

Self-Service Checkouts: The Role Of Service Innovation In Indonesian Convenience Stores

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ABSTRACT

The idea of self-service in grocery stores allows customers to serve themselves without help from other people. This topic has resulted in multiple types of research, alongside the new innovative technologies that are put out to enhance retail. This research has a key objective of expanding previous research which focuses on the Technology Acceptance Model's effect, consumers' trust on self-service technologies, and the readiness of technology. This research obtained 140 responses for data analysis from those who are located in Jakarta. This research provides insights for those in retail industry on consumers' behaviors on self-service technologies in their purchases, and improvements of technologies and approaches for retail-related technologies.

Keywords

self-service technology, technology readiness, trust, technology acceptance model, self-service checkout, retailing, convenience store

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Introduction

Shopping in a convenience store can be viewed as a fun activity for we can directly take the products we want to buy. However, we often hate it when we have to queue at the checkout. We all want to pay straight away, but at times the queue at the cashier is very long. In Indonesia, Super Indo in Jakarta was the first retailer to come up with a self-service checkout facility, allowing customers to process their own payment without the help of the cashier (Rahayu, 2018).

The self-service model is considered to be an innovative concept as it allows consumers to service ones' self through the process of scanning, placing in bags, and paying without the help of other people. Customers can exit without using cash and paying humans; they can take the items and go. Although Automated Teller Machines (ATMs) and self-service checkout stores has been around in the past 20 years, it was initially not well accepted. However, it is widely accepted now and has been of help for secure transactions.

The importance of self-serving checkout is yet to be implemented, and it is stated that technologies, for this reason, face issues in their initial phases which require further attention (Dabholkar et al., 2003). However, there is a rapid increase in the application of these checkouts in the United States of America, where it is due to its ability in taking more work with less expense (The Economist, 2004). This system shows how the use of Technology-Based Self-Service (TBSS) can be beneficial and with a more affordable price, resulting in more businesses applying this system and saving capital on staffs and consumers having more comprehensive options, along with quicker ways in serving themselves.

In Indonesia, the application of self-serving checkout is still limited, yet it is gaining popularity with many local convenience stores applying this system. The use of this

innovative system and procedures allow new competition among businesses, which is evident in many older scientific studies (Erturk, 2009; Kalay & Lynn, 2015). Being a new and intriguing issue, it is a reason as to why the study will be made on this phenomenon, specifically the application in Indonesia. It is believed that the use of this system will be widely applied in the future due to economical purposes, and the conveniences provided, along with the development of technologies for the sectors of retailing. However, the issue that may arise is in terms of value rather than the implementation, which affect consumers' perspectives on this new procedure (Fernandes & Pedroso, 2017; Kallweit et al., 2014). Hence, updated research on the following issue should be focused on, considering the perspectives of consumer on the quality of service as well (Lee & Yang, 2013).

Problem Statement

There is a problem in achieving better efficiency in the transaction through self-service technologies. Although the application of innovative technologies in improving services in the retail industry is on the rise, limited studies are made on this topic. This issue has adversely impacted the needs of the customer because consumers are expecting a convenient way of shopping. A possible cause of this problem is how innovative technology is adopted. Perhaps a study that investigates the impact of technology readiness and trust on consumers' attitude toward using self-service technology may remedy the situation.

Research Problems

As of current times, few studies were made to focus on the impact of applying technologies on self-serving through technology acceptance model, trust and the promptness of

technologies. The aspects that will be included in this study is how technological readiness, practicality, and user friendly will affect the behavior of consumers in using it. This study also aims to improve the perception of the technology’s model, trust, and promptness for businesses in applying this technological procedure.

Research Objectives

This study is focused on investigating technological innovation on the application of self-service technology, specifically the effects it has towards the promptness and trust in consumers’ behaviors in using it. The base for this

study is assessing the technological readiness, practicality, easy usage, and trust on behaviors that drive the use of the technology.

Literature Review

There have been numerous researches made on technologies found off-sites (such as phones, e-banking, and e-commerce purchases), yet those focused on technologies found on-sites (such as ATMs, automated ticketing machines, checkouts services, convenience stores) in retails are still challenging (Fernandes & Pedroso, 2017).

Table 1. Relevant Literature on Self-service Checkouts

Study	Factors	Location	Findings
Siah & Fam (2018)	Speed, ease-of-use, reliability, enjoyment, control	Malaysia	The factors impact service quality
Sedighmanesh, Sedighmanesh, & Ashghaei (2017)	Usefulness, control, ease-of-use, enjoyment	Iran	Three factors impact satisfaction
Fernandes & Pedroso (2017)	Speed, ease-of-use, reliability, enjoyment, control	Portugal	Five factors affect perceived quality
Considine & Cormican (2016)	Functionality, security, design, customization	Ireland	The factors impact the level of satisfaction with an organization’s SST
Lee & Yang (2015)	Interpersonal service quality, SST service quality	USA	Two factors are related to retail patronage intentions, the moderating effects of technology anxiety, need for interaction, and age are partially supported

The self-service trend is different from automation. Both strategies are attempting to embrace efficiency, the automation is trying to replace the activity of employees with equipment, while self-service is trying to replace these activities by customer (Sedighimanesh et al., 2017). Technologies focused on providing self-service empower consumers to serve themselves without the presence and assistance of employees (Meuter et al., 2000). Table 1 provides a summary of the related self-checkouts literatures.

Technology Readiness

Technology readiness is consumers’ consideration in their willingness and to accept and apply the technologies in their daily life (Parasuraman & Colby, 2001; Liljander et al., 2006).

Perceived Ease of Use

It is considered to be easy to use when an individual does not exude a high amount of effort on the system to experience the benefits and has low societal risks (Davis, 1989; Timmor & Rymon, 2008; Dabholkar, 1996). Collier and Sherrell (2010) mentioned factors that may influence a system to be easy to use is situational factor which include locations, hourly operation, and the readiness of SST. Self-services tend to be avoided if consumers view the presence of additional attempts that are required, both physically and mentally, which lead to feeling unease and not confident (Lee et al., 2013; Oghazi et al., 2012).

Trust

For technologies focusing on self-serving, Johnson (2007) mentioned trust as the assumptions of consumers whereby the tool is capable and can be relied on upon usage. Whereas technologically, Johnson and Grayson (2005) stated that trust is gained through efficiency assessments from the experiences of using SST).

Perceived Usefulness

An extent to which individuals see a system to be useful in improving their work efficiency and the advantages that it comes along with is known to be the view of practicality that is associated (Davis, 1989; Elliot et al., 2012). Davis (1989) mentioned that the chances for this system to be recognized if it is not only functional but also easy to use.

Attitude towards Usage

Individuals with a more positive outlook are more open to trying and using self-serving technologies than those who have negative outlooks, and these behaviors are influenced by the increase of exposure to those technologies. Factors that influence the willingness to use those technologies are social influence, satisfactory efficiency, innovation, needs for interaction, trust, and personal control factors (Kulviwat et al., 2009; Dabholkar & Bagozzi, 2002; Lin & Hsieh, 2006; Suh & Han, 2002; Oyedele & Simpson, 2007).

Hypothesis Development

It has been examined how consumers are more focused on the possible opportunities that technologies have to bring (Parasuraman et al., 2005). Perceived usefulness also influences consumer attitudes towards self-service technology usage (Childers et al., 2001). A deciding factor for individuals to use certain technologies, especially in the retailing sector, is considered to be its perceived practicality (Weijters et al., 2007). Hence, the hypothesis is how technological readiness has a positive impact on the perceived ease of use (H1).

It was displayed how individuals who are not confident in using technologies will be unwilling to use self-serving-based technologies, whereas those who are confident and like using technologies will focus more on the security aspects (Parasuraman, 2000; Liljander et al., 2006). Hence, the second hypothesis is how technological readiness has a positive impact on trust (H2).

