be substantial. The main reason for feeling the perceived usefulness to be high was the time saved when using the SST which has been brought out also by Jia et al. (2012, see chapter 1.2 figure 4) factors of desirability and discussed by Pasarnphanich and Gillenson (2003, see page 16) in their study.

One active user on the other hand brought out that for her it is even not so much for saving time but just the convenience SSTs offers when using them on daily basis. Other active users also brought out SSTs to give them a chance to be independent and do the procedure faster themselves. One stated that SSTs give one full control over their purchased goods without someone else mixing up the product quantities.

> My grandmother went to the store to buy some juice. Once reaching the regular checkout her products were scanned and she already paid to get to leave from the store. Afterwards she discovered, that the cashier had registered ten packs of juices for her instead of the one she really bought. Then my grandmother had to go back to the store to get things solved. Thanks to SSTs such situations cannot happen because I am my own boss by performing scanning of my product on my own and avoiding theft by the retail store. (Active user 5, age 28)

Once consumer evaluates the possible perceived usefulness one will get from choosing the SSTs then secondly according to TAM (see chapter 1.2 figure 3) they will evaluate the ease of use of the systems. Active users were asked to evaluate two different types of SST systems that Estonian retail market uses in scale one to five (very difficult to very easy) where most of the active users evaluated the self-shopping remote at 4 and self-checkout terminal equally at 3 and 4.

They found the self-shopping remote easy because it is fun to learn and understandable. Still, they brought out that at first the remote seemed intimidating and difficult but after few times of trying it became very clear and easy as also Lin and Hsieh (2006, see chapter 1.2 figure 5) and Wang (2017, see chapter 1.2 figure 5) have stated through factors of feasibility. One of the active users highlighted the easiness of using the self-shopping remote with several options for scanning the code.

> The self-shopping remote is very easy, logical and convenient. For me the convenience is the key factor for using the system. I can quickly scan the product and place it into my shopping bag right away. If it may happen that for some reason, I cannot scan the code from the product then I can easily do it from the counter because all price tags also have the scanning code printed on them. (Active user 9, age 52)

Two active users on the other hand brought out that remote requires client card which is an obstacle for them due to not having right client card. One other active user claimed to forget to scan the products with the remote and rather uses the self-checkout terminal.

> The remote system is a little tricky for me and I can say that I have a subconscious fear towards the remote system because I am used to doing the routine of taking the groceries

> and putting the directly into the shopping cart. Due to this, it may happen that I forget to scan some of the goods and place them directly into the cart. I also have ended up in a shopping control and this gets me anxious just because I am afraid that out of habit, I forgot to scan all the goods. That is also why I am careful when using the remote and when possible I either choose the regular checkout or self-checkout terminal. (Active user 3, age 34)

Active users found the ease of use of the self-checkout terminal to be from manageable to easy due to not having to have a client card and it is fun to use. One of the active users even compared it with the childhood play only this time you can do the actual cashier job yourself. This on the other hand is a reason that was highlighted by one other active user to dislike the self-checkout terminal:

> I hate the terminal and cannot see the point of scanning my things one by one in the terminal. The convenience of the self-checkout is also lost in the terminal version because I must first gather the goods into the shopping cart, then take them out and scan, then put them on a scale and put them into my bag. I could let professional cashier to do the same but faster and I only need to collect my things and go. (Active user 9, age 52)

Most active users stated that the main fault self-checkout terminals have is the difficulty of the machines menu as has been uptake in Lin and Hsieh (2006, see chapter 1.2 figure 5) and Wang (2017, see chapter 1.2 figure 5) factors of feasibility. When active users would like to buy fruits and vegetables then it is needed to weight them in the terminal. The menu of the terminal is built up in triangle method by starting out with the larger fruit or vegetable group and focus down on the specific one. This on the other hand causes confusion to where certain fruits and vegetables are grouped. Some stores that use self-checkout terminals such as Prisma and Coop have solved the issue by adding the scales next to fruit and vegetable counters and divided them with numbers matching on the price label and in scale menu. This is a system that could also be adopted by other stores using self-checkout terminals.

Active users were asked if they have ever felt social pressure by other consumers and most of the active users had never felt social pressure. They said that they really do not pay attention to other consumers and seems that others do not as well. Usually when something happens the it is due to machine errors and these seven active users do not feel affected by it. These results are not compatible with the previous studies done on this topic see e.g. Bulmer et al. (2018), Dabholkar and Bagozzi (2002) and Al-Somali

et al. (2009 on page 19. On the other hand, one active user highlighted that she feels uncomfortable when the machine gives an alarm and draws attention.

> Sometimes I indeed feel unwanted attention since the terminal lights up due to some error and draws attention to me. Sometimes I also feel social pressure from other customers. They come and stand into the narrow isle to wait for their turn and then they breathe to my neck, so I would finish my checkout faster. I find it inappropriate and uncomfortable. (Active user 2, age 27)

One other active user explained that she sees social pressure to be positive by motivating purchasers to keep up with the technology innovations and push themselves to use more technology. She agreed that due to positive social pressure she started using the SSTs. It can be concluded that findings in Bulmer et al. (2018), Dabholkar and Bagozzi (2002) and Al-Somali et al. (2009) see page 19, studies about social pressure and risk pushing consumers away from using SSTs, are not applicable to this exploratory study.

Last, it was asked from active users when they feel most comfortable to use the SST systems to see if findings by Garry (2009, page 18) are applicable to this study. Most active users found that it does not matter for them if someone else is also using the SST or not. They explained that in most cases they make the choice already before entering the store and stick with the decision regardless of the amount of other people using it. One active user highlighted that it is the most enjoyable to use the SST when the shop is crowded because then the benefit of saving time and convenience feel to be the greatest. It can be said that previous researches up taking the comfortless of using the SSTs, see e.g. Garry (2009, page 18), do not apply in this exploratory study due to active users feeling comfortable anyhow and enjoying the use of SSTs.

All in all, it can be said, that active users are using both systems on daily basis. They still are divided into two based on the systems – active users that enjoy using the self-shopping remote and active users who enjoy using self-checkout terminals. Active users find both systems to be from manageable to easy by bringing them high to very high perceived usefulness. The main benefits are saving time by avoiding long queues and convenience of getting faster service delivery.

3.1.3. Benefits and disadvantages of self-service technologies

Final block of the semi-structured interview focused on the main benefits and faults both SST systems have today and what could be improved to engage more consumers to use them. First, active users were asked which main benefits in addition to the time-saving by avoiding long queues they feel when using SSTs. Almost all active users agreed that SSTs are easy and fun to use by giving them independence and being convenient.

Most of the active users also appreciate the opportunity to monitor their total shopping bag amount from the self-shopping remote screen which helps them to stay in the budget and be sure that all products have the right price and/or discount. Same aspects have been uptake in four dimensions of desirability by Jia et al. (2012, see chapter 1.2 figure 4) and TAM (see chapter 1.2 figure 3). One of the active users brought out that it helps her avoid communication with others which is in line with earlier study by Tänava (2011, see page 23). In addition, SST gives the opportunity to keep the stores open at late hours which gives more flexibility to visit the shop as is stated in feasibility factors by Lin and Hsieh (2006, see chapter 1.2 figure 5) and Wang (2017, see chapter 1.2 figure 5). One other active user highlighted that thanks to SSTs it is possible to monitor exactly which fruits and vegetables one will buy.

> SST gives me opportunity to scan exactly the fruits and vegetables I have chosen from the counter. For example, sometimes it may happen that the cashier puts the fruit or vegetable code randomly into the cashier machine which costs me more money. Sometimes it is not notable amount difference, but when it is, then I will lose valuable time by claiming the money back from the store to solve the issue. (Active user 8, age 28)

Active users were also asked to describe the main faults they see SSTs to have today. There were several improvement areas that were noted by interviewees. The most common fault they found was weighting the fruits and vegetables in the self-checkout terminal. Many active users stated that the menu is too complicated. It is difficult to find the correct fruit or vegetable group. That costs them valuable time which decreases the total saved time which is explained in previous studies see e.g. Lin and Hsieh (2006, page 17) and Wang (2017, page 17).

The second most common issue was the requirement of a client card. Active users found that it should be elementary to use SST systems without the obligation to have a client card. The same criterion is also taken under consideration in the previous studies that consumers are not feeling comfortable of shops using their personal information see e.g. factors of feasibility by Lin and Hsieh (2006) and Wang (2017) in chapter 1.2 figure 5. Third most common issue was that the machines are relatively slow and do not work in a proper way meaning the machine starts to hallucinate and asks the client several times to take the product off from the scale and put it back.

Some active users found that sometimes when they are buying alcohol, system gives them an error message and they need to wait for the personnel to check their ID to confirm their age. In many occasions there are not enough shop assistants monitoring the SSTs. That influences active users' evaluation of one of TAM (see chapter 1.2 figure 3) factors, perceived usefulness, and may even make them turn back into regular checkouts because they will not save time with the SST.

Next, active users were asked about the crucial characteristics of SSTs that would engage more customers. All active users found that SSTs need to be convenient and reliable, meaning if the solution is brought to the market it should be ready and fully functional. They added that the interface should be easy and user friendly to help them save time instead of adding to the time spent shopping.

One of the active users brought that there must be enough remotes for the consumers so that a person who is willing to use the SST would not have to give up the idea just because there are not enough remotes available. The other two admitted that the scanner in the self-checkout terminals could be more sensitive to help the consumer be faster. These aspects can be related to previous studies of four dimensions of desirability (Jia et al. 2012, see chapter 1.2 figure 4) and four factors of feasibility (Lin and Hsieh, 2006; Wang, 2017, see chapter 1.2 figure 5) that help the consumer to come to a decision of choosing and using the SSTs.

Active users were also asked to speculate what could be the main reasons for other consumers to not use the SSTs as much as expected. More than half active users found that elderly people might be afraid to use it and do not trust the technology which also makes sceptical towards SSTs. The same criterion has also been brought out in previous

studies, see e.g. Lin and Hsieh (2006), Kourouthanassis and Roussos (2003) and Evanschitzky (2015) on page 18. Sometimes even if customers have the willingness they do not know how it is done and they will use the regular checkout instead. The same reason is brought out in a study by Wang (2017, see page 18) that it is needed to have a certain level of skills or the confidence to use SSTs in addition to willingness to try.

Some active users also thought that some consumers may enjoy the communication with the shop assistant and are not willing to give it up. They also said that they might not know how to use the system just because nobody has never showed them. They added that some people may enjoy the old way by taking their time and letting the cashier help them because it is easier, does not require extra effort and decreases social risk to be judged if something goes wrong which is in line with the study by Dabholkar and Bagozzi (2002, see page 19).

Last, it was asked what recommendations active users would give to retailers to improve already existing systems to engage more purchasers in the future. Four suggestions came out from the interviews almost unanimously. First, active users found that shops together with IT companies should develop a solution that would basically transfer SSTs into consumers' mobile phones without requiring a loyalty card and additional self-shopping remote or terminal. All the product scanning could be done through an application in a mobile phone. Only payment terminal would be needed to purchase the scanned goods. This would also solve the issue of checking the ID card when buying goods that have age limit because a purchaser using the solution should be registered in the application and the age would be detected automatically.

Secondly, the scanning sensitivity could be improved to make the machine read the scanning code faster. In addition, regular maintenance should be arranged for both types of SSTs to ensure their reliability. Third, active users found that there should be a special person managing only SST systems and providing new consumers personal assistance to motivate them to use SSTs regularly. Fourth, retailers should optimize their staff by also ensuring that there is at least one shop assistant always observing the SSTs to provide faster service delivery. These enhancements would help retailers to gain more benefits by increasing the number of loyal customers, reducing the unsatisfied

customers standing in long queues and provide pleasant shopping experience (Keeling et al., 2006, see chapter 1.2 table 4).

All in all, the analysis of active users' opinions, attitudes and beliefs about SSTs in Estonian retail market showed that SSTs have mostly served their purpose over the time they have been available. Active users enjoy the benefits of the SST systems on daily basis as the SSTs provide them opportunity to save time, avoid long queues and enjoy convenient faster service delivery. Still, there are some improvement areas that are the main reason why SSTs are not accepted as widely as it was first expected. Main improvement areas are on the technical side of the systems, such as setting up regular maintenance schedule, having enough shop assistants available to help and observe and improving the concept of SSTs by launching an opportunity to scan with a mobile phone application. Retailers should take under consideration suggestions and difficulties stated by active users to improve their systems to engage new customers and keep active users satisfied.

3.2. Non-users' acceptance of self-service technologies

This subchapter will provide overview of the data collected in the quasi-experiment where non-users first explained their reasons for not using the SST systems and what are their fears and expectations towards SSTs. Then, after performing two shopping trips by using first time self-checkout terminal and second time self-shopping remote non-users evaluated the perceived usefulness and ease of use of the systems.

The youngest non-user participating in the research was 20 years old and the oldest 45. Three non-users (age 24, 36 and 41) work as mid-level specialists and having either higher or applied higher education and earning above Estonian average salary (1310 € /per month, Eesti Statistika 2019). One of the non-users (age 20) is a student and has secondary education. Last non-user (age 45) works as a mid-level manager and owns higher education. The sample of non-users does probably not reflect the general population of non-users as the author recruited the participants from her own network and thus the sample would be biased to resemble the profile of the author herself. However as this is an exploratory qualitative study, a sample like that can nevertheless give first valuable insights into the opinions of non-users, regardless of their

demographic background although it was claimed otherwise by Jayasimha and Nargundkar (2007, see page 17).

3.2.1. Reasons for not using self-service technologies on daily basis

Current part of the study included the main reasons and fears of non-users not using the SSTs and what are their expectations regarding SST usage. Non-user 1 brought out that she has had previous unpleasant experiences with SSTs and this is the reason for not using SSTs on regular bases. It was also mentioned that waiting for the shop assistant to fix the error on the remote or in the self-checkout terminal takes long time and it seems more convenient to use the regular checkout instead.

Half of the non-users found that since their home shop has not implemented the SST system, then they have not felt the need to start using it. They also agreed that SSTs, specifically self-shopping remote, seems complicated to use and requires extra effort to understand which is also in line with previous studies by e.g. Oghazi et al. (2012, see page 19) and Vuegen et al. (2019, see page 19). One of the non-users highlighted that she feels regular checkout to be more beneficial than the SST and it does not include any social pressure.

> When I enter the store, I can see the self-checkouts and I have even thought about using them sometimes, but it seems to me that benefits such as saved time are higher when using the regular checkout instead of SST. This is because learning about the SST takes so much additional time and when I will not succeed in using the system, I do not want to feel social pressure from others staring at me. Therefore, I choose the already familiar regular checkout to decrease social risk of being humiliated. (Non-user 4, age 24)

This is also in line with past research by Dabholkar and Bagozzi (2002, see page 19) who have brought out that due to the need to decrease social risk, consumer might choose an already familiar regular checkout instead of SST. One other non-user additionally stated that it is important to have human interaction and he likes when the cashiers smile. He stated that cashiers are faster and more professional to do this job and he does not see the reason not to use the regular checkout.

Next, it was asked, which are the biggest fears and obstacles of using the SST systems that have kept non-users for trying out the solutions. Two of the non-users found that they do not fear anything but are rather just choosing convenient and tested solution. They enjoy that the job is done on behalf of them by the professional cashiers because

self-checkouts seem to require extra effort as is also found in previous studies, see e.g. Oghazi et al. (2012) on page 19.

One of the non-users brought out that he is more afraid of system failure and scanning-code recognition difficulties than personally failing to use the SST. The other two non-users on the other hand stated that their biggest fear is to personally fail of using the SST by scanning something more than once and not knowing how to solve the situation. They usually choose regular checkout to decrease social risk and feel more comfortable which is in line with previous studies by Dabholkar and Bagozzi (2002, see page 19). Main expectations that non-users had towards SSTs were similar to each other. They all expected that the shopping experiment would go smoothly without any major interruptions and it would prove them otherwise as they have thought so far. They hoped to get things done faster and understand the system better.

All in all, it can be said, that all the non-users were happily ready to participate in the quasi-experiment and give SSTs a try. The main reasons so far for not using the SSTs were that non-users either had had an unpleasant experience with the systems of it never occurred to them to try out the solutions. They did not feel the need to use SSTs, or the systems were not implemented into their most frequently visited stores. All non-users expected from this quasi-experiment positive outcomes to understand systems better and see the value in choosing SSTs over regular checkouts.

3.2.2. Non-users' evaluation to TAM model factors after the quasi-experiment

After expressing their fears and expectations, non-users were asked to participate in quasi experiment with a purpose of visiting two retail stores with different SST systems. The experiment design was quite flexible only specifying that the participants had to first try out self-checkout terminal and second try the self-shopping remote. The shops that participants visited were chosen from among the five biggest retailers in Estonian market that were introduced in chapter 2.1.

Next, research aimed to find out, how non-users would evaluate perceived usefulness and ease of use according to TAM (see chapter 1.2 figure 3). They were also asked how likely they will use the systems in the future and will they become active users. First, non-users were asked to evaluate the perceived usefulness from TAM (see chapter 1.2 figure 3) on a 5-point scale (very low to very high). Most of the non-users evaluated the

criterion at 4 - high. Only one non-user found it to be low, because Maxima's SST was used, and it did not seem easy or logical to the participant.

> I used Maxima's self-checkout terminal and I find it difficult to understand. I also see it as a replacement of the cashier but if the system is faulty, I end up spending more time in the self-checkout terminal than I would have spent waiting in the regular queue. If I would be in a hurry, I would not use it because for me it is not user friendly. (Non-user 3, age 20).

These reasons are also brought out in the previous studies by Lin and Hsieh (2006) and Wang (2017) in chapter 1.2 on figure 5. Other non-users found instead, that SSTs really are offering them possibility to save time by being faster and not having to stand in long queues.

Perceived usefulness of the self-shopping remote was evaluated on a 5-point scale (very low to very high) and most of the non-users evaluated the criterion at 4. Two of the non-users found the self-shopping remote to be fun and innovative. They stated that the solution is interesting, clear and logical. The other two found that it would have been faster to use the regular checkout instead of the self-shopping remote because it needs extra effort to understand the interface which is in line with previous studies by Oghazi et al. (2012, see page 19), Lin and Hsieh (2006, see chapter 1.2 figure 5) and Wang (2017, see chapter 1.2 figure 5). One non-user on the other hand enjoyed the self-shopping remote and was positively surprised to see how much benefit the solution brings.

> When I entered the store, I already saw very long queue in the regular checkout and then already I acknowledged to myself that self-shopping remote would be better choice. The person who was at the end of the queue when I entered the store was about to make the payment to the cashier at the same time I had already scanned and put all my groceries into the shopping bag and entered the self-checkout payment area. This opened my eyes and showed how much time I could save by using this solution. In addition, I like that I can follow the total amount of the shopping cart during the shopping. I was convinced that the system is very easy and user friendly. (Non-user 3, age 20)

The ease of use was also evaluated on a scale from one to five (very difficult to very easy). Non-users evaluated the criterion mostly at 3 and 4 for both SST system. Non-users found the systems to be from manageable to nearly easy. It can be said that this was because they were the first-time users and did not have all the skills and knowledge to fully succeed.

Half of the participants found the self-checkout terminal to be easier than they expected. It took them first a moment to understand the logic of the machine, but afterwards it was easy and convenient to use. One of the non-users found the overall system to be easy but needed extra effort.

> When I used the self-checkout system it overall seemed easy and understandable but needed extra effort from me. With this I mean that I needed first to put my things into the shopping cart, then take them out and scan them and finally put them into my shopping bag. It did not seem sufficient for me and cashier could have done the same work a lot faster. (Non-user 5, age 45)

The same aspects are in line with previous studies by Vuegen et al. (2019, see page 19). Three non-users found that self-shopping remote requires extra effort and needs more time to understand at first. Once they had the chance to get to know the system it turned out to be enjoyable after all which is also brought out in previous researches by Evanschitzky et al. (2015), Schütte (2015) and Kourouthanassis and Roussos (2003) on page 18. One of the non-users did not find the system to be hard in general but there were still some aspects confusing her while trying out the self-shopping remote.

