


THE STUDY OF CUSTOMERS' EXPECTATIONS AND REAL EXPERIENCES USING THE SELF-SERVICE KIOSK

Abdul Rahman Zahari^A, Elinda Esa^B, Nor Hazlin Nor Asshidin^C, Khairul Nizam Surbaini^D, Azmer Ezwan Abdullah^E, Nurshahirah Abd Majid^F



ARTICLE INFO	ABSTRACT
<p>Article history:</p> <p>Received 01 May 2023</p> <p>Accepted 28 July 2023</p>	<p>Purpose: This study examines the gap between residential customers' expected and real experiences with self-service kiosks from the perspective of a major Malaysian electrical service provider.</p>
<p>Keywords:</p> <p>Self-Service Technology; Self-Service Kiosk; Customer Expectations and Real Experiences; Utility Firm; Residential Customers.</p>	<p>Theoretical framework: The comparative study of customers' expectations and real experiences using the self-service kiosk is excessive in various sectors like banking and transportation but limited in the energy sector in boosting customer engagement and leading to customer satisfaction.</p> <p>Design/Methodology/Approach: Using a stratified sample approach based on a sampling frame given by a Malaysian utility provider, survey questions were disseminated online to residential customers who have used self-service kiosks.</p> <p>Findings: The findings demonstrate that customers' expectations and real experiences significantly differ with a few variables, such as secure/privacy, design, and convenience. However, the effect sizes were small. Moreover, some individual items in several factors like enjoyment, secure/privacy, design, convenience, and customization also showed significant differences.</p>
	<p>Practical implications: The findings shed light on the energy sector and give Malaysian power providers, in particular, identifying the gap between customer expectations and actual self-service kiosk experiences. With this information, the firm can close the gap and manage customer experience to increase customer satisfaction.</p> <p>Originality/Value: This study expands the investigation of self-service technology (SST) service quality by analysing the gap between the expectations and actual experiences of residential consumers utilising the SST self-service kiosk offered by Malaysia's major energy service provider. This study assists the company in closing the gap and enhancing the offerings of self-service kiosks to boost customer satisfaction and manage customer experience.</p> <p>Doi: https://doi.org/10.26668/businessreview/2023.v8i8.2295</p>

^A Senior Lecturer. Department of Business and Management, College of Business Management and Accounting, Universiti Tenaga Nasional - Sultan Haji Ahmad Shah Campus. Malaysia. E-mail: rahman@uniten.edu.my

Orcid: <https://orcid.org/0000-0001-7825-9651>

^B Lecturer. Department of Accounting and Finance, College of Business Management and Accounting, Universiti Tenaga Nasional. Malaysia. E-mail: elinda@uniten.edu.my Orcid: <https://orcid.org/0000-0002-7089-501X>

^C Lecturer. Department of Business and Management, College of Business Management and Accounting, Universiti Tenaga Nasional - Sultan Haji Ahmad Shah Campus. Malaysia. E-mail: hazlin@uniten.edu.my

Orcid: <https://orcid.org/0000-0002-3305-9004>

^D Senior Lecturer. Department of Business and Management, College of Business Management and Accounting, Universiti Tenaga Nasional - Sultan Haji Ahmad Shah Campus. Malaysia. E-mail: nizamk@uniten.edu.my

Orcid: <https://orcid.org/0000-0003-1538-7685>

^E Assistant Lecturer. Department of Foundation and Diploma Studies, College of Business Management and Accounting, Universiti Tenaga Nasional - Sultan Haji Ahmad Shah Campus. Malaysia.

E-mail: azmer@uniten.edu.my Orcid: <https://orcid.org/0000-0001-8819-7060>

^F Research Assisstant. College of Graduate Studies, Universiti Tenaga Nasional - Putrajaya Campus. Malaysia.

E-mail: shahirah.majid@uniten.edu.my Orcid: <https://orcid.org/0000-0003-3968-4799>

O ESTUDO DAS EXPECTATIVAS E EXPERIÊNCIAS REAIS DOS CLIENTES USANDO O QUIOSQUE DE AUTOATENDIMENTO

RESUMO

Objetivo: Este estudo examina a lacuna entre as experiências esperadas e reais de clientes residenciais com quiosques de autoatendimento na perspectiva de um grande provedor de serviços elétricos da Malásia.

Estrutura teórica: O estudo comparativo das expectativas dos clientes e experiências reais usando o quiosque de autoatendimento é excessivo em vários setores, como o bancário e o transporte, mas limitado no setor de energia para aumentar o engajamento do cliente e levar à satisfação do cliente.

Design/Metodologia/Abordagem: Usando uma abordagem de amostra estratificada baseada em um quadro de amostragem fornecido por um fornecedor de serviços públicos da Malásia, as perguntas da pesquisa foram divulgadas on-line para clientes residenciais que usaram quiosques de autoatendimento.

Constatações: as conclusões demonstram que as expectativas dos clientes e as experiências reais são significativamente diferentes com algumas variáveis, como segurança/privacidade, design e conveniência. No entanto, os efeitos foram pequenos. Além disso, alguns itens individuais em vários fatores como diversão, segurança/privacidade, design, conveniência e personalização também mostraram diferenças significativas.

Implicações práticas: as descobertas evidenciam o setor energético e dão aