Research Article

Self-service token vending machines: Are train commuters satisfied and continue to use them?

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Abstract
Global acceptance of self-service technology (SST) is derived from the retail sector. SST is designed to enhance the services and is installed in many stations to reduce the waiting time when getting a train ticket. After exploratory factor analysis, five dimensions were formed: machine performance, self-control, reliability, perceived ease of use, and commuters' emotion. Based on the regression analysis result, it can be concluded that the three dimensions, i.e., machine performance, reliability, and self-control, are able to influence the experience of the train commuters directly; hence, it can be a blueprint for the service provider to ensure all aspects of their service will always be in good condition. Thus, the study has proven that train commuters' experience might influence the continuation intention mediating for two dimensions of token vending machine, i.e., machine performance and self-control.

Keywords:
Commuters' Experience; Token Vending Machine; Self-Service Technology; Continuation Intention;

1 Background of the Study

Public transportation is important; every state and country has provided public transportation for their people. Modes of public transportation in Malaysia are buses, taxis, e-ridesharing, and rails. Rail transportation, i.e., *Keretapi Tanah Melayu* (KTM) Komuter, light rapid transit (LRT), and monorail service, are the first choice among Malaysians in the city such as Kuala Lumpur and Klang Valley areas because it is one way

to solve a traffic congestion issue, especially during peak hours (Nordin et al., 2016). Rail transportation must provide better service and comfort to commuters (Nordin et al., 2016).

Malaysia implemented self-service technology (SST) for train services to provide efficient services to commuters. For the ease of train commuters commuting the LRT daily, Prasarana installed ticket vending machines (TVM) in 2011 for commuters buying train tickets or tokens for train services (Community, November 26, 2011). Commuters use a self-service kiosk or TVM daily to buy tickets/tokens when they commute public transportation (Prasarana Malaysia Berhad, 2019). Besides TVM, a touch'n'go card system for commuters to board the train is also provided at most train stations. Malaysia is on the verge of becoming a smart nation where a cashless system is adopted in transactions; therefore, commuters are encouraged to use the cashless system by using an electronic card for fare payment to reduce congestion at station gates, and commuters can monitor their transactions through online (Ministry of Works Malaysia, 2019).

Most service organisations now offer SST to consumers, users, passengers, and commuters due to SSTs' efficiency and convenience (Bhat et al., 2019; Demoulin & Djelassi, 2016; Ramaseshan et al., 2015). The customer interacts with the technology from a distance, with electronic banking, or physically as with ticketing machines. The SSTs are increasing their presence across various industries, from pre-packed refreshment vending machines to purchase a ticket to ATM self-service banking to automated national border checkpoints in the airport. Self-service kiosk becomes essential in service environments when businesses advance with automation (Ivanov & Yan, 2022; Prior et al., 2016).

The relationship between the service provider and the commuters might be a more positive experience because of SST (Demoulin & Djelassi, 2016). Time wasting and overcrowding at the Rapid Stations are the worst during the peak hour in the morning and after office hours (The Star, 2017). Associated with the idea that the TVM may reduce waiting time, minimize long queue issues, and assist commuters, TVM was designed and placed at many stations to improve the waiting time when getting a train ticket (Prasarana Malaysia Berhad, 2019). Unfortunately, the harassing atmosphere at the LRT stations and the problems sometimes occur with the TVM. Since not everybody has their own Rapid Card, most commuters must be in line to purchase the token and reload the Rapid Card. However, the TVM caused a long queue due to some problems but has been denied by rapidKL (The Star, 2017). At the same time, it may result in the minimum number of commuters who may use the service.

There is also a time when the machine is out of service; there are frequent complaints about the TVM being out-of-service, the commuters needing to wait longer to settle their transactions, and some declining use of TVM (Selan, February 17, 2022). Other negative feedback about the TVM the commuters shared was the size of the tokens being easy to lose, difficulty using the first time, the machine itself having difficulty accepting cash notes, and TVM mainly coins and RM5 notes. If commuters do

not have RM5 notes, they must exchange them at the manual ticket counter, and it is a time-consuming issue because they need to go back to TVM to buy the tokens (Lingam, 2021; lowyat.net, 2015).

Train commuters' good experience may have been affected by the TVM efficiency, especially when they face a terrible experience. For example, having a long queue for a token during peak hours may lead to dissatisfied train commuters. Commuters sometimes prefer to deal with the service staff during the service experience because of personal interaction. TVMs play a significant role in ticket distribution; however, not all commuters are comfortable with the latest technology, and commuters still need a manual counter ticket (Roy, 2018, 21 April). For example, some commuters still hesitate to use the TVM as they might not feel confident enough to use TVMs to purchase tickets for unfamiliar journeys, and some are likely to prefer to buy a ticket from a counter ticket (Lingam, 2021). The commuters' continuing intention is affected by the acceptance of the TVM for the journey token. Commuters with technology anxiety may create a negative TVM experience even though they can complete all the processes (Meuter et al., 2000). The failure to provide an appropriate self-service recovery resulted in commuters' embarrassment, negative word of mouth, and defection when they could not provide self-service recovery for their commuters (Collier et al., 2017).

It is important to highlight that some studies have been done regarding the effectiveness of rail transportation and commuters' satisfaction for example, Ibrahim et al. (2022) findings indicate that commuters' perceptions of satisfaction with the quality of service delivered by the LRT were influenced by various factors: information signs, comfort, speed, safety, ticketing services, facilities, staff performance, and information provision. However, a few published studies have been conducted on the TVM service quality dimensions and commuter experience that lead to their intention to continue using the TVM. It is important to conduct this study to evaluate the train commuters' experience with the TVM to ensure this service is improving, effective, and accepted by the commuters. Therefore, aligned with the limitations, two research objectives are formulated: (RO1) to examine the TVM service quality dimensions on the commuters' experience and their continuation intention to use and (RO2) to examine the mediating effect of commuters' experience between TVM service quality dimensions and their continuation intention to continue use.

2 Conceptual Framework and Hypotheses Development

2.1 TVM Service Quality Dimensions and Commuters' Experience

Experience is an episode or a time that one individual goes through, involving tangible perceptions through our senses, feelings, and thoughts (Hassenzahl, 2010). When passengers' journey experience is enjoyable, they will likely continue their travel over time and repeat it (Wu, 2018).

Performing transactions efficiently in the SST environment compared to the interpersonal service environment increases customer satisfaction (Gunawardana et al.,

2015; Yen, 2005). One of the advantages to commuters when using SST is that the service staff's involvement or the need for human interaction may be minimized (Bitner et al., 2000; Meuter et al., 2000). Ho and Ko (2008) stressed that once passenger accepts SST, their decision to continue using it may be affected by several reasons. Although passenger has conquered their fears of SST and has accessed hi-tech services, they are still vulnerable to worry and anxiety while using these services (Lin & Hsieh, 2006). In addition, to determine whether the passenger will use and continue using SST, passenger readiness is a mental desire that plays an important role (Lin & Hsieh, 2006). Ibrahim et al. (2022) findings indicate that commuters' perceptions of satisfaction with the quality of service delivered by the LRT were influenced by various factors: information signs, comfort, speed, safety, ticketing services, facilities, staff performance, and information provision. SST-related studies assert that higher perceived service quality leads to higher customer satisfaction (Susianto & Fachira, 2015). Thus, the following hypotheses were formulated:

H1: There is a significant relationship between TVM service quality dimensions and commuters' experience

Based on the literature, seven dimensions of TVM service quality dimensions are identified, i.e., reliability of TVM, self-control of self-service technology, interaction, perceived usefulness, perceived ease of use, speed of delivery, and enjoyment. These seven dimensions can predict the commuters' experience and intention to continue the TVM again. The following paragraphs discuss the formulation of the hypotheses. See the illustration of the research framework in Figure 1.

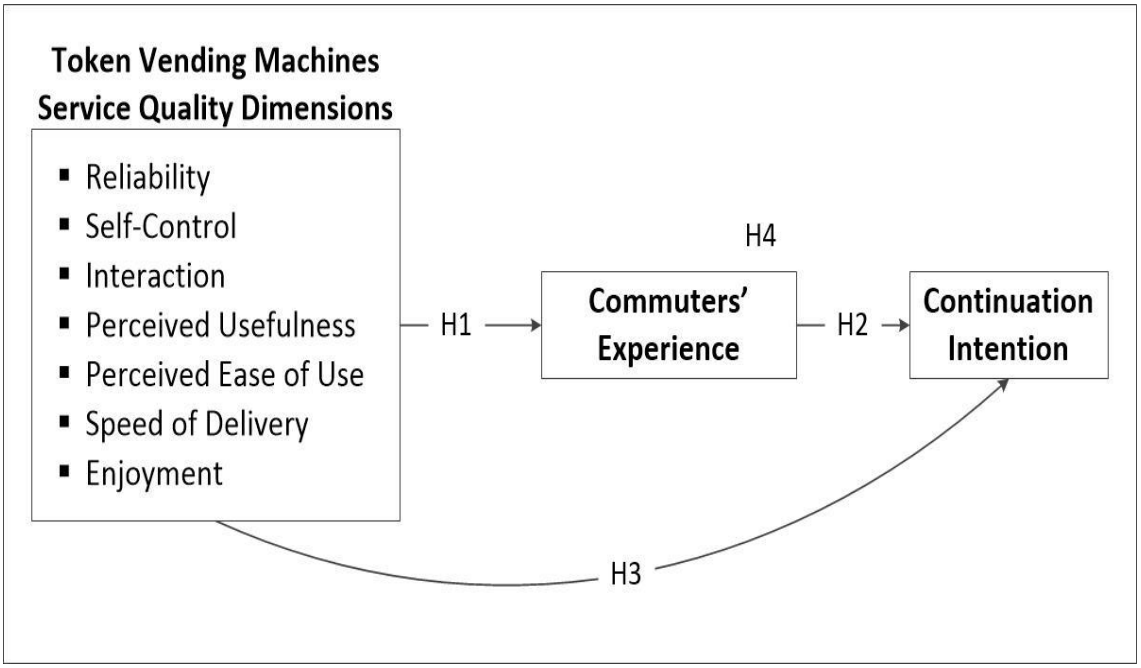

Figure 1: Proposed Research Framework

Reliability can be one of the aspects of promoting a high level of a customer relationship, which may positively affect customer satisfaction (Kashif et al., 2015; Mat et al., 2019; Parasuraman, Zeithaml, et al., 1988). Reliability is the ability to perform the promised service dependably and accurately (Parasuraman, Zeithaml, et al., 1988), including technology-based services (Davis, 1989). Reliability involves consistency of performance and dependability; it is the ability to deliver expected standards at all times, how the organization handles customer services problems, performs the right services for the first time, provides services within the promised time, and maintains error-free records (Iberahim et al., 2016; Yang & Fang, 2004). Georgiadis and Stiakakis (2009) found reliability as a fundamental criterion of superior electronic service quality. Besides that, machine or product parts' reliability is considered consistently good in quality or performance, which can be treated at any time (Heizer & Render, 2014).

Reliability is a significant factor in ensuring that commuters are satisfied. One of the reliability attributes focused on in the SST context is the service's speed, which is the transaction time needed during a deal with SST (Dabholkar, 1996). The attributes of SST that service managers should focus on include: how much time is saved, whether SST systems provide speed, the ease of use of SSTs, and whether the SST is perceived as reliable and accurate (Fernandes & Pedroso, 2017). Fernandes and Pedroso (2017) mentioned that the firms offering SST could design clear usage guidelines to increase perceived speed, simple and user-friendly interfaces to increase the ease of use, and more reliable operating systems to lower the frequency of service failure and increase accuracy. Thus, the following hypothesis is proposed:

H_{1a}: There is a relationship between reliability and train commuters' experience

The literature regarding technology-based services and self-services has identified perceived control as vital to SSTs' effectiveness (Collier & Barnes, 2015). Perceived control is a function of an individual's ability to perform a particular behavior, such as commanding the process and outcome of an SST encounter (Sherrell & Collier, 2010). Perceived control also involves controlling the flow of information, the transaction speed, and the interaction level (Schumann et al., 2012). One of the key benefits for customers to not only try but also continue to use an SST is the ability to control the transaction (Sherrell & Collier, 2010). Some users prefer SSTs over person-to-person encounters (Meuter et al., 2000). Commuters who experience perceived control over using an SST are more likely to be satisfied with it (Jungki & Allaway, 2002; Oyedele & Simpson, 2007).

Perceived control was identified as one of the discriminating factors between users and non-users of SST (Howard & Worboys, 2003). Perceived control can be viewed as the amount of control that a customer feels he/she has over the process/outcome of a service encounter, and a diminished sense of control may frustrate customers and discourage future self-service transactions reducing customer satisfaction (Bateson & Hui, 1987; Sherrell & Collier, 2010). Anselmsson (2001) found that customers need independence, self-esteem, social escapism, risk aversion, commitment, social

integration, and attitude towards using technology as the customer characteristic determinants of service quality. The speed of delivery, enjoyment, reliability, ease of use, physical appearance, personnel-based support, and decision control were technology/system-specific determinants of service quality. Power of predictability, controllability, and outcome desirability are examples of self-control (Jungki & Allaway, 2002). Self-control enables the service activity without depending on servers or releasing personal information (Ho & Ko, 2008). Thus, the following hypothesis is proposed:

H_{1b}: There is a relationship between self-control and train commuters' experience

One construct inherently tied to evaluating a self-service experience is the degree of human interaction desired during the transaction. The need for human interaction is defined as the desire for human contact by the customer during a service experience (Dabholkar, 1996). Researchers found that the need for human interaction positively influenced a customer's overall attitude toward an SST (Dabholkar & Bagozzi, 2002; Meuter et al., 2005; Yen, 2005). Therefore, intimate customer-to-employee relationships highly affect overall customer satisfaction and loyalty. Growing numbers of people interact with technology to create service outcomes instead of interacting and interfacing with a customer service employee (Dzia-Uddin et al., 2018).

SST is also beneficial for commuters since it saves them time while avoiding customer helplines Lin and Hsieh (2006). The introduction of SSTs has brought impressive changes because commuters can complete transactions within SST interfaces without assistance from service providers (Meuter et al., 2000). Alternatively, some commuters still use personal interaction with service encounters to receive their service. However, the need for employee interaction becomes a barrier to SST implementation on everything or processes as SST is unsuitable for complex services and processes. It may require human analysis and assistance to evaluate the situation on a case-by-case basis. For instance, the banking industry implements SST with ATMs and phone banking services, but getting a bank loan is unsuitable for SST as this is a complex procedure (Mexen, 2015). Khalid et al. (2014) stated that 25% of train users spend not less than 20 minutes purchasing their train tickets in Malaysia. Some commuters may prefer using SST over person-to-person encounters if they find it easy to use, more convenient than the alternatives, or if it can help them avoid interaction with the employee (Meuter et al., 2000). Technology also may lead to a higher sense of fun when utilized regularly (Vivek et al., 2012). Thus, the following hypothesis is formulated:

H_{1c}: There is a relationship between the need for interaction and train commuters' experience

The usage behavior of information technology begins with perceived usefulness and perceived ease of use of information technology (Davis, 1989). Usefulness and ease of

use are expected to influence individual attitudes toward technology acceptance; both can also explain the intention to use technology (Davis, 1989; Juniwati, 2014).

Perceived usefulness is the degree to which an individual perceives that using a specific system will improve his or her job and life performance (Davis, 1989). Use experiences may help consumers perceive a mobile payment provider, likely affecting their trust in the mobile payment service. In addition, in a multiscreen world, cross-platform consumer behavior is standard (Google, 2012). Customers' perceived usefulness is one of the crucial predictions of consumer trust in the mobile commerce environment (Jun & Lee, 2007). Cho (2011) used perceived usefulness in the study of self-service technology, investigating the potential for adoption in apparel retail settings; the results show that perceived usefulness has a significant relationship with customers' attitudes. Industries such as banking, airport, and trading also have a similar outcome, identifying perceived usefulness as one of the major drivers for attitude toward an SST (Cho, 2011). Dabholkar and Bagozzi (2002) mention it is not easy to measure perceived usefulness in SST as a consumer of SST does not own the technology, even though they participate in using the technology unless this construct is measured consistently and accurately on a performing task. Thus, the following hypothesis is formulated:

H_{1d}: There is a relationship between perceived usefulness and train commuters' experience

Davis (1989) defined perceived ease of use as when the users face difficulties in using the technology due to the complicated features or too many steps involved, and they might resist using the system. The ease of use is essential to customers' acceptance of SST. Ease-of-use reflects the extent to which customers expect SST to be easy to learn and use and is positively linked to customers' willingness to reuse SST free of effort (Dabholkar, 1996; Davis, 1989). If he or she perceives the technology or system benefits her or his usage, then the level of acceptance of that technology or system is very high. If not, he or she will resist using the system or technology or face techno-stress (Yao & Cao, 2017). Ease-of-use thus relates to the efforts a customer needs to make to effectively use the new service process and enjoy its expected advantage.

Not surprisingly, the ease of use of an SST is a decisive factor in influencing customers' satisfaction (Yen, 2005). Perceived ease of use strongly influences the intention to accept technology. The users with greater self-efficacy will likely indicate more ease of use in SST. When users perceive new technology as practical and functional, they will be more likely to adopt it and make it a new alternative (Jungki & Allaway, 2002; Juniwati, 2014; Sun & Zhang, 2006). The ease of use of SST is associated with reducing potential social risk and spending less effort (Dabholkar, 1996). The complexity of SST can hinder the customers' clarity and ability to complete the task, making the SST difficult to understand and decreasing customers' motivation to use it (Meuter et al., 2005). The more a system requires less effort, the more it is applicable (Oh et al., 2013). Since people, in general, are not equipped with the necessary skills and

confidence, users may feel anxious over expected extra efforts in terms of physical and mental exertion, leading them to avoid self-service (Lee & Yang, 2013).

SST enables users to perform and provide services without direct employee assistance, allowing them to enjoy efficient and customized services (Meuter et al., 2000). SST effort perceptions may be influenced by physical location, operating hours, and overall availability of the SST. For example, In some cases, most commuters have good experience with the efficiency of TVM, and some commuters prefer to buy tickets at the counter when they are in a rush or facing difficulty when the TVM is not easy to use. These situational factors can determine the perceived ease of use (Collier & Sherrell, 2010). Thus, the following hypothesis is formulated:

H_{1e}: There is a relationship between perceived ease of use and train commuters' experience

Time-saving is a real issue for commuters due to routine activity, and they are likely to be sensitive to the speed of delivery. TVM is an alternative channel for customers who want to reduce service delivery time (Lee et al., 2013). Transaction speed is the time it takes to actively complete a transaction via SST (Bateson, 1985; Dabholkar, 1996). TVM can overcome the perceived time and location constraint of a complete service offering and decide which service channel to use (Collier & Sherrell, 2010). Commuters who strive to make the most efficient use of their time may prefer not to interact with staff at the manual ticket counter. The speed of service delivery of the technology reduces waiting time (Beatson et al., 2007; Ding et al., 2007; Hyun et al., 2013).

The most obvious advantage offered by TVM is to minimize the amount of spending time (Marzocchi & Zammit, 2007). Chen et al. (2015) report that fast service delivery is considered an important factor in using SSTs for business and leisure travelers in terms of service quality. SST studies mentioned transaction speed as one of the most influential factors in customer satisfaction (Collier & Kimes, 2012). Conversely, if customers expect a service to be delivered speedily, they will likely evaluate it more highly (Dabholkar, 1996). Thus, the following hypothesis is formulated:

H_{1f}: There is a relationship between the speed of delivery and train commuters' experience

Dabholkar (1996) proposed that enjoyment should be a major service quality measurement. Enjoyment mainly differs from other service quality factors since it is only a hedonic aspect in the service quality scales (Collier & Barnes, 2015). Traditionally, enjoyment is considered a sense of pleasure regarding service experiences (Klinger, 1971). Enjoyment refers to the extent to which the activity of using technology is perceived to reinforce its right, apart from any performance consequences that may be anticipated (Davis, 1989). Using SST may be considered a source of fun by commuters who derive pleasure from interacting with TVM (Childers et al., 2001). Collier and Barnes (2015) mentioned that fun, which reflects the hedonic features of the service process, can also be conceptualized as enjoyment.

From a utilitarian perspective, commuters are mainly concerned with performing their tasks efficiently and timely and may still enjoy the activity (Oghazi et al., 2012). Customers who enjoy playing with machines will likely use the self-service option for fun (Dabholkar, 1996). Accordingly, enjoyment influences using technology devices among SST users and positively affects customer service quality perception and future intentions (Curran & Meuter, 2007). In addition, Bauer et al. (2006) and Collier and Barnes (2015) verified that enjoyment is the strongest antecedent of customer profitability and customer delight. Thus, the following hypothesis is formulated:

H_{1g}: There is a relationship between enjoyment and train commuters' experience

Continuance intention refers to commuters' intention to continue using TVM (Bhattacherjee, 2001). The commuters' repeated use of TVM depends on their initial experience (Bitner et al., 2002). When commuters perceive a high-level service climate, the service provider's quality-focus service practices enhance the self-service experience and improve the outcomes. Continuance intentions are a part of the positive attitude of behavioral intentions besides loyalty, good WoM, and return patronage. Behavioral intentions demonstrate whether customers have stayed with or defected from the organization. Parasuraman, Berry, et al. (1988) proposed that the positive behavioral aims included saying positive things and prescribing services to others, paying a value premium to the organization, and expressing cognitive loyalty. In the context of this study, it can be said that TVM continuing intentions represent commuters' self-reported likelihood of reusing TVM. For example, commuters who had fun and enjoyment experienced using the TVM and might continue to use the TVM. Usefulness and ease of use are also expected to influence commuters' attitudes toward technology acceptance; both can also explain the intention to use TVM (Juniwati, 2014). Commuters satisfied with their experience with TVM represent a significant self-service outcome and predict TVM continuance intentions (Wang et al., 2013). Thus, the following hypothesis is formulated:

H2: There is a relationship between train commuters' experience and continuation intention

2.2 TVM Service Quality Dimensions, Commuters' Experience and Continuation Intention

Product or service features and perceptions of quality influence customer satisfaction. When the customer is experienced with the product or service of the company satisfied, it can make the customer purchase frequently and recommend products or services to potential customers (Zeithaml & Bitner, 2003). Providing appropriate services is key to gaining customer satisfaction and loyalty (Sedighimanesh et al., 2017). In today's business environment that cannot meet the customer's needs without new technologies, providing quality and efficient services plays a vital role in attracting and retaining customers. In terms of satisfaction, the need for human interaction may be minimized by introducing SST. This leads to concern that SST will

impact service encounters in terms of service quality, satisfaction, and loyalty, which may be detrimental to the firm's success (Ganesh et al., 2000).

A business organization cannot grow if the company ignores or disregards customers' needs (Tao, 2014). In the context of SST adoption, previous studies attempted to determine the defining key events and situations of the SST delivery experience that have a significant association with overall customer satisfaction within various types of industries, such as retail banking and hospitality (Beatson et al., 2007). For example, Chathoth (2007) explored how the effective use of ITs improves service quality and guest satisfaction, increasing hotel profitability. However, the results have been inconclusive or contradictory. For example, the satisfaction consumers experience with internet-based SST is affected not only by the benefits associated with its usage (efficiency and convenience) but also by the attributes that reduce barriers to using (ease of use and perceived control) (Liljander et al., 2006). Liljander et al. (2006) investigated the effects of contributors and inhibitors (technology readiness) on airline customers' attitudes towards a self-service check-in system on the Internet in terms of perceived service quality, satisfaction, and loyalty. Chou et al. (2014) studied how service quality and customer satisfaction impact customer loyalty using 1,235 High-Speed Rail passengers in Taiwan. Among the 24 service attributes, passengers were most satisfied with cleanness, employee appearance, and attitudes but were the least satisfied with the transfer, ticketing, and responses to complaints and suggestions. Thus, the following hypothesis is formulated:

H3: There is a relationship between self-service token vending machine dimensions toward continuation intention

H4: Train commuters' experience mediated the relationship between the self-service token vending machine dimension and continuation intention

3 Methodology

Self-administered and close-ended questionnaires were distributed online during the movement control order due to the Covid-19 using a Google Form link posted on WhatsApp, Telegrams, and Facebook to reach the potential respondents. Convenience sampling was adopted. Data was collected online; therefore, river sampling was adopted. River sampling is one of the convenience sampling forms. River sampling is based on a web-based opt-in procedure that recruits participants by placing survey invitations on a website, often using attention-catching approaches (Hair et al., 2020, p. 192). Snowball sampling or referral sampling is also adapted because the researcher then uses the initial respondents to help identify the other respondents in the target population. The process is continued until the required sample size is reached (Hair et al., 2020). A minimum of 384 respondents above 18 years old with experience using the TVM are required for this study; a minimum of 384 is based on an unknown population (ProjectRegards Admin, 2019).

Items were adapted from various disciplines and tailored to the setting (see Table 2). The questionnaire used seven-Point Likert-type scales ranging from 1 (Entirely disagree) to 7 (Entirely agree). The statement in the questionnaire is designed in Malay and English languages. The draft questionnaire was done through validity and reliability procedures. Ten persons with experience using the TVM were chosen to provide comments and suggestions to improve the questionnaire's content. Fourty respondents among train commuters who had experience using the TVM were chosen for pilot testing. The Cronbach alpha scores for all items varied from 0.633 to 0.875 exceeding the criteria of 0.60, indicating internal consistency in the entire scale (Hair et al., 2010). Two analyses procedure were applied; Exploratory Factor Analysis (EFA) and multiple linear regressions. EFA aims to identify the relevant dimensions proposed in the research framework. Multiple linear regressions are used to identify the relationship between dependent, mediating, and independent variables addressing RO1 and 2 and testing H1 to H4 (Hair et al., 2010; Pallant, 2013).

4 Findings

This study is a cross-sectional study. Four hundreds questionnaires were collected; five were excluded because it is unsuitable for further analyses. Three hundred and ninety-five questionnaires were more significant than the minimum 384 sample size, thus, acceptable for the study. The demographic profiles of the respondents are summarised in Table 1

Table 1: Demographic Profiles of the Respondents (N = 395)

Characteristics	Frequency	Percent	Characteristics	Frequency	Percent
Gender:			Frequency of used:		
Male	150	38	First time	42	10.6
Female	245	62	One to three times	119	30.1
			Over three times	234	59.2
Age:					
18-25	183	46.3			
26-35	177	44.8			
36 and above	35	8.9			

Table 2 itemizes the sources of the items adapted in the questionnaire and summarizes the descriptive analysis.

Table 2: Items and Descriptive Analysis

Items Code	Statements	Source	Mean	Std Deviation
Self-service token vending machine				
	Reliability			
R1	Token vending machines are secure to use	(Fernandes & Pedroso, 2017; Lee et al., 2009)	5.68	1.168
R2	Token vending machine service is very fast		5.51	1.322
R3	Token vending machines may be replacing traditional services		5.50	1.500
R4	You had high expectations of the token vending machine service		5.72	1.201
	Self-Control			
SC1	Language offered is convenient		5.74	1.123

Items Code	Statements	Source	Mean	Std Deviation
SC2	Token vending machine provides clear instruction	(Arli & Leo, 2017; Ho & Ko, 2008)	5.84	1.075
SC3	Language shown is easy to understand		6.16	.945
SC4	Token vending machine provides sufficient information		5.74	1.110
	Need for Interaction			
NFI1	Token vending machines may minimize the human interaction	(Hsiao & Tang, 2015b; Lee, 2017)	5.93	1.136
NFI2	Token vending machines able to educate people about self-service culture		6.09	1.001
NFI3	Token vending machines provide sufficient assists information		5.63	1.106
NFI4	Token vending machine seeks to minimize assistance from the service provider		5.63	1.146
	Perceived Usefulness			
PU1	Token vending machine is suitable for traveler	(Hsiao & Tang, 2015b; Izuagbe & Popoola, 2017)	5.81	1.150
PU2	Token vending machine is suitable to avoid queue issue		5.41	1.463
PU3	Token vending machine is faster than the counter system		5.76	1.181
PU4	Token vending machines are useful for those who rarely use a train		5.26	1.511
	Perceived Ease of Use			
PEOU 1	Token vending machine is easy to use	(Guriting & Ndubisi, 2006; Hsiao & Tang, 2015b)	5.82	1.059
PEOU 2	Token vending machines may reduce an anxiety		5.31	1.214
PEOU 3	Token vending machines easy to accept the cash note		4.96	1.484
PEOU 4	Method of payment offered is convenient		5.56	1.196
PEOU 5	Sufficient number of the token vending machine are provided		5.19	1.413
	Speed of Delivery			
SOD1	Token vending machines can save my time	(Ueno et al., 2018)	5.71	1.139
SOD2	Token vending machines able to complete in a short time		5.69	1.121
SOD3	Payment transaction is very fast		5.71	1.098
SOD4	Duration of time to get a balance payment is minimum		5.70	1.052
	Enjoyment	(Collier & Kimes, 2012; Dabholkar, 1996; Venkatesh, 2006)		
E1	Using the token vending machine is very interesting		5.63	1.217
E2	I am curious about self-service technology at the train station		4.47	1.744
E3	It is interesting to use self-service technology at the train station		5.76	1.087
E4	The process of using the token vending machine is enjoyable		5.63	1.180
Train Commuters Experience				
PEX1	Satisfied with the decision to use the Token vending machine	(Guriting & Ndubisi, 2006; Hsiao & Tang, 2015b)	5.80	1.045
PEX2	You are enjoying using the token vending machine		5.65	1.136
PEX3	Your experience using the token vending machine is positive		5.75	1.073
PEX4	Token vending machines may make your journey easier		5.82	1.022
PEX5	Overall perception toward token vending machine are positive		5.92	.967
Continuation Intention		(Fernandes & Pedroso, 2017; Ho & Ko, 2008; Lwoga & Komba, 2015)		
CI1	I will use word of mouth to promote the token vending machine		5.42	1.273
CI2	I will share the information with other train commuters		5.48	1.228
CI3	I will recommend to others to use this token vending machine		5.74	1.097
CI4	I will switch to the cashless ticket system		5.75	1.211
CI5	I will continue to use this token vending machine in the future		5.77	1.248

4.1 Result Addressing RO1

4.1.1 Exploratory Factor Analysis

KMO value is 0.922 and near one, regarded as the meritorious value (Kaiser & Rice, 1974). All factors with an eigenvalue greater than one are considered significant. The total variation is 64.75%; 60% is acceptable for social science research (Hair et al., 2010). The factors are summarized in Table 3. Factor loadings above 0.50 are retained. Most

items did not load exactly on seven dimensions. Each factor was renamed and re-labeled (Hair et al., 2010; Pallant, 2013). The items were subjected to a reliability test.

Table 3: EFA Results

Item Coding	Component				
	Factor 1 Machine Performance (H_{1a})	Factor 2 Self-Control (H_{1b})	Factor 3 Reliability (H_{1c})	Factor 4 Perceived Ease of Used (H_{1d})	Factor 5 Commuters' Emotion (H_{1e})
SOD4	.768				
SOD1	.762				
SOD3	.754				
E1	.741				
SOD2	.712				
E3	.652				
PU3	.542				
E4	.539				
SC2		.820			
SC3		.757			
SC1		.709			
NFI3		.703			
SC4		.666			
PEOU1		.540			
R1			.710		
R3			.663		
R4			.655		
NFI1			.638		
R2			.632		
PEOU3				.779	
PEOU4				.739	
PEOU5				.665	
E2					.826
PEOU2					.532
Cronbach α	.922	.892	.837	.799	.427

4.1.2 Hypotheses Testing

The model of self-service token vending machine dimensions explained 72.2% $\left(R^2 = .722, F = 111.756, p < .05\right)$ of the relationship with train commuters' experiences. Table 4 demonstrates that machine performance $\left(\beta = .604, p < .001\right)$ is the most predictor that significantly influences train commuters' experience of the self-service token vending machine, followed by self-control $\left(\beta = .172, p < .05\right)$ and reliability $\left(\beta = .114, p < .10\right)$. Nevertheless, the perceived ease of use and emotions were insignificant. Thus, this result addresses RO1 and partially supports H1.

Table 4: Result of Testing Hypothesis 1

Predictors	Model 1	Sig	Assessments
Dependent Variable: Train Commuters' Experience			
a) Machine Performance	β=.604***	.000	H_{1a} supported
b) Self-Control	β=.172**	.004	H_{1b} supported
c) Reliability	β=.114*	.052	H_{1c} supported
d) Perceived Ease of Use	β=.019	.714	H_{1d} rejected
e) Commuters' Emotions	β=.015	.719	H_{1e} rejected

*Note: ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level*

4.2 Result Addressing RO2

Self-service token vending machine models could explain 56.8% $\left(R^2 = .568, F = 287.388, p < .05\right)$ of the relationship with train commuters' experience. Train commuters' experiences significantly influenced the continuation intentions $\left(\beta = .753, p < .001\right)$. Thus, this result addresses RO1 and supports H2.

Table 5: Result of Testing Hypothesis 2

Predictors	Model 1	Sig	Assessments
Dependent Variable: Continuation Intention			
a) Train Commuters Experience	β =.753***	.000	H2 supported

*Note: ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level*

Self-service token vending machine dimensions are able to explain a 51.7% $\left(R^2 = .517, F = 46.068, p < .05\right)$ relationship with continuation intention. Table 6 demonstrates that the machine performance $\left(\beta = .591, p < .001\right)$ of the self-service token vending machine is the most significant predictor of the commuters' continuation intentions, followed by self-control $\left(\beta = .191, p < .05\right)$. It can be concluded that the self-service token vending machine dimensions have partially contributed to the continuation intentions. Thus, this result addresses RO1 and partially supports H3.

Table 6: Result of Testing Hypothesis 3

Predictors	Model 1	Sig	Assessments
Dependent Variable: Continuation Intention			
a) Machine Performance	β= .591***	.000	H_{3a} supported
b) Self-Control	β= .191**	.015	H_{3b} supported
c) Reliability	β= -.042	.583	H_{3c} rejected
d) Perceived Ease of Use	β= -.024	.727	H_{3d} rejected
e) Commuters' Emotions	β= .055	.310	H_{3e} rejected

*Note: ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level*

Only two dimensions were significant for self-service token vending machine dimensions, which met for testing H3. As shown in Table 7, Model 1 indicates that machine performance dimensions $\left(\beta = .582, p < .001\right)$ affect continuation intentions followed by self-control $\left(\beta = .170, p < .05\right)$ and can explain 51.4% $\left(R^2 = .514, F = 115.445, p < .001\right)$ of continuation intentions. Model 2 indicates that self-service token vending machine performance dimensions $\left(\beta = .239, p < .001\right)$ and continuation intentions became significant in train commuters' experience $\left(\beta = .516, p < .001\right)$. The level of train commuters' experience was explained, with 59% $\left(R^2 = .590, F = 40.069, p < .001\right)$ as the mediator between self-service token vending machine dimensions and continuation intentions. It can be concluded that train commuters experience a mediating variable between self-service token vending

machine dimensions and commuters' continuation intentions. Thus, the findings address RO2 and partial mediation, which supports H4.

Table 7: Result of Testing Hypothesis 4

Predictors	Model 1: Std. β	Model 2: Std. β	Sig	Assessments
Step 1: DV: Continuation Intention				
i. Machine Performance	β= .582***		.000	Supported
ii. Self-control	β= .170**		.015	Supported
Step 2: DV: Continuation Intention				
i. Machine Performance		β= .239**	.005	Supported
ii. Self-control		β= .053	.430	Rejected
Iii. Train Commuters Experience		β= .516***	.000	Supported

****Significant at 1% level; **Significant at 5% level; *Significant at 10% level*

5 Discussion and Conclusion

This study has extensive literature from various fields, including transportation, hospitality, retail, and information technology, to understand the research area better. The existing model was modified to get proper insight and create a model that can suit the current setting.

Based on the findings, it can be indicated that TVM service quality dimensions significantly influence train commuters' experience. It also has proven that train commuters' experience influences the continuation intention. Each dimension, i.e., machine performance, self-control and reliability, has its role in determining the experience of the train commuters. Similarly, Mason et al. (2023) says results from the study confirm that a high need for human interaction in older customers has detrimental effects on their willingness to co-create via SSTs and well-designed service environment increases elderly customers' attitudes toward SSTs as it helps them overcome the "natural" aversion to self-service machinery. Despite three sub-dimensions are significant, there are two sub-dimensions, relationship between perceived ease of use and passenger's emotion was not significant relationship with the train passengers experience. Similarly, Kim and Qu (2014) mentioned that perceived usefulness and perceived ease of use did not have significant effects on travellers' satisfaction towards hotel self-service kiosk usage. As the sense of stress is a type of emotion encountered by users, this study by Lu, et al. (2023) has confirmed that the sense of emotion (i.e. health stress, HS) is positively related to the perceived usefulness and satisfaction of using the mHealth apps. However, study of Hsiao and Tang (2015) mentioned that ease of use has a stronger influence on attitudes and is was indicated that perception of ease of use plays a pivotal role in the user acceptance of SST. The TVM must be easy to operate, or commuters prefer alternatives (Pashkevich et al., 2021). A possible explanation for this study is that the train commuters have other choices instead of using the TVM, such as the myrapid Smart 7 Weekly pass, myrapid Smart 30 Monthly pass, or myrapid TnGo Card (MyRapidKL, 2020). These are the other options introduced

by the rapidKL to overcome congestion issues during peak times. Besides that, train commuters do not have a major issue while using the TVM because most of the train commuters are regular since trains are one of the major transportation modes for Klang Valley areas (MyRapidKL, 2020). Similarly, Prior et al. (2016) says that commuters will use TVM to buy tickets when they travel from one destination to another every day because the passenger widely knows this technology.

Although complaints and feedback were made and are being solved, Prasarana must maintain and improve the service of the TVM day by day because every day average of commuters will increase. Maintaining the TVM is also for the country's good image. If the TVM keeps going out of order, it is a disgrace to the country's image because the service is popular with foreign tourists. When the TVM is out of order, commuters queue up at the only manual ticket counter. Furthermore, commuters' good experience with the TVM will add value and increase commuters' satisfaction. At the same time, it can help transit operators, transport planners, and building designers improve their plans and work. This is essential to meet the commuters' satisfaction with public transport because the number of people using the LRT increases yearly.

5.1 Implication for Theory and Practice

From an academic perspective, the study offers and tests a proposed research framework of TVM service quality dimensions and relationships them with commuters' experiences that led to their continuance intention to use the TVM. The study's findings will provide academicians insight into the proposed framework and practitioners. This study hopes to enhance the service quality literature and add to the body of knowledge in the service marketing discipline.

This study takes an opportunity to combine various literature disciplines to develop TVM service quality dimensions to suit the current study setting. In addition, many arguments exist on the SERVQUAL model and other service quality models regarding limitations that cannot be replicated in specific industries. Many scholars have stressed that service quality is multidimensional and the need to develop industry-and-cultural-specific models when investigating the dimensional structures of service quality. Furthermore, there was no specific agreement on the number of service quality dimensions and the content of the dimensions.

This study attempts to fill previous studies' limitations by adding and modifying several dimensions of TVM service quality to be tested in the rail transportation service setting, enhancing knowledge and idea. This study has comprised various dimensions into one research framework model to examine the TVM service quality dimensions on commuter experiences and their continuance intentions. This study contributes to rail transportation services literature by empirically testing several hypotheses and suggesting future research possibilities.

The result proves that all the dimensions suggested are related to the commuters' experiences and their continuance intentions to use the TVM. TVM service, although not new in the transportation industry, there are limited published empirical studies on

commuters' experiences and their continuance intentions by using TVM service quality dimensions as a predictor. In the RO1, the study concluded that the three dimensions, i.e., machine performance, reliability, and self-control, are able to influence the experience of train commuters. The train commuters' experiences also influence the continuation intention to use the TVM. Some other studies in the transportation area might emphasize specific dimensions such as speed of delivery, safety, perceived reachability, and cost savings, which suit and fit each study's objectives and study purposes. Alternatively, this study has comprised various dimensions into the proposed research framework to examine one service that can measure the TVM service quality dimensions. Lastly, in addressing the RO2, the study concluded that only machine performance and self-control dimensions are able to mediate the experience of train commuters and continuation intentions. Therefore, this study hopes to enhance the literature and add to the body of knowledge in the service quality discipline, particularly in the transportation industry.

This study also expected to contribute significant information to relevant parties, especially in the transportation industry. In today's competitive business, the service provider should know what is vital to satisfy customers' needs and wants. This study result shows that the dimensions of the TVM are the key to the experience and continuation intentions of the train commuters. Thus, public transportation companies such as Prasarana should understand what makes train commuters use TVM by ensuring the kiosk performance and self-control attributes.

This study can be concluded that the three dimensions, i.e., machine performance, reliability, and self-control, are able to influence the experience of the train commuters, and indirectly, it can be a blueprint for the service provider to ensure all aspects of their service will always be in good condition. For instance, TVMs can be frustrating to commuters for many reasons, such as the TVM being out of order, TVM is not friendly user to new commuters, and only accepting small notes and coins. The operator should ensure the TVM function effectively to avoid congestion. Operation staff at the stations should always be ready and efficiently offers assistance so that the smooth operation flow in the stations.

Lastly, it will be good if the service provider improves some of the dimensions found in this study to ensure this service may ease the train commuters and ensure the ticketing system is more efficient and systematic.

5.2 Limitations and Recommendations for Future Study

This study serves a number of limitations. First, due to only five dimensions been focused in this study based on the literature which are machine performance, self-control, reliability, perceived ease of use, and passenger emotion, therefore, future study can be considered other variables to be included such as fees, time consumed, or technology anxiety, to be tested in the TVM service quality dimensions research framework. Secondly, the present study did not examine the perception of the cashless mode for ticketing purposes, which is applied by rapidKL and can be tested regarding

the train passenger perception of the service provided. For future research, it can be beneficial if the study can be conducted on behalf of the service provider regarding the problem that occurs during the service delivery, which may come from the train commuters' attitude and behavior, such as missing the token, do not know how to use the self-service token vending machine or limited information regarding the train route map.

Another limitation of current research is that it only focuses on the self-service token vending machine as a ticketing system for train transportation. Future research can be suggested to relate this service with other services, such as the hospitality and travel industries, such as the impact of self-service kiosks in the travel industry or other public transportation modes. Most businesses were conducted by introducing the self-service mode to reduce labor costs and educate the people to be more technology friendly. Thus, this opportunity can be taken by future researchers to identify the impact of self-service technology in the hospitality industry.

Some practical difficulties, such as time limitations and sample size, are quite limited. It can be improved by expanding through longitudinal studies with a big sample size to increase the accuracy of the result. In addition, it would also be helpful if the qualitative approach could be conducted from the service provider's perspective on other dimensions that cannot be measured through a quantitative approach. Service providers might have some ideas, perspectives, or difficulties that they have experienced during the service delivery and need to be listened to and recorded to improve, sustain and satisfy the business or service offered.

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