A system is considered to be useful when it contributes to the enhancement of individuals' efficiency (Davis, 1989). As for its easy usage, it is when individuals do not require additional effort. Hence, the third hypothesis is how perceived ease of usage has a positive impact on the perceived usefulness (H3).

Previous longitudinal research stated how trust positively impacted the recognized practicality, after the use of e-service (Gefen et al., 2003). According to Lai et al. (2013), consumers' website trust determines perceived usefulness. Thus, we can hypothesize that trust positively influences perceived usefulness (H4).

Consumers' behaviors are affected by trust, which will affect their approval in using e-banking for their e-transactions (Suh & Han, 2002; Grazioli & Jarvenpaa, 2000). This shows how the trusting aspect is influential towards consumers' behaviors, hence the fifth hypothesis is how trust has a positive impact on the attitude of usages (H5).

The consumer will focus on technological advantages when deciding to start using the offered technologies (Meuter et al., 2000; Parasuraman et al., 2005). The behaviors of consumers for using SST, a deciding factor, which are affected by the practicality of the technology (Childers et al., 2001; Weijters et al. 2007). This results to the sixth hypothesis which is perceived usefulness has a positive impact on attitude towards usage (H6).

Figure 1 reflects the model for the analysis as follows.

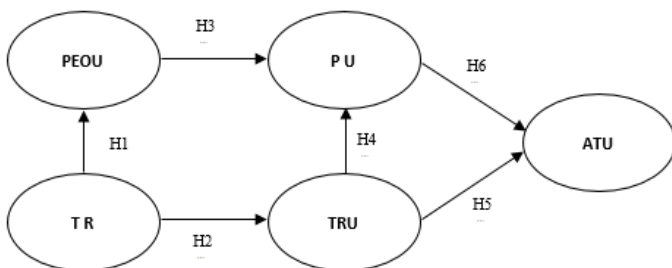


Figure 1. Framework Model

Research Methodology

A quantitative method was applied in collecting the required data, which was done using an online survey from June to August 2018, as well as the planning, data collection and

processing, and analysis. Instead of SEM, the analysis using the regressing method was used for predicting and determining the relations of both dependent and independent factors (Tabachnick & Fidell, 2001).

The construction model for this study consisted of tested tools and is made to suit the studied topic, with the use of multi-item Likert scaling with a range between 1 (strongly disagree) and 5 (strongly agree).

A scaling measurement was used for Technological Readiness (TR), Trust (TRU), Perceived Ease of Use (PEOU), and Perceived Usefulness (PU) (Zagel & Bodendorf, 2014), whereas Venkatesh et al. (2003) scaling was applied for the dimensions of attitude towards usage (ATU). Not only that, the use of e-service was questioned, and candidates were required to mention the service if they have.

Results And Discussions

From the total distributed questionnaires, 140 were returned with 60% (males) and 40% (females), and the demographics are shown in Table 2.

Table 2. Demographic Profiles

Demographics	N	Percent
Age		
< 18	23	16.4
18-25	47	33.6
26-33	12	8.6
> 33	58	41.4
Total	140	100.0
Gender		
Male	84	60.0
Female	56	40.0
Total	140	100.0
Weekly Shopping Freq.		
< 3 times	67	47.9
3-5 times	57	40.7
> 5 times	16	11.4
Total	140	100.0
Time Spent Shopping		
< 5 minutes	20	14.3
5-15 minutes	94	67.1
> 15 minutes	26	18.6
Total	140	100.0
Store Freq. Shopped		
Alfamart/Alfamidi	59	42.1
FamilyMart	4	2.9
Indomaret	69	49.3
Lawson	6	4.3
The Food Hall	2	1.4
Total	140	100.0

Table 3. Simple Regression Test of Model 1-5

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate
1	0.499	0.249	0.244	0.62833
2	0.249	0.062	0.055	0.78401
3	0.672	0.452	0.448	0.56981
4	0.249	0.055	0.055	0.74518
5	0.723	0.522	0.515	0.52516

