Consumer acceptance of self-service checkouts in Estonian retail market

Katri Kerem
Estonian Business School
Sirli Saar
Estonian Business School

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Abstract:

All bigger retailers in Estonia have introduced self-service checkouts into their stores but the customer acceptance has been below expected levels in spite of the long queues in regular checkouts. This qualitative exploratory study aims to understand why the users adopt or resist the seemingly so much more effortless way of doing daily shopping.

10 active self-service users were recruited for interviews to understand their motives and behaviour for using the self-checkout. Equipped with this info accompanied shopping with 5 non-users was conducted in 10 stores. The non-user study had three phases – pre-experience interview, 2 accompanied shopping trips and follow up interview.

The results revealed that the main reasons of non-acceptance are fear of failing (on the system and personal level) and overall scepticism. Interestingly time saving was not associated with the service by the non-users. Personal experience resulted in future intention to use only for 3 participants.

Keywords: retailing, self-service, technology acceptance

Track: Retailing & Omni-Channel Management

1. Introduction and theoretical framework

Rapid technological developments have simplified many everyday tasks of consumers and digitalization has created expectations of completing tasks with low effort and maximum efficiency. The share of online shopping is increasing share in several countries and categories, but with an exception of a few countries grocery shopping still takes place predominantly in brick and mortar stores. Increasing labour costs and new technologies have motivated retailers to introduce various self-service technologies, including self-checkouts. In grocery stores two main in-store self-checkout systems are used. First one allows the consumer to walk around in the store with a special remote and scan all the products immediately after selecting them from the shelf. This enables consumers to put the groceries directly into a shopping bag without a need to store them in the shopping basket first. The second option requires consumers to select goods from the shelves and place them into a shopping basket or cart first. The items are then self-scanned in an automated cashier station near the exit and placed into shopping bags after scanning.

In Estonia all of the bigger supermarket chains have introduced some form of self-checkout. In spite of the seemingly obvious benefits of self-service checkouts to the consumers (substantial time saving, no need to store items in cart first, overview of the total cost at any time, etc.), the adoption of the service is still in its early stage after several years. It is not unusual to observe 10 to 15 people checkout queues per cashier side by side with an empty self-checkout area on an average weekday evening in a major grocery store. This observation promoted the authors of the current paper to look into the factors that facilitate adoption of self-checkouts and also explore the barriers that prevent adoption.

1.1 Introducing self-service technologies to the marketplace

Many companies are changing from personal service channels to self-service technologies (SST) by engaging the consumers as active participants into the service delivery process (Scherer, Wünderlich & von Wangenheim, 2015). SST can be defined as the interface that gives a consumer opportunity to make the purchase from scanning the items to finalizing the purchase without involving the employees (Otekhile & Zeleny, 2016). Meuter, Bitner Ostrom and Brown (2005) clarify 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) suggested that via using the SST consumers will effectively become temporary employees of the service provider while using the SST.

The benefits of SST are obvious for the companies. Gunawardana, Kulathunga and Perera (2015) have highlighted that SST is giving businesses the opportunity to increase the productivity through decreased demand for employees, lower labour costs, longer opening hours and faster service delivery. Kleinman (2000) has additionally argued out that self-services could 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.

While the advantages of the self-service technologies are straightforward there is always a possibility for technological problems. Robertson, McQuilken and Kandampully (2012) claim that companies who are using SSTs are often not taking the responsibility for failures. Instead they blame the consumers for the mistakes and do not take negative consumer feedback regarding SST usage into account.

1.2 Adoption of self-service technologies

Large body of research has been looking at adoption of various technology related innovations in diverse sectors. Understanding why consumers accept or reject technology helps to engineer better technologies and address consumer concerns while promoting new technologies. As there is not enough research specifically on self-service checkout adoption, general technology adoption theories will be used as a theoretical framework.

Technology acceptance model by Davis (1989) is by far the best known robust model for explaining what determines acceptance of technology related innovations. It postulates that the most important variables of technology adoption are perceived usefulness and perceived ease of use. Those beliefs lead to attitude towards using new technology which in turn influences behavioural intention regarding technology (Davis, Bagoz, & Warshaw 1989). If either the beliefs about usefulness or/and ease of use are not positive it is not likely that the consumer will adopt new technology, especially in case there is older or non-technology alternative available. Pantano and Di Pietro (2012) have confirmed that TAM is also relevant and applicable to retail sector as it helps to explain adoption of technological solutions in this context. Their extensive research synthesized all TAM related research in retail and proposed that there is a range of additional factors that influence technology adoption both in online stores and brick and mortar retail stores. Table 1 gives overview of the results of their research. It is noteworthy that the factors of risk and trust get a lot of attention in their meta-analysis.

Perception of the features of technology	Perceived security, perceived cost, perceived risk, trust.

Consumers traits	Self-efficacy, behavioural control.
Social pressure	Subjective norm, social influence.
Hedonic values	Enjoyment, satisfaction.

Table 1. Proposed factors influencing technology acceptance in retail setting (Pantano & Di Pietro, 2012)

Jia, Wang, Ge, Shi and Yao (2012) have approached technology acceptance from the perspective of desirability-feasibility. Although they claim that perceived usefulness is partly related to desirability and ease of use is a component of feasibility, they have introduced several new dimensions that are crucial. Desirability is a combination of functional value, instrumental value, experiential value and social value; and feasibility is a sum of security, control, ease of use, and accessibility.

The additional factors influencing technology acceptance in retail context will be incorporated into the interview plan to help better understand how consumers rationalize the benefits or disadvantages of the self-checkouts.

2. Methods

The aim of the research was to understand consumer acceptance of self-service checkouts. The authors chose qualitative approach to get up and close understanding of peoples' beliefs, attitudes and behaviour as it has been widely documented that consumers are not able to accurately report reasons behind their choices (Ludwichowska, Romaniuk, & Nenycz-Thiel, 2017) in hindsight. Semi-structured interviews were conducted with users and non-users of self-service checkouts. Qualitative approach also enabled to include an observational stage - a researcher shadowed shopping trips of consumers who had not used self-service checkouts before to gain their immediate feedback. The accompanied shopping trips have previously been proposed as a valuable method for gaining new and relatively reliable insights into consumer behaviour (Lowrey, Otnes, & McGrath, 2005). Reflective short interviews were conducted after the shopping experience.

The research involved convenience sample that was recruited through the authors' personal networks utilizing an e-mail invitation to potential participants. Using personal networks enabled to find people who were ready to devote their time and also felt comfortable in the presence of researcher. 15 participants were included in the study. Volunteers were divided into two groups based on their previous experience specified by the participants themselves – non-users of self-checkouts (5 persons) and active users of self-checkouts (10

persons). The non-user group was smaller due to the time and resource constraints. Non-users are these participants who have either never used self-checkouts or who have tried it out once but did not use it again. Active users are defined as users who choose the self-checkouts in most of their visits to the retail stores that offer the self-checkout possibilities.

Interview plan for the regular users of self-service checkouts was composed based on the influential factors identified in past research. These included overall interest in new technologies, reasons for adopting the self-service checkouts, emotions evoked by the usage, importance of environmental and social factors, ease of use, perceived usefulness and benefits, perceived risks, main problems and shortcomings. The participants in the active user group were females between ages 24 to 52.

The initial interview for non-user group was shorter focusing on the reasons of not using the self-service. Researchers looked into perceived risks, fears, social concerns and other factors expressed by the participants. In the second stage all non-users visited 2 different retail stores to try out self-service checkout with remote and self-scan checkout. Finally, all participants were interviewed to understand if this experience had changed their initial viewpoints. The study was carried out in Tallinn as it has the biggest choice of shops that use different self-service checkouts and it was easier to do 2 different visits per participants while negotiating suitable times and locations. The non-user group included 3 females and 2 males between ages 20 to 45.

3. Results and discussion

3.1 Adoption of self-service checkouts: view of the regular users

All of the active users who participated in the study expressed interest in new technologies and willingness to try them out in general. Their personal traits and backgrounds appeared to be important factor in technology adoption. Most of them were still very rational looking for external proof that the new technology provides value, typical reasoning provided by one of the participants:

> 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)

All but 3 participants had started using self-service checkouts on their own initiative, the others had been exposed to positive word of mouth from friends or had the first experience while going shopping with someone else, so social influence was not remarkable. Three participants had used self-service check outs in other countries. Interestingly, previous

experience with similar systems had twofold influence. It did create willingness to try but it also created some confusion and hesitance as the systems in Estonia were different from what users had experienced before. So we can say that interest in new technologies in general is definitely facilitating taking up self-checkouts but previous experience with very similar technology can actually create confusion.

Most of the active users admitted that using the self-checkout is almost like being on an autopilot – alternatives are not considered. The only conscious decision is to avoid shops without self-checkout. A few active users went through a decision process almost every time they visited a store: how much do I buy, what type of goods, is there a lot of people, what time of a day it is, etc. As a result they either went for the self-checkout or regular checkout.

While saving time was mentioned as a perceived advantage by all participants, one interviewee expressed an opinion that even if the overall duration of the visit is not shorter with self-service, it usually seems shorter as there is no idle waiting time and customers keep themselves busy doing something during the whole sty in the retail space. Some others mentioned that there is no time saving but the process is just more enjoyable. Interviewees also discussed that they prefer having no interaction with the shop personnel and such shopping trips are more satisfying.

Users who had already adopted the service did not feel any particular risks. Rather it was pointed out that self-service gives you a chance to be in control of the process. Consumers illustrated this with various stories and experiences about occasions where cashiers had inserted wrong product code or wrong amount of their purchases. A few participants also mentioned that while using remote they have a good control over the total cost of their shopping basket and this helps them to stay in the predetermined budget limits. So perception of security and low risk translated into feeling of self-efficacy.

3.2 Non-users of self-service checkouts

All of the non-users were well aware of the self-checkout possibilities and one person had even tried it once but run into the problems. The initial cost of time to learn the system seemed prohibitive for all. All of the main concerns are well summarized by a participant:

> 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 the SST takes so much additional time and when I will not succeed in using the system, I do not want to feel pressure from others staring at me. Therefore, I choose the already familiar regular checkout to decrease risk of being humiliated. (Non-user 4, age 24)

So it is mainly lack of perceived advantage and fear of appearing somehow incompetent that makes consumers keep the status quo. At the same time two participants clearly disagreed that it has something to do with fear of failure – they were convinced that non-usage is a rational choice. One person was sure that the system is not reliable and is prone to failures. The possible negative scenarios were mainly barriers for the consumers as they had no idea what should they do or what would happen if something goes wrong.

While active users of the service expressed getting satisfaction from self-efficacy and not having to interact with others, some non-users also valued personal communication with the employees at the checkout.

The self-checkouts have been around for a while and even if consumers initially felt somehow curious about it, sticking to their old habits had created a new habit – not using self-checkouts. The decision was made a while ago and consumers did not ponder about it anymore. One of the participants explained this as follows:

> 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. But then I forgot it. /…/ 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)

During the accompanied shopping trips the researcher explained the participants how the systems work and observed them conducting the shopping. Three out of five found the self-checkout remote surprisingly easy and logical. As consumers where in somewhat experimental situation this also forced them to pay attention to the details they did not notice before, like:

> When I entered the store, I saw a very long queue in the regular checkout and I already acknowledged 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. (Non-user 3, age 20)

Two others managed to use the remote without problems but were not convinced of the advantages. They were confident that scanning their own items as they took them from shelves took longer than it would have taken at the cashier. The remote was not intuitive, even participants who managed it without any problems commented that they did not feel confident and secure.

When the non-users tried out the second type of self-service checkouts, the self-scan technology, the process went really smoothly for most of them. However, the ease of use was not complemented by perceived usefulness:

> When I used the self-scan 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 benefit for me and cashier could have done the same work a lot faster. (Non-user 5, age 45)

In general, non-users found the systems to need extra effort and they seemed somewhat complicated. It can be said that non-users had the prejudice and deep scepticism towards self-checkouts and this was not completely erased with personal experience. Non-users also added that since nobody had showed them how SSTs are used and what benefit they can be, it never occurred to them to try out the systems. Non-users have stayed loyal to the more convenient regular checkout option without giving the self-checkouts chance to prove otherwise

4. Conclusions and managerial implications

It is clear that retailers want to direct people to use self-checkouts. This study provides a few insights for retail managers into how to do this more effectively.

First, it is crucial to convert consumers quite fast after the new system is introduced as consumers who have been thinking about adopting several times (for more than a year) but have not done so are prone to stick to their decision. After saying no in your mind for 10 times it becomes more and more difficult to say yes.

Second, clear information on what should be done in case of problems should be available at all times. The non-users expressed a myriad of "what-if" scenarios related to their own mistakes, technology failures, forgetting to scan something, etc. Although the objective trialability of the service is high, i.e. one can try it out at no cost and with low effort to make a final decision, the real trials are hindered by the fear of running into problems and not knowing what to do.

Third recommendation for the retailers who want to convert consumers to self-checkout would be to provide personal assistance to those consumers who are willing to try the system but are prone to postponing that because of insecurities. Combining this with a promotional incentive for first time users could yield good results.

It is important to note that occasional failures are just an annoyance for the regular users but detrimental to the non-users taking their first steps. So the reliability of the self-checkouts deserves full attention from the retailers.

Form he theoretical point of view this study highlighted a number of interesting factors that influence consumer adoption of self-checkouts and that add to existing knowledge could be studied further. For the active users of the service a new way of looking at the time usage appeared. Even if the self-service does not provide time savings it provides a different way of using time. If the time of idle waiting is replaced with doing something actively (e.g. scanning

the items), the perceived time cost is lower and the overall satisfaction of the process is higher.

Avoiding interactions with service personnel appeared to be an important criterion as well and current research suggests it is a positive factor facilitating technology adoption. Distrust to service people might also be a cultural phenomenon that influences self-service technology acceptance in general.

Third new aspect that emerged from the study of active users was the influence of previous experience with similar technologies. While generally innovation adoption theories tend to suggest that prior experience with similar technologies has a positive effect, the current study found that similar but not the same technologies created confusion and some hesitance in adopting a new technology.

Social pressure appeared to manifest itself differently for active users and non-users. Active users did not pay any attention to other people around them and almost operated in their personal bubble. Mistakes and errors were just something that happens in their interaction with the technology. Non-users were acutely aware that if they get into trouble, others will notice and it will be embarrassing. So there seems to be a relationship between perceived trust/risk and social pressure, as higher social pressure is felt by these who also feel higher risk.

Studying the non-users revealed that they had had initial curiosity towards the self-checkouts but as time passed the habit of non-using become more pronounced and they did not contemplate about adoption any more. The factors that converted the majority to using the service are not effective to the laggards and the question is how the presentation of the arguments should be different for late adopters as compared to the majority.

The limitation of the study is that it is a qualitative exploratory research in one specific city employing a convenience sample. Thus the new findings of the study would need quantitative assessment in future studies.

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