> I thought many times, that I will try the remote next time I go to the store and have more time to focus on the instructions. I think the system could be easier. Still, the remote itself was not that hard to understand because they also offer instruction flayers, but again, it takes additional time to memorize all the remote functions. Some of the buttons are confusing and did not state clearly what could be done. I must take time to understand the system. For me it means, that I really need to have the wish to use self-shopping remote, not that I would automatically take the remote because I gain benefits when going shopping. (Non-user 2, age 41)

Finally, it was asked from the non-users how likely they use the SSTs in the future and is there a chance they become active users. Two of them found that they most definitely will use the self-checkout terminal in the future due to simplicity of the system and the fun in using it. The other two found that the probability of using the self-checkout terminal in the future is quite high, but it will not be their first choice each time because they like the convenience of the regular checkout. One non-user found that the terminal will not be used that much in the future because it takes extra effort and time to use. In addition, the terminal in Maxima is faulty and often does not work properly.

Three of the non-users will use the self-shopping remotes in the future because they loved the interface and system itself seems innovative. They added, that they can follow

their budget thanks to the possibility to see their purchase amount and it saves them time by avoiding long queues. This is also in line with findings by Jia et al. (2012, see page 17) that functional and experimental value will motivate the users to try SST systems. Two other non-users stated that they probably will not use the self-shopping remote in the future due to complexity of the system and not seeing the benefit of using it. In their minds, the remote is clumsy and they see it as extra object that must be carried around. Still, they admit that seeing the purchase amount from the remote is a great bonus.

All in all, it can be concluded from the quasi-experiment that the reasons for non-users not using the SST systems coincided with the difficulties active users brought out from their experiences and their opinions why customers are not using SSTs as much as expected. For example, non-users found the systems to need extra effort and they seem complicated. It can be said that non-users had the prejudice and inner sceptics towards SSTs that were also brought out by active users as one of the reasons why people are not using the systems as much as expected. Non-users also added that since nobody had showed them how SSTs are used and what a great benefit they can be, it never occurred to them to try out the systems. Active users also stated that there are not enough shopping assistants introducing the solution to purchasers.

Based on these reasons, it can be said that non-users have stayed loyal to the more convenient option without giving the SSTs chance to prove otherwise. Non-users have believed their prejudices without trying to give them up. Still, as it turned out from the interviews with the active users' SSTs give great benefits when giving it time to understand the systems and trying them out even after first-time difficulties. This is something that non-users should keep in mind and give the SSTs a try second or third time. Also, this quasi-experiment showed that all non-users were willing to participate and try out the solutions if they had someone (this time interviewee) to show them how SSTs are used. They were convinced that SSTs can make their shopping more enjoyable by saving time and being convenient. Non-users admitted that there is a high possibility that they will try out SSTs in the future as well and become active users.

CONCLUSION

Over the past decade Estonian retailers have implemented self-checkout technology systems into their shops all over the country. Still, the systems are not used by the consumers as much as retailers expected. The aim of this master thesis was to find out why self-service technologies are not accepted as widely by consumers as expected. Based on different models presented in the literature review research tasks were mapped and performed by using qualitative research methods.

Visiting the retail stores is a part of consumers' everyday life and standing in the long queues to make their purchase in the regular checkout wastes a lot of valuable time. Customers do not see the possible benefit of time-saving by avoiding long queues that self-checkouts can offer because they are stuck in their usual comfort zone and routine of using the regular checkouts. The topic was chosen to understand consumer' choices better and show that self-checkouts really are as beneficial as they are claimed to be.

Previous studies have shown that it requires willingness and a set of skills to be ready to use the self-checkout systems. It has been also found that purchaser needs to get over his/her overall prejudice and sceptics about the technology before trying out the self-checkouts. Some researchers also found that it needs a general belief into technology that a customer would use the self-checkout. Ten interviews with the active users of self-checkout systems and five quasi-experiments with non-users of self-checkouts in Estonian market proved generally the same results as were found in earlier studies. Active users evaluate highly the time they save and convenience of the self-checkout. Non-users were sceptical about the systems and had assumptions which had kept them from using the systems earlier.

Active users are mainly making the choice to use the self-checkout every chance possible and at times they even choose the retail store after the possibility to use the self-service technology. They see the main benefits of self-checkouts to have the opportunity to save time. The second reason for being an active user is the convenience of the system. They also found the system to be easy and innovative. Active users find

the aspects of TAM, perceived usefulness and ease of use, of the self-checkouts to be high. They said the systems are fun to use, easy and they do not see any reason for not using these systems.

Non-users admitted their sceptics and prejudice about the self-service systems. They thought that it would not give them any large benefits and they have stayed in their routine. Non-users also say that they are used to going to the store and taking their time by standing in the queue due to what it has never occurred to them that self-checkout might be easier and faster way out. After the quasi-experiments non-users participated in it came out that they are willing to come out from their comfort zone. They evaluated the perceived usefulness and ease of use of both SST systems to be from medium to high which shows that they have the skills for using the self-checkouts they just had not given the systems a try due to earlier sceptics and prejudice. All non-users admitted that they will use the self-service technologies in the future because the experiment proved them otherwise and convinced them to reject their prejudices. Three of the non-users agreed that they are likely to use self-shopping remotes in the future an two non-users found self-checkout terminals to be suitable for them.

The results of the research show that the main reason for consumers not accepting the self-service technologies is the sceptics that they have towards the innovative technologies. Performed quasi-experiment confirmed the same and to overcome the prejudices it is needed to give the technology a try and not quit after the first time failing. It does not need a specific set of skills to use the systems, just the willingness to try them out. Almost all active users stated as well that they first were looking the systems from a far and gave it some time before they truly saw the benefits. Now, they would never make the choice to go back to the regular checkout.

It can be concluded from this exploratory research that self-service technologies have served their purpose in general but still need improvements to gain trustworthiness among consumers. Retailers should take under consideration provided recommendations by participants of this exploratory research in order to improve the systems even more and increase the usage in the future to gain more benefits and engage new loyal customers.

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APPENDIXES

Appendix 1. Interview plan for non-users

1) What is your age?
2) What is your profession?
3) Which education do you have?
4) What are the main reasons for not using the self-service technology (SST) on daily basis?
5) Which are the biggest fears of using SST while doing your daily shopping?
6) What are your expectations about the SST usage?

Volunteer performs shopping by using SST.

7) How would you evaluate the ease of use of the SST on scale 1 to 5? Why? (1 – very difficult; 2 – somewhat difficult; 3 – manageable; 4 – easy and 5 – very easy)
1) How would you evaluate perceived usefulness of the SST on scale 1 to 5? Why? (1 – very low; 2 – somewhat low; 3 – medium; 4 – high and 5 – very high)
8) How likely will you be using the SST in the future? Will you become an active user?

Appendix 2. Interview plan for active users

1) How do you evaluate your innovativeness and level of technology usage? How many different technology-based systems you use today?
2) How would you evaluate your readiness to try out new things?
3) How did you become an active user of the self-service technology (SST)?
4) Which SST system was the first one you used? Why did you decide to try it out?
5) How often do you use SST when doing your daily shopping?
6) How and when the usage of SST influences your time management? How much time you spend on daily/weekly shopping?
7) How would you evaluate the ease of use of different SST systems on a scale from one to five? Why? (1 – very difficult; 2 – somewhat difficult; 3 – manageable; 4 – easy and 5 – very easy)
8) How would you evaluate the perceived usefulness of different SST systems on a scale from one to five? Why? (1 – very low; 2 – somewhat low; 3 – medium; 4 – high and 5 – very high)
9) Have you ever felt social pressure to use the SST systems? If yes, why and how?
10) When do you feel the most comfortable to use the SST system in a retail store?
11) What are the main benefits of SST systems for you besides better time management?
12) Which are the main shortcomings of SST systems for you? Have they ever driven you to quit and return to the regular checkout?
13) What are the "must" aspects of SST systems for the consumer to use the them?
14) What do you think may be the main reason why people are not using SSTs as much as expected?
15) What do you recommend retailers to improve in the SST systems so that more consumers would use them?
16) What is your age?
17) What is your profession?
18) Which education do you have?

