Journal of Service, Innovation and Sustainable Development
Vol. 1 (2020) No. 2, pp. 37-50
DOI:10.33168/SISD.2020.0103

Consumers Attitudes towards Self-Checkout Systems in FCMG Retail in Croatia

Blazenka Knezevic[1]*, Ivan Mitrovic[2] and Petra Skrobot[3]

[1, 3] University of Zagreb, Faculty of Economics and Business, Zagreb, Croatia
[2]The Third High School of Economics, Zagreb, Croatia
bknezevic@efzg.hr

Abstract. Retail is strongly affected by the fact that the pace of the life of consumers is becoming increasingly faster, while at the same time they have less and less time on hand, and their needs and desires are increasingly demanding as a result of rapid implementation of digital technologies. Moreover, contemporary retail industry is facing growing challenges characterized by a rising competition, rapid implementation of new technologies, growth of e-commerce, and internationalization of business activities. Self-checkout systems and smart shopping carts as well as other self-service systems are becoming widely spread technology in in large retail formats such as supermarkets and hypermarkets. In recent years, this trend has become more prevalent in Croatia as well. The aim of this paper is to explore the consumers' attitudes regarding the introduction and application of self-checkout systems in large retail stores in fields of fast-moving consumer goods (FCMG) in Croatia. The paper is based on primary research conducted in 2019 among consumers in large FCMG stores in Croatia.

Keywords: Consumer, consumer behavior, retail, self-checkout system.

1. Introduction

Modern business is nowadays increasingly exposed to digitalization, as well as the implementation of various digital innovations and FCMG retail is not an exception. Moreover, driven by consumer needs, this industry is forced to implement newest technologies even faster than some other industries. Contemporary consumer is more and more demanding in terms of usage of various technologies to gather information and to shop, in terms of communication channels utilization, and, in addition, less loyal and less patient when shopping.

Digitalization refers to the integration of digital technologies in everyday life by digitizing everything that can be digitized. In modern societies it represents one of the most important transformation processes, both in the business world and beyond (Hagberg et.al, 2016). Digitalization is a consequence of the fourth industrial revolution which led to acceleration innovation cycle and faster obsolescence of existing technologies and business models. On the one hand this diminishes barriers to technology transfer, but on the other hand from all actors requires very good management of frequent sectoral disruptions (Perkov, 2019).

Through digitalization, the transaction costs of the company's operations are reduced, exchange is increased and it is easier to match supply and demand. It forces changes in organizational structures, managerial strategies and customer relationship patterns and relationships with other companies (EGSO, 2017). Successful companies are preparing for digital disruption systematically instead of reacting to it situationally (Apsolon, 2019).

In the area of retail, digitalization is not something that is driven "from outside of company", but it should be viewed as a continuous process that takes place “from within a company” (Hagberg, 2016). Although, digitalization has a long history in the retail sector, but since 1990 the intensity of change is increasing. It is likely that digitalization in retail will lead to increasing robotization and automation of operations in warehouses, distribution centers, delivery systems and in stores. Store security will be increased thanks to new computer vision systems. With the help of virtual and augmented reality technologies, new opportunities will open up to demonstrate the capabilities and benefits of products during sales. Finally, there will be a refinement of the personified model price offers, when buying via smartphones the buyer will be offered personalized commodity prices (Zhu and Gao, 2019).

Among all other technologies implemented in retail, self-service technologies (SST) are becoming increasingly important in the global retail sector. Retailers employ self-service technologies as means to improve service quality, reduce service delivery costs, and enhance overall service efficiency. Implementation of self-service technologies as an in-store service innovation represents major challenges for retailers in terms of organizational change (Den Hertog et al., 2010).

In addition, digitalization processes seem to allow retailers in stores to successfully overcome the so-called; dilemma of quality or productivity. This

dilemma arises in the gap between customer requirements for high quality service on the one hand and employers demands for increased productivity on the other (Azab and Pernebrink, 2018). As implementation of self-service technologies (SSTs) empowers customers to individually perform a service independent of direct service employee involvement (Curran et al., 2003) we can say that self-service systems contribute to the successful resolution of this classic problem, leaving retailers more space to focus on improving service quality with existing workforce who can focus on more creative work in terms of communication with consumers and suppliers which can lead to increased retailers' internal profitability and improved satisfaction and loyalty of consumers (Kallweit et al., 2014). Subtype of self-service technology in retail stores are self-checkout systems (SCS) which are implemented and utilized to efficiently scan products and deliver payment at the exit of the store.

We distinct two types of self-checkout systems (Andriulo et al., 2014/2015): fixed SCS and mobile SCS. The difference between them is in the process of product scanning because in fixed systems products are brought to a self-check out register and then scanned, while in mobile SCS systems products are scanned by using some specific mobile scanner or mobile application installed on a smartphone and at the exit there is no need for scanning, but only payment or (if necessary) control is done.

When a company decides to implement technology, relevant questions arise: how consumers will accept implemented technology, how fast and in which way will they utilize that technology. Numerous research paper use Technology Acceptance Model (TAM) originally proposed by Davis (1986), which assumes that an individual's acceptance of some kind of information technology is determined by two major variables: (1) Perceived Usefulness (PU) and (2) Perceived Ease of Use (PEOU). Similar approach can be applied to assess perceptions and attitudes of consumers towards self-checkout systems in FCMG retail stores. Therefore, the purpose of this paper is to critically overview literature on self-service application, to design and adapt questionnaire and, based on primary research results, to evaluate level of usage of self-checkout systems by consumers in Croatia in FCMG retail.

In addition to the introduction, this paper consists of four parts. In the theoretical overview we outline main authors who are dealing with topics of digitization, self-service cash registers and technology acceptance models. Next chapter is methodological and we give a description of the sample the methodology of primary research. Then, overview and interpretation of the obtained results is given. At the end, there is a conclusive part with outlined limitations and suggestions for future research in this field.

2. Theoretical background

The retail sector has been characterized by a rapid permeation of self-service

technologies (SSTs), technological interfaces that allow customers to produce a service independent of direct service employee involvement (Curran et al., 2003). Companies install self-service technologies (SSTs) to improve their productivity (Walker et al., 2002) while enhancing customer satisfaction by offering new and convenient service channels (Meuter et al., 2003; Orel and Kara, 2014). SSTs are defined as: 'technological interfaces that enable customers to produce a service independent of direct service employee involvement' (Meuter et al., 2000, p. 50). Retailers have extended their range of SSTs to include self-scanning or self-checkout, whereby customers scan their purchases themselves and then make payment. By using SSTs, customers perform the service, or part of the service, traditionally performed by the service provider. Self-scanning and self-checkouts are self-service technologies (SST) that allow clients to perform tasks previously carried out by employees (Anitsal and Paige, 2006; Meuter et al., 2000, 2003). SST provide new services for clients and help reduce personal costs (Meuter et al., 2003), as clients become "partial employees" (McWilliams et al., 2016). Having said that, ease of use and utility of SST is crucial for their adoption by clients/partial employees (Curran and Meuter, 2005). Therefore, SST implementation (as a service innovation) represents major challenges for retailers in terms of organizational change (Den Hertog et al., 2010).

Due to the organizational impact of SST, retail managers need to understand the individual, technology-oriented and situational factors that influence customers to adopt or reject SSTs during a shopping trip. Past studies have identified some specific factors influencing SST usage, such as the need for interaction with employees (Walker et al., 2002; Oh et al., 2013), technology anxiety (Meuter et al., 2003; Jia et al., 2012), enjoyment (Weijters et al., 2007), self- efficacy (Meuter et al., 2005; Zhao et al., 2008), reliability (Walker et al., 2002; Weijters et al., 2007) and perceived control (Walker et al., 2002). Moreover, some studies show that SSTs are a key drivers of changes in consumer behaviour (Kandampully, 2012).

Acoording to some studies, there are two reasons for this rapid diffusion of SSTs in retail industry. First, as the retail industry enters the maturity phase of life cycle, innovation becomes a crucial ingredient for sustained market growth. Second, the deployment of innovative service technologies not only generates higher revenues but also provides more value to customers through better service quality (Meuter et al., 2000). In addition, SSTs facilitate the value of the co-creation process and enhance the customer experience (Akesson et al., 2014).

Technology Acceptance Model (TAM) is considered the most influential and commonly employed theory for describing an individual's acceptance of various information systems. TAM is originally proposed by Davis (1986), assumes that an individual's information systems acceptance is determined by two major variables: (1) Perceived Usefulness (PU) and (2) Perceived Ease of Use (PEOU). TAM has been applied to different technologies (e.g. word processors, e-mail, WWW, GSS,

Hospital Information Systems) under different situations (e.g., time and culture) with different control factors (e.g., gender, organizational type and size) and different subjects (e.g. undergraduate students, MBAs, and knowledge workers), leading its proponents to believe in its robustness (Lee et.al, 2003). Therefore, we assume that it can be fully or partially implemented to assess self-checkout systems as well. Kazancoglu and Kursunluoglu Yarimoglu (2018) applied TAM to evaluate SCS adoption and discovered that, in case of consumers in Turkey, perceived ease of use, perceived usefulness and technology anxiety affected intentions to use SCS while perceived risks, need for interaction and situational factors did not influence it. Gelbrich and Sattler (2014) tested TAM in adoption of public self-service technology and they concluded that technology anxiety has a direct negative effect on intention to use SST, perceived crowding reinforces effect of technological anxiety and if we add time pressure to the model, intention to use SST in public is fully vanished. On the other hand, Demoulin and Djelassi (2016) analyzed actual usage of SST to explain the situational factors that influence the choice of SSTs over traditional checkouts and extended TAM by several variables.

However, there are studies showing how consumer adopt and utilize SSTs which apply modified set of questions than initial TAM model to analyze SCS and SST consumer attitudes and perceptions. Marzocchi and Zamit (2006) explain positive characteristics of self-checkout systems and their influence on consumer perception of the retail store and store loyalty. Eilliot et al. (2013) described influence of consumer readiness on their intention to use self-checkout systems. Lee, H-J (2015) focused on in-store kiosks to explain SST usage frequency and perceptions of SST quality. Dean (2008) used cluster analysis to explain differences between consumer generation regarding factors influencing SST adoption and empirically proven that older customers had lower experience, lower confidence, lower level of usage of SST while expressing higher degree of missing human interaction than younger consumers.

There is a lack of papers dealing with implementation, consumer attitudes and intention for future use in region of Central and Eastern Europe.

3. Methodology and sample

Based on literature review, we can conclude that attitudes towards SST and SCS (as a subtype) can be evaluated beyond classical TAM model. Therefore, according to analyzed literature we adapted own set of questions for primary research taking into account specifics of implementation of this technology in supermarkets and hypermarkets in Croatia as an example of Central and Eastern European market.

The questionnaire consisted of 30 questions, 28 questions were closed-ended (selection of one or more possible answers, ranking) and 2 were open-ended questions (respondents had the opportunity to write short answers). The survey was conducted in June 2019. The research was conducted via Internet, and the tool used

for the research is the Google forms tool. The sample included 150 respondents from all Croatian counties.

The first part of the questionnaire referred to the gender, age, education and employment status of the respondents. The second part of the questionnaire was related to the frequency of weekly or monthly grocery purchases, and then the respondents were asked about the frequency of crowds and queues at checkouts in shopping malls and whether they give up shopping due to large crowds. The third part of the questionnaire covered the main issues of SCS usage, and related to the introduction of novelties in retail shopping centers, more precisely the questionnaire was addressing issues related to fix self-service cash registers.

According to the data in Table 1, the sample was dominated by women, most of the respondents were aged 18-30, most of the respondents have a university degree and most of them are employed in an organization.

Table 1: Respondents characteristics (N=150)

Characteristic	**Options**	**Relative frequencies**
Gender	Male	83.3%
	Female	16,7%
Age	18-24	32,7%
	25-30	30,7%
	31-39	26,0%
	40-50	8,7%
	50-56	1,3%
	57 and more	0,7%
Education level	High school	40,7%
	Bachelor degree	22,0%
	Master degree	37,3%
Work status	Student	33,3%
	Unemployed	8,7%
	Employed	58,0%

Source: own research.

4. Results

In Table 2 purchasing habits of the respondents are shown. We can conclude that majority (90%) of respondents' households perform planned weekly or monthly grocery shopping. More than 65% respondent are involved in weekly or monthly shopping (either they are only one who does it 12.70% cases or they do it on equally basis as other in household members – 42.70% of cases). Only 10% of respondents claim that their household does not purchase groceries on a weekly or monthly basis, i.e. they shop according to the ad hoc necessity. In addition, large purchases in which respondents or their households spend more than 50 EUR for groceries occur on one or two weeks basis (70% of respondents).

Figure 1 shows occurrence of crowds and their influence on consumer's behavior. We can observe that 20% of respondents often noticed crowds at checkouts or cash

registers in large FCMG stores while 30% noticed them rarely. Only 20% of respondents did not noticed crowds at all. What should worry retailers is the fact that 95% of respondents have no patience to wait, but they rather withdraw from the purchase (50% of respondents – often behave in this manner and 47% - very often).

Majority of respondents (83%, see Figure 2) already used self-checkout systems at least once to conclude shopping in FCMG stores. Therefore, responses of those respondents (N=124) are analyzed further on.

When it comes to satisfaction with usage of self-checkout systems, majority of respondents express positive feelings, 71% expressed that they are satisfied or completely satisfied with the usage, see Figure 3). However, there is a respectively high number of those who have neutral feelings (23%) or negative feelings (6%) which can influence their willingness of future usage of such technology.

Table 2: Purchasing habits in FCMG retail (source: own research)

Question	Relative frequencies
Who performs weekly or monthly purchase of groceries at your household?	
Only me	12.70%
Household members and I equally	42.70%
One household member	17.30%
Two or more household members	17.30%
We do not shop on weekly or monthly basis	10.00%
Total	100.00%
Frequency of "large" grocery shopping (spending more than 50 EUR)	
once a week	50.00%
once in two weeks	20.00%
once in three weeks	6.00%
once a month	13.30%
once in two months	0.70%
rarely	1.30%
we never spend more than 50 EUR per one grocery purchase	8.70%
Total	100.00%

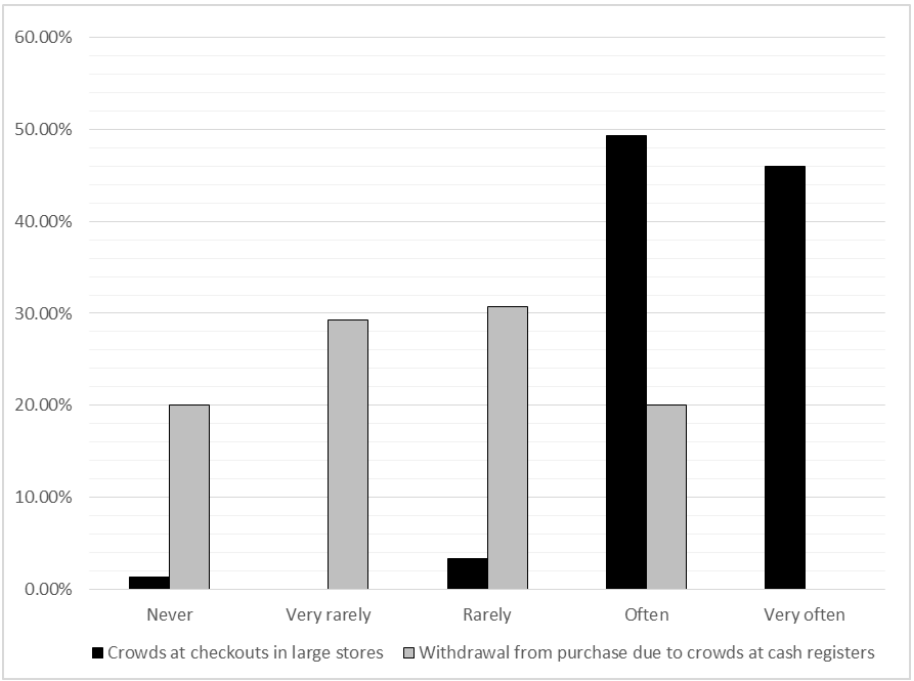

Fig 1: Crowds and their influence on consumers' behavior (source: own research)

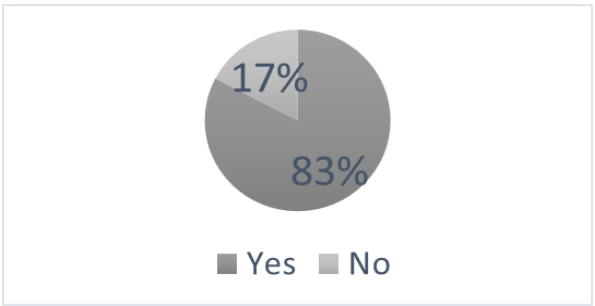

Fig 2: Usage of self-checkout systems in FCMG stores (source: own research)

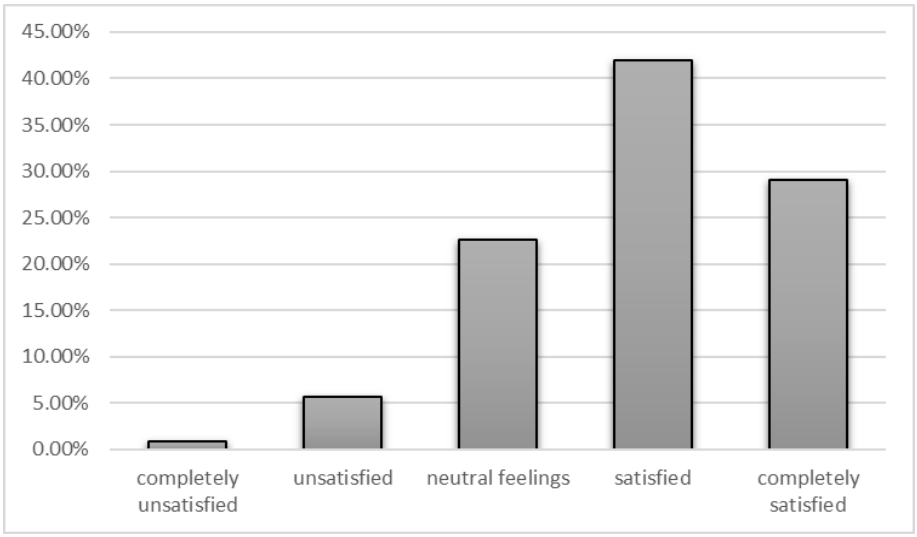

Fig 3 Satisfaction with usage of self-checkout systems (N=124) (source: own research)

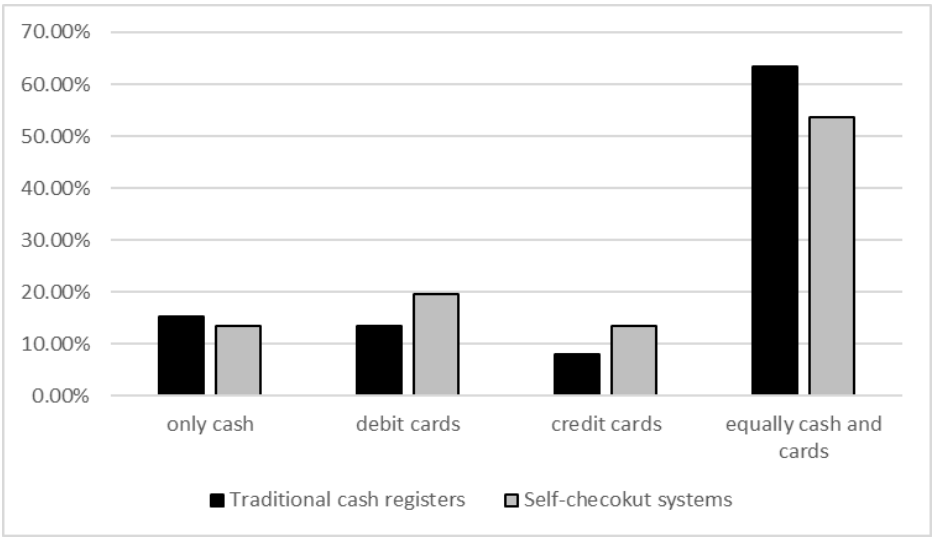

Fig 4: Payment methods used at checkout in FCMG stores (source: own research)

Methods of payment at traditional cash registers and self-checkout systems were analyzed and shown in Figure 4. The largest number of respondents who are buying at traditional cash registers (over 60%) stated that they are paying equally in cash and cards, while the smallest percentage of respondents (less than 10 %) that they are paying with credit cards at traditional cash registers, and also a small percentage of respondents answered that they are paying only with credit cards at self-checkout systems. Slightly more than 10% of respondents stated that they are paying exclusively with debit cards at traditional cash registers, and 20% of respondents pointed out that they are paying exclusively with debit cards at self-checkout

systems.

About 15% of respondents are paying exclusively in cash at traditional cash registers, and slightly less than 15% of respondents stated that they are paying exclusively in cash at self-checkout systems. It can be concluded that most of consumers when they are buying at traditional cash registers or at self-checkout systems equally paying by cash and cards.

Table 3 shows how the advantages of using self-checkout systems in retail stores are ranked. According to relative frequencies, the three most significant advantages are: (1) Less crowds in large retail stores (69.35%), (2) No queues at the cash registers (66.94%), (3) Easier organization and disposal of products after scanning. As last one advantage, consumers ranked; Greater commitment of sales staff to stacking products on shelves (20.16%). What is important to see from the data is that consumers think that if staff will not work at cash registers, that they will not be more involved in putting products on shelves. But consumers think that the biggest advantage of self-checkout systems in retail stores is less crowds.

Table 3: Ranked advantages of self-checkout systems in FCMG retail stores (N=124)

Advantage	Relative frequency
Less crowds in large retail stores.	69.35%
No queues at the cash registers.	66.94%
Easier organization and disposal of products after scanning.	59.68%
Purchasing privacy.	46.77%
Minimal communication during shopping for consumers who are not social types.	37.10%
Cost reduction and better distribution of sales staff.	32.26%
Greater commitment of sales staff to consumers.	25.81%
Greater commitment of sales staff to stacking products on shelves	20.16%

Source: own research

Disadvantages of self-checkout systems in retail stores are shown in Table 4. As a three most significant disadvantages from eight listed consumers rate as follows; (1) Insufficient information for consumers (71.77%), (2) Sales staff is not always available (63.71%), (3) Difficulties to buy certain products (61.29%). At last place as a disadvantage was ranked; Sales staff are not sufficiently trained (13.71%). In conclusion about disadvantages, consumers think that the biggest problem with self-checkout systems is lack of information for consumers. Consumers do not think that there is a problem with insufficient trained sales staff in terms of self-checkout systems.

Table 4: Ranked disadvantages of self-checkout systems in FCMG retail stores (N=124)

Disadvantage	Relative frequency
Insufficient information for consumers.	71.77%
Sales staff is not always available.	63.71%
Difficulties to buy certain products.	61.29%
Impossibility of simultaneous scanning of the product and packaging in the bag.	52.42%
Problem of finding bar code on some products.	33.06%
It is not possible to get the rest of the money when paying with cash.	31.45%
Lack of personal contact between consumers and sales staff.	25.00%
Sales staff are not sufficiently trained.	13.71%

Source: own research

In Figure 5 statements on future advances in retail stores are shown. The biggest percentage of respondents (80.00%) agreed that in retail stores except self-checkout systems should remain also traditional cash registers. Interesting is that more than 70% of respondents point out that there is no need for more technological changes and innovations in stores. The smallest percentage of respondents agreed that jobs of salespersons in large stores are jeopardized by self-checkout systems. In other words, respondents are thinking that implementation of self-checkout systems will jeopardize jobs of salespeople in retail.

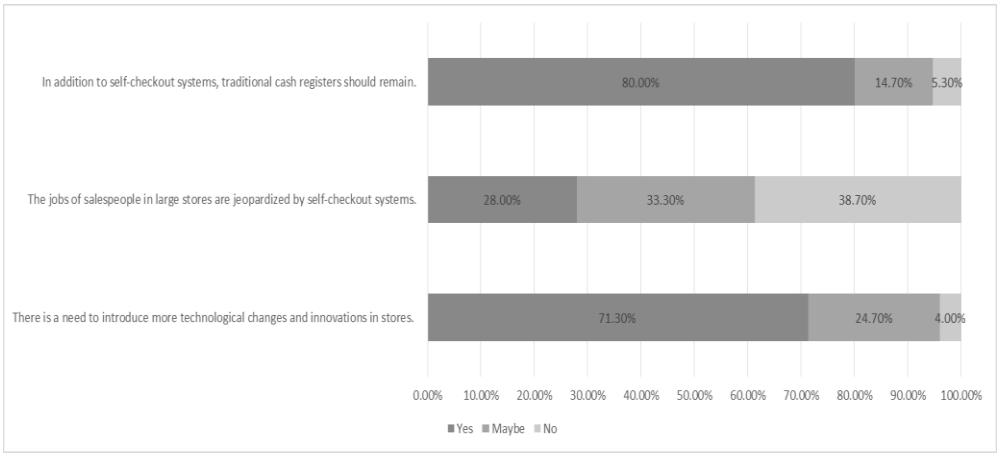

Fig 5: Statements on future advances in retail stores (source: own research)

Respondents were asked to rank reasons for keeping traditional cash registers when stores are implementing self-checkout systems. Five reasons were examined (see Table 5). The most highly ranked reason for keeping traditional cash registers for respondents is; It's good to have more choices when finalizing purchase (35.33%) and it is followed by second ranked reason which is; Consumers' confusion at self-service checkouts (25.33%). On the other side the lowest ranked reason to keep traditional cash registers is; Need for personalized contact and more

information during purchase (6.67%).

Table 5: Reasons to keep traditional cash registers when introducing self-checkout systems

Reason	Frequency
For some consumers it is difficult to adjust to modernization.	9.33%
Consumers' confusion at self-service checkouts.	25.33%
Technical difficulties with self-checkout systems.	23.33%
Need for personalized contact and more information during purchase.	6.67%
It's good to have more choices when finalizing purchase.	35.33%
Total	100.00%

Source: own research

5. Conclusion

Focus of this paper is on consumer attitudes towards self-checkout systems in FCMG retail in Croatia. According this, a primary research was conducted. Based on the conducted research, it can be concluded that consumers are satisfied with the level of digitalization in retail. Self-service cash registers and other innovations have been well received. In addition, they believe that the current level of innovation is sufficient. No matter what suits the presence of innovation and technology in stores, they still like to meet sales staff and appreciate human contact. Consumers have expressed concern about jobs due to the digitalization of business and the introduction of innovative solutions.

There are some limitations of the study, the geographical scope should be broadened to other countries in the region in future research, and also the number of respondents (sample size) should be broadened as well in order to enable conclusions on level of usage and satisfaction with SST in FCMG retail in Central and Eastern Europe.

References

Akesson, M., Edvardsson, B. & Tronvoll, B. (2014). Customer experience from a self-service system perspective. *Journal of Service Management*, 25(5), 677-698.

Andriulo, S., Elia, V. & Ginoni, M.G. (2014/2015). Mobile self-checkout system sin the FCMG retail sector: A comparison analysis. *International Journal of RF Technologies*, 6, 207-224.

Anitsal, I. & Paige, R.C. (2006). An exploratory study on consumer perceptions of service quality in technology-based self-service. *Services Marketing Quarterly*, 27(3), 53-67.

Apsolon (2019). Digitalna transformacija u Hrvatskoj.

Azab, A. & Pernebrink, L. (2018). Retailing in the digital age. A cross-sectional survey of employees' attitudes toward digitalization. Umea School of Business, Economics and Statistics.

Curran, J., Meuter, J.M. & Surprenant, C.F. (2003). Intentions to use self-service technologies: a confluence of multiple attitudes. *Journal of Service Research*, 5(3), 209-224.

Curran, J.M. & Meuter, M.L. (2005). Self-service technology adoption: comparing three technologies. *Journal of Services Marketing*, 19(2), 103-113.

Davis, F.D. (1986). Technology Acceptance Model for Empirically Testing New End-user Information Systems Theory and Results. Unpublished Doctoral Dissertation, MIT.

Dean, D.H. (2008). Shopper age and the use of self-service technologies. *Managing Service Quality: An International Journal*, 18(3), 225-238.

Demoulin, N.T.M. & Djelassi, S. (2016). An integrated model of self-service technology (SST) usage in a retail context. *International Journal of Retail & Distribution Management*, 44(5), 540-559.

Den Hertog, P., Van der Aa, W. & De Jong, M.W. (2010). Capabilities for managing service innovation: towards a conceptual framework. *Journal of Service Management*, 21(4), 490-514.

Elliott, K. M.; Hall, M. C. & Meng, J. (2013). Consumers' intention to use self-scanning technology: the role of technology readiness and perceptions toward self-service technology. *Academy of Marketing Studies Journal*, 17(1), 129-144.

European Economic and Social Committee (EGSO) (2017). Impact of digitalization and the on-demand economy on labour markets and the consequences for employment and industrial relations. Luxembourg: Publications Office of the European Union. Brussels: European Economic and Social.

Gelbrich, K. & Sattler, B. (2014). Anxiety, crowding, and time pressure in public self-service technology acceptance. *Journal of Services Marketing*, 28(1), 82-94.

Hagberg, J., Sundstrom, M. & Egels-Zandén, N. (2016). The digitalization of retailing: an exploratory framework. *International Journal of Retail & Distribution Management*, 44(7), 694-712.

Jia, H., Wang, Y., Ge, L., Shi, G. & Yao, S. (2012). Asymmetric effects of regulatory focus on expected desirability and feasibility of embracing self-service technologies. *Psychology and Marketing*, 29(4), 209–225.

Kallweit, K., Spreer, P. & Toporowski, W. (2014). Why do customers use self-service information technologies in retail? The mediating effect of perceived service quality. *Journal of Retailing and Consumer Services*, 21(3), 268-276.

Kandampully, J. (2012). Service as the new paradigm in retailing, in Kandampully, J. (Ed.). *Service Management*, Springer, New York, 1-6.

Kazancoglu, I. & Kursunluoglu Yarimoglu, E. (2018). How food retailing changed in Turkey: spread of self-service technologies. *British Food Journal*, 120(2), 290-308.

Knežević, B. & Butković, H. (2020). Digitalizacija u trgovini, Friedrich-Ebert-Stiftung.

Lee, H.-J. (2015). Consumer-to-store employee and consumer-to-self-service technology (SST) interactions in a retail setting. *International Journal of Retail & Distribution Management*, 43(8), 676-692.

Lee, Y., Kozar, K. A., & Larsen, K. R. T. (2003). The Technology Acceptance Model: Past, Present, and Future. *Communications of the Association for Information Systems*, 12(50), 752-780.

Marzocchi G & Zammit A (2006). Self-scanning technologies in retail: determinants of adoption. *The Service Industries Journal*, 26(6), 651–669.

McWilliams, A., Anitsal, I. & Anitsal, M.M. (2016). Customer versus employee perceptions: a review of self-service technology options as illustrated in self-checkouts in US retail industry. *Academy of Marketing Studies Journal*, 20(1), 79-98.

Meuter, M.L., Ostrom, A.L., Bitner, M.J. & Roundtree, R. (2003). The influence of technology anxiety on consumer use and experiences with self-service technologies. *Journal ofBusiness Research*, Vol. 56, No. 11, 899-906.

Meuter, M.L., Ostrom, A.L., Roundtree R.I. & Bitner M.J. (2000). Self-service technologies: understanding customer satisfaction with technology-based encounters. *Journal of Marketing*, 64(3), 50-64.

Oh, H., Jeong, M. & Baloglu, S. (2013). Tourists' adoption of self-service technologies at resort hotels. *Journal of Business Research*, 66, 692–699.

Orel, A. & Kara, A. (2014). Supermarket self-checkout service quality, customer satisfaction, and loyalty: empirical evidence from an emerging market. *Journal of Retailing and Consumer Services*, 21, 118–129.

Perkov, D. (2019). Online i offline postaju podjednako važni prodajni kanali. *Suvremena trgovina*, 44(5), 20-23.

Walker, R.H., Craig-Lees, M., Hecker, R. & Francis, H. (2002). Technology-enabled service delivery: an investigation of reasons affecting customer adoption and rejection. *International Journal of Service Industry Management*, 13(1), 91–106.

Weijters, B., Rangarajan, D., Falk, T. & Schillewaert, N. (2007). Determinants and outcomes of customers' use of self-service technology in a retail setting. *Journal of Service Research*, 10(1), 3-21.

Zhao, X., Mattila, A.S. & Tao, L.-S.E. (2008). The role of post-training self-efficacy in customers' use of self-service technology. *International Journal of Service Industry Management*, 19(4), 492–505.