Customer Intention Towards Self-Service Checkout in Indonesian Supermarket

Dea Clarissa Safitri[a], Zaky Nurahman[b], Roozbeh Babolian Hendijani[c]

[a]Executive in Strategic Management Program, Management Department, BINUS Business School Master Program, Bina Nusantara University, Jakarta, Indonesia, 11480, dea.safitri@binus.edu
[b]Executive in Strategic Management Program, Management Department, BINUS Business School Master Program, Bina Nusantara University, Jakarta, Indonesia, 11480, zaky.nurahman@binus.edu
[c]Executive in Strategic Management Program, Management Department, BINUS Business School Master Program, Bina Nusantara University, Jakarta, Indonesia, 11480, rhendijani@binus.edu

Abstract

The recent development of digital services quality models and the intention to use self-checkout technology in Indonesian supermarkets might help retailers to make comprehensive business decisions regarding self-checkout technology. The study is based on the Attribute-based model on self-service options by Dabholkar that used to generate expectations of self-service quality which is drawn upon the cognitive approach in decision making to test customer intention. The findings using multiple linear regression indicate that the majority of the respondents expected the easiness when using self-service checkout while other aspects did not seem to resonate as high as ease of use. The 153 survey responses were collected using a convenient sampling strategy. The collected data was processed through IBM SPSS software using regression analysis and frequency tests to answer the objective of this study.

Keywords: Cashier-less, Checkout, Customer Retention, Self-Service Checkout, Retail, Service Quality, SST, Omni-Channel, Supermarket, Indonesian Retail Setting

1. Introduction

Hypermarket is a modern retail type that is widely available for consumers in urban areas. The availability of various products and brand options is the primary cause of household essentials purchases (Hassan and Rahman, 2012). Initially, the modern retail setting designated the activity of customers choosing the products from the shelves to the trolley or basket and then bringing the product to the counter for payment independently. The cashier then follows with assistance towards the customers by scanning the products, packing the goods, offering promotion or loyalty programs, and facilitating the payment. The problem is the long queue on the checkout lines that gets peaked during the monthly shopping spree on the weekend or holiday as the most preferable time for shopping happens (Yulita, H.F, Simanjuntak, M., Sartono, B., 2019). Let us assume that one person takes an average of 6 to 10 minutes to process their grocery checkout, assuming that the line consists of at least four people, then it will take an average of nearly forty minutes for the checkout process alone. The undesired situation does not stop there, as according to previous research, people overestimated how long they waited in line by 36 percent (Hornik, J., 1984; McDonnell, J, 2002). The psychology of queueing has also found that waits would seem much shorter when people are distracted (Heineke and Davis, 1994). With recent app-based technological advances, this might be the right time for innovation to tackle this issue.

The recent technology disruption creates a new future for the retail industry (Williams, 2019) that seamlessly integrates the connectivity of online and offline channels (Rigby, 2011). A McKinsey article (A Transformation in Store, 2019) suggested that retail should evolve their strategy to delight customers with an omnichannel

experience. Human-technology interaction is becoming a topic of interest in delivering service service amid a growing implementation of self-service technologies within the service sectors (Siah, Fam, Prastyo, Yanto and Fam., 2018). Moreover, omnichannel environments require consumers to be more self-motivated (Saghiri, Wilding, Mena, and Bourlakis., 2017). Nowadays, customers are becoming more receptive to technology that revolves around a self-service approach (Das, Gryseels, Sudhir, and Tan., 2016).

The study "Store of the future" by Phononic (2019) projected the implementation of self-checkout in supermarkets in five years' time, due to the 89% demand for faster checkouts. The self-checkout service that is integrated with an e-payment system has been popular in China and the USA (Wu and Gereffi, 2018). It is only a matter of time until Indonesia, a country that has the highest rate of mobile e-commerce in the world (Natanson, 2019) will adopt a self-checkout technology.

A previous study by Orel and Kara (2013) mentioned self-checkout as a popular self-service technology implementation that has a competitive advantage for retailers to reduce cost, increase value and improve customer satisfaction (Lee, Fairhurst, and Lee., 2009; Bitner, Ostrom and Meuter., 2002). Although previous literature embraces self-service technology as a viable and cost-efficient solution (Siah et al. 2018) there is a lack of study that specifically discusses self-checkout in Indonesian Supermarkets. Local retailers need to study this approach before implementing it in their business. The study is conducted to examine the link between service quality models and the intention to use self-checkout technology in Indonesian supermarkets. Specifically, it aims to answer the following questions: "Will Indonesian customers use self-checkout technology in supermarkets?" This study will provide insights about customer intention to use in order to help retail owners, marketers, and managers to make comprehensive business decisions regarding the implementation of self-checkout technology as innovation to medium to large retail settings in Indonesia.

The literature reviews are obtained to reinforce the approach of self-service in retail. This study focuses on the hypermarket retailing industry in Indonesia's urban areas. Considering the opportunity to win a bigger market share as a modern-trade retailer (Magni, M., et al, 2015) and high tech-adoption of millennials (Das, K. et al, 2016) this literature suggests that it is the right moment to investigate self-checkout implementation in Indonesian hypermarkets. Furthermore, this study also provides a new research direction for future researchers to explore and analyze the effect of new technology implementation in retail service.

2. Literature Review

Previous literature has discussed the customer perception of waiting in retail settings as irritating, bored, frustrating, unpleasant, and belief that waiting is a waste of time (Hui and Tse, 1996; Sheu et al., 2003; Heineke and Davis, 2007; Voorhees, et al., 2009). As a service-based industry, the expectation of speed response of service delivery is considered a positive experience in terms of service quality and satisfaction (Naik, C.K., Gantasala, S.B., and Prabhakar, G.V., 2010). Previous studies also stated that they perceived uncertainty related to checkout operations (Voorhees et al, 2009) therefore their perceptions of waiting experience must be prioritized (Morimura, F. and Nishioka, K., 2016). Considered the overestimated time of waiting and negative experience, Mc Kinsey (2019) suggested implementing technology-based innovation to accommodate the faster and better shopping experience.

Previous literature has made extensive research on technological adoption, such as Venkatesh and Davis (2000) and Dabholkar and Bagozzi (2002), which explicitly explained the correlation of intention and actual usage concerning consumer satisfaction or even future retention. Relevant studies, for instance The Theory of Reasoned Action (TRA) and the Theory of Acceptance Model (TAM) (Venkatesh and Davis, 2000) have been extensively applied in studying the adoption of self-service technologies. Another research is using SERVQUAL theory by Parasuraman (1988) to study the difference between customer expectation and the actual service received (Grönroos, 2001). Morimura and Nishioka (2016) further demonstrate how the degree of anticipation for self-checkout influences expectations of waiting and satisfaction. However, this study is expected to find the correlation between the expected variables of service quality before service encounter to customer intention towards new and not widely available self-service options.

Therefore, the research model guiding this study is based on Dabholkar's attribute-based model on self-service options (Dabholkar, 1996) which is also confirmed by a similar study conducted by Siah and Fam (2018). The framework has four attributes such as the speed of delivery, ease of use, enjoyment, and control that can be used to generate expectations of service quality which is drawn upon the cognitive approach in customer decision making to test the customer intention towards self-checkout technology acceptance. The figure of the framework can be seen in Figure 1.

Expected Speed

Dabholkar (1996) defines expected speed of delivery as consumers' estimation of the time required to execute a service actively. The definition was narrowed down from waiting time and time required to deliver a service in the previous study. The main reason why it was specified is to separate between the waiting before using the service such as the queue at the ATM machine and the time of actually using the ATM machine. In general, the study stated when a service delivered in a generally fast manner, then it is more likely for customers to rank the service quality to be high (Orel and Kara, 2013). Other literature also argue that implementation of self-service technology could give a perception of enhanced service quality in terms of improved transaction speed and convenience (Fernandes and Pedroso, 2016). This study asked consumers about the speed expectation of utilizing self-service checkout over the conventional method. Therefore, the hypothesis:

H1: Expected speed from self-checkout technology has a positive effect on service quality.

Expected Ease of Use

Similar to the perceived ease of use in TAM as stated by Venkatesh and Davis (1989), the second attribute refers to the extent of individuals in believing that less effort is needed in learning new features (Rinta and Kahila, 2013) to reduce technological discomfort (Walczuch, Lemmink, and Streukens., 2007). Lin, Shih, and Sher (2007) found that technological preparation generalization with prior related technology could influence perceived usage perception. If technology is perceived as easy to use, consumers would be more likely to use the self-service technology (Lam, Chiang, and Parasuraman., 2008).. By applying the related evidence to the prior growing self-service technology acceptance expected to generate a positive attitude from the customers to increase intention to use (Latun, Purnomo, Christopher and Hendijani., 2019). Therefore, the hypothesis:

H2: Expected ease of use from self-checkout technology has a positive effect on service quality.

Expected Enjoyment

Dabholkar (1996) relates the enjoyable experience within technology-based self-service with novelty aspects in computer software or even video games. Today instead of novelty reason, with the rapidly growing customer-centric experiences, the retailer needs to ensure that all digital initiatives including the technological implementation involves their customer enjoyment at the centre of it all (Adhi et al., 2019). Recent study by Fernandes and Pedroso (2016) also discussed the perceived enjoyment as one of the drivers to influence customers attitudes toward the intention of using self-service technology.

According to McKinsey research (2016), consumers in the current era are in search for the next-step user experience that comes with high personalization, interconnection, fast, fun, and seamless. Expected enjoyment refers to the amount of fun that resulted from the interaction with self-service technology (Dabholkar, 2001). Therefore, the hypothesis:

H3: Expected enjoyment from self-checkout technology has a positive effect on service quality.

Expected Control

Extending the term from perceptions to expectations, expected control refers to the degree of leverage consumers have toward the process or results (Bateson and Hui, 1987) . Bobbitt and Dabholkar (2001) explained expected control to be the degree of control of consumers expectations on the service result's mechanism or outcome . Moreover, this sense of control enhances the experience (Ding, Hu, and Sheng, 2011). The consumer's sense of control is the most critical aspect of self-checkout technology (Pezzini, 2019). With the significant amount of control provided by self-service technology, the conceived service quality would also be high . Therefore, the hypothesis:

H4: Expected control from self-checkout technology has a positive effect on service quality.

Intention to Use

Previous research has shown that quality of service is distinctly associated with consumer satisfaction (Zhao et al., 2012). If customers perceive superior service quality, they will feel satisfied (Beatson, Coote, and Rudd., 2006). Within this literature, the causal relationship between perceived service quality shows the importance for retails to understand their upcoming intention regarding the technology (Orel and Kara, 2013). This literature hopes to increase service quality of self-checkout technology thus becoming a driving force that leads to an increase in purchasing intention in retail stores. To perform the service quality expectation measurement, this study will be based on the SERVQUAL questionnaire but only focused on the expectation part. Therefore, the hypothesis:

H5: Expected service quality of the self-checkout technology will have a positive influence on intention to use that option.

Figure 1. Theoretical Framework

3. Research Methodology

The quantitative approach was conducted in this study. The context in this literature is a self-checkout scenario where customers were expected to self-scan, using virtual cart, and pay using e-wallet in self-checkout counter. The role of these respondents will be as themselves since the result depends on the most accurate impression from respondents. This design helps studying yet to be implemented technology-based self-service checkout for future customers through their appropriate expectation (Dabholkar, 1996). A structured questionnaire was generated from extensive literature from previous study and modified to fit the self-service context.

The survey instruments consist of 7 sections, being prelude by general introduction and scenario, and the last one is for the demographic questions. A five-point Likert scale with the range between 1 (strongly disagree) to 5 (strongly agree) was utilized. Each section is filled with five questions except for "Expected Enjoyment" which only had four questions. These questions were taken from previous literature that discusses self-service (Dabholkar, 1996; Dabholkar and Bagozzi, 2003; Weijters, Rangarajan and Schillewaert, 2007) and service quality (Ding, Hu, and Sheng, 2011).

A pilot test was performed among a convenience sample of 25 Indonesian shoppers aged between 18 – 50 years old. During the pilot test, expected speed resulted in 0.732 Cronbach's alpha value, expected ease of use clocked in 0.764, expected control (0.849) and expected enjoyment showed 0.686. Followed by expected service quality (0.781) and purchase intention with value of 0.906. All of the results show that all constructs have threshold above 0,6 which indicates all the questions reliability is accepted (Sekaran and Bougie, 2016).

The questionnaire was distributed online through convenient sampling in the Jakarta area. The data collection process was taken in April 2020 and the sample consists of 153 respondents. The collected data was processed by IBM SPSS software by running regression analysis and frequency tests to answer the objective of this study.

4. Results and Discussions

Results

The characteristic of the sample is 55% female and 45% male. Majority of them aged between 18 – 30 years old which accounts for 72% of the total sample. In terms of marital status, majority of respondents were single (59%). A total of 172 questionnaires are distributed via social media and messaging platforms. Most of them had a Bachelor degree (70%) and were self-employed (63%) with monthly income between 5 Million to 12 million IDR (42%) as seen on Table I.

Table I	Respondent's Profile
Gender	
Male	71 (45%)
Female	86 (55%)
Marital Status	
Single	93 (59%)
Married	61 (40%)

Divorced/Widowed	3 (1%)
Age (years old)	
18 - 30	113 (72%)
31 - 40	40 (25%)
41 - 50	4 (3%)
>50	0 (0%)
Education	
High school	13 (8%)
Diploma	11 (7%)
Bachelor	111 (70%)
Master/Doctorate	22 (15%)
Occupation	
Student	4 (2%)
Unemployed	9 (6%)
Government employed	9 (6%)
Private-sector employed	99 (63%)
Self-employed	1 (1%)
Retired	
Monthly income	
Less than IDR 5.000.000	23 (15%)
IDR 5.000.000 - 12.000.000	66 (42%)
IDR 12.000.001 - 20.000.000	42 (26%)
> IDR 20.000.000	26 (17%)

Table I. Respondent Profile

The table II below shows the model summary for customer intention towards self-service checkout. Coefficient determination of R Square explains the four independent variables that explain 28.5% ($R^2 = 0.285$) of total variance towards service quality and also service quality explains 14.6% ($R^2 = 0.146$) of total variance towards Intention to use.

Table II	Result of Multiple Linear Regression				
Dependent Variable	Independent Variable	Multiple linear regression R^2	Unstandardized	Standardized	Significance
Exp. ServQual	Expected Speed	.285[a]	.079	.110	.198
	Expected Ease of Use		.322	.448	**.000**
	Expected Enjoyment		-.049	-0.50	.547
	Expected Control		.092	.111	.165
Intention To Use	Expected Service Quality	.146[a]	.344	.383	**.000**

Table II. Result of Multiple Linear Regression

The first part of the table is a regression model that calculates the relationship between expected speed, expected ease of use, expected enjoyment and expectation of control towards expected service quality and the second table calculates relationship between expected service quality and purchase intention. Expected ease of use (p-value = 0, β = 0.448) is the only significant variable based on the regression. Other variables such as expected speed (p = .198, β = .110), expected enjoyment (p = -.049, β = -0.50) and expected control (p = .092, β = .111) were rejected. Results of ANOVA result suggests that [$F(4, 148)=24.021$, $p=.000$] and it indicated that the testing model is significant. Single linear regression was conducted, and the result shows the significant service quality (p = .000, β = .383) and intention to use SST-based checkout.

Discussions

The objective of this study is to estimate customer intention to use self-checkout in medium to large retail settings in Indonesia. Around 66,7% of respondents indicate they are strongly willing to try the self-checkout options if such option is available. The most important original findings from this study is, while other literature indicates that shopping experience is expected to be faster with self-checkout options, our study found that the hypothesis is rejected. However, 83% of respondents expect the overall shopping experience to be more efficient. The respondent also states that self-checkout will give them a sense of control while shopping and 59% of them strongly believe that self-checkout provides a safer transaction compared to the conventional checkout as they have control over the chosen products on their cart and payment. The additional important notes to the retailers to regularly manage the error-free encounter as customers have a high expectation related to the service quality.

Previous study conducted in Malaysia by Siah and Fam (2018) found control, ease of use and enjoyment has a significant impact on service quality. However, this literature was conducted in Indonesia, and presented different findings. Expected ease of use is the only variable which showed a significant impact in the current study. The lack of self-service checkout in Indonesia might be the reason why control and enjoyment are not strongly relatable factors due to lack of experience and comparison. There is one similarity found between two studies, the expected speed for faster checkout shows insignificant results by Siah and Fam (2018) however contradictory with another similar study by Fernandes and Pedroso (2016).

Among all variables, expected ease of use is the only variable which has a significant relation towards expected service quality. This literature sees that the significance for easiness to use SST-based checkout in retail settings is the main factor of its service quality which implicates the intention to use such service.

While customers have become more sensitive to time in service delivery (Meuter et al., 2000), the self-service scenario in this literature might present different expectations where respondents are unable to compare the expected speed of performance due to the lack of experience in such service. It is assumed that the closest implementation or example of this type of self-service is mobile payment through QR code scanning while purchasing items on stalls such as street food vendors.

Expected enjoyment shows no significant impact towards service quality in SST-based checkout. The reason might be users did not consider the "checkout" process to be hedonic but rather something more practical, thus expressing enjoyment in such a situation is hard to relate.

Enhanced perceived control was also mentioned directly proportional to enhanced service value (Bateson and Hui, 1987) which is applied as expectation of control by Dabholkar (1996) does not seem to apply in this literature. It could be of what even Dabholkar himself said, that "control" is rarely covered in qualitative study due to the fact that it is hard to articulate.

Practical Implications

Previous study by McKinsey (2019) also recommended the retailer enhances the service quality with technology to achieve better customer satisfaction. The findings of this study support the statement with the indication that service quality might bring a positive effect of shopping experience and customer intent to use it voluntarily. In that case, investing in the installation of self-checkout on medium to the large setting of retail might be a good opportunity to pursue.

Retail owners in Indonesia could look into this insight before investing in SST-based checkout in their stores. Marketers should consider highly in the practical benefit that comes from easiness to use SST-based checkout in their retail stores, for such experience is valued highly by the customers. Project managers and product developers need to be able to provide seamless experience in SST-based checkout to maximize efficiency while shopping in retail stores. When marketers decide to promote this new method in Indonesia's market, they have to focus on the easy aspect of it to make them motivated to purchase in these kinds of shops.

5. Conclusion

This study contributes to service quality and customer intention in the retail industry, conducted in Indonesia. The result represents findings that rejects three aspects of expected service quality which is different to other studies in Malaysia (Siah and Fam, 2018) and Portugal (Fernandes and Pedroso, 2016). This could indicate a gap between countries that could be reviewed by future studies. Ultimately findings of this study add to the body of knowledge in customers' intention behaviour in developing countries.

Limitation and Directions for Future Research

Convenient sampling was used and therefore the findings cannot be generalized to the whole population. Future studies could replicate or recreate this study using probability sampling in which the findings can be generalized to the mass population of urban area in Indonesia. To date, Indonesia has only installed self-checkout in a few convenience stores located in Jakarta.

The framework of this literature focuses on 4 aspects that signify the expected service quality in SST-based checkout that will predict the customers intention to use such technology. Future studies should look into other aspects that could have significant impact towards service quality in SST-based checkout.

Future studies are also encouraged to investigate customer behaviour in more depth in Indonesia to better understand customers' perception of new technology in retail settings alongside the risk, and legal perspectives to deliver comprehensive insight for retailers. The cultural difference in different areas might also play a factor as the research is conducted within a major urban city of Jakarta.

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