EESTI JAETURU ISETEENINDUSSÜSTEEMIDE OMAKSVÕTT TARBIJATE POOLT

Sirli Saar

Resümee

Viimase kümnendi jooksul on Eesti jaemüüjad implementeerinud kahte eri tüüpi iseteenindussüsteeme poodidesse üle kogu riigi. Siiski tuleb tõdeda, et tänaseks ei ole iseteenindussüsteemid oma eesmärki täielikult täitnud ning suur osa tarbijatest suunduvad igapäevasel poodlemisel endiselt tavakassadesse. Käesoleva magistritöö eesmärgiks oli välja uurida miks iseteenindussüsteeme Eesti turul ei aktsepteerita nii laialdaselt kui seda oodatakse. Selleks, et jõuda püsitatud eesmärgini tugines autor varasematele teoreetilistele artiklitele ning mudelitele ja viis läbi kvalitatiivse uuringu. Autor otsustas läbi viia intervjuud kümne aktiivse iseteenindussüsteemide kasutajaga ning kvaasi-eksperimendi viie mittekasutajaga minimariseerides uuringu tulemuste kõrvalekaldeid.

Varasemad teoreetilised käsitlused on välja toonud, et tarbijad ei aktsepteeri iseteenindussüsteeme skeptilisuse ning eelarvamuste tõttu. Samuti on välja toodud, et iseteenindussüsteemide kasutamine nõuab teatavaid oskusi, valmisolekut kasutama uut lahendust ning üleüldist usku innovaatilistesse tehnoloogiatesse. Lisaks on välja toodud peamised faktorid tehnoloogia aktsepteerimise mudelist – kasutuslihtsus ja tajutav kasulikkus, mille põhjal tarbija langetab otsuse kasutada/mitte kasutada iseteenindussüsteemi.

Uuringu tulemustest selgus, et peamisteks põhjusteks, miks tarbijad ei aktsepteeri iseteenindussüsteeme niivõrd laialdaselt, on nende skeptilisus ning eelarvamused süsteemide osas nagu ka teoreetilised käsitlused varasemalt kinnitasid. Kõik eksperimendis osalenud mittekasutajad tõdesid, et tegelikult on iseteenindussüsteemide kasutamine lihtne ja lõbus. Mittekasutajad tunnistasid, et on jäänud mugavusstooni ning ei ole tulnud selle peale, et süsteeme kasutada, kuna kardavad ebaõnnestuda. Aktiivsete

kasutajate intervjuudest selgus, et peamised põhjused kasutamaks iseteenindussüsteeme olid mugavus ning võidetud aeg. Aktiivsed kasutajad tunnistasid samuti, et esialgu vaatasid nad süsteeme kaugelt ning võtsid aega enne kui süsteeme proovisid. Alles hiljem tundsid nad tõelisi iseteenindussüsteemide eeliseid. Nii aktiivsed kasutajad kui ka mittekasutajad hindasid iseteenindussüsteemide kasutuslihtsust ja tajutavat kasu kõrgeks ning leidsid, et kõnealused süsteemid on tõepoolest mugavamad ja kiiremad. Kõik mittekasutajad tõdesid, et kindlasti kasutavad iseteenindussüsteeme ka tulevikus.

Kokkuvõtvalt võib öelda, et käesoleva uuringu tulemuste põhjal on iseteenindussüsteemid täitnud enda eesmärki, kuid siiski on arenguruumi võitmaks uute klientide usaldust ja pikaajalisi kasutajaid. Jaemüüjad võiksid kaalutleda uuringu tulemustes esitletud soovitusi et parendada juba olemasolevaid iseteenindussüsteeme, et tõsta kasutajate arvu ning saada juurde uusi lojaalseid kliente.