The R values in Table 3 indicate the strength of the overall linear relationship (model 1 with 0.499, model 2 with 0.249, model 3 with 0.672, model 4 with 0.249, model 5 with 0.723). The value of the coefficient of determination is higher than 0.1, meaning that the linear relationship is

strong. To measure the proportion of variation of the dependent variable towards all independent variables, the R-squared was used as the measurement. For model 1 with 0.249, it means that 24.9% of perceived ease of use can be described through technology readiness. For model 2 with 0.062, it means that 6.2% of trust can be described through technology readiness. As shown from model 3, the recognized practicality can be seen through the recognized ease of usage through the value of 0.452 or 45.2%. For model 4 with 0.055, it means that 5.5% of perceived usefulness can be described through trust. For model 5 with 0.522, it means that 52.2% of attitude towards usage can be described through trust and perceived usefulness.

Table 4. F-Test Result of Model 1-5

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	18.105	1	18.105	45.858	0.000
2	Regression	5.612	1	5.612	9.130	0.003
3	Regression	36.896	1	36.896	113.637	0.000
4	Regression	5.073	1	5.073	9.135	0.003
5	Regression	41.322	2	41.322	74.915	0.000

Table 5. T-Test Result of Model 1-5

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Err.	Beta		
1	(Constant)	1.401	0.362		3.871	0.000
	TR	0.590	0.087	0.499	6.772	0.000
2	(Constant)	4.702	0.452		10.411	0.000
	TR	-0.328	0.109	-0.249	-3.022	0.003
3	(Constant)	1.301	0.260		4.996	0.000
	PEOU	0.713	0.067	0.672	10.660	0.000
4	(Constant)	4.822	0.270		17.853	0.000
	TRU	-0.237	0.078	-0.249	-3.022	0.003
5	(Constant)	1.830	0.346		5.283	0.000
	TRU	-0.156	0.057	-0.167	-2.744	0.007
	PU	0.652	0.060	0.663	10.869	0.000

The F-test findings were shown in Table 4 (with all Sig. values being lower than 0.1, stating the significance of the regression model), whereas Table 5 shows the variables for t-test.

The conclusions and outcomes of this study could provide future assistance on the management of self-service technologies perceived by consumers, and the enhancement of technological efficiencies. This analysis also shows the influential aspect of technological practicality and trust on the behaviors of consumers within the retail sector.

Conclusions

As shown in the analysis for Model 1, the availability of technologies affects the perspective on the usage of self-service technologies, which is similar to a previous study (Weijters et al., 2007), and how easy the use of the

technology is. Meanwhile, Model 2 demonstrates how trust is affected by the readiness of the technology, and those who are confident in using technologies are focused on security aspects (Liljander et al., 2006). As for Model 3, technologies are considered to be highly useful when it is deemed to be easy to use, and this was shown from this analysis. It was also shown how beneficial gains from the technology affect the usage by individuals. From the model used, perceived ease of use (PEOU) is stated to be significant (Cheng et al., 2006; Al-Somali et al., 2009), affecting PU. The correlation of easy usage is evident towards the effect usefulness of a system/technology. In Model 4, trust influences perceived usefulness. This finding confirms that trust is an affirmative predictor of perceived usefulness. How consumers trust the system is significant to comprehend and predict their responses for the usage perception process. The obtained result is similar, which stated how trust is effective on the perceived usefulness of new technological advancement (Gefen et al., 2003; Lai et al., 2013). Model 5 resulted to

how behaviors are positively impacted by trust and recognized efficacy of self-serving technologies, which is similar to a previous research (Grazioli & Jarvenpaa, 2000; Suh and Han, 2002; Childers et al., 2001; Weijters et al., 2007).

There are multiple drawbacks found in this analysis. The respondents were of consumers convenience stores located in Jakarta, whereby wider respondents could have been included for a better and valid result with different kinds of good and service. The second drawback was the only use of two variables (TR and PEOU), in which various factors could be involved, such as the use of experiential design and the fascination with services (Zagel et al., 2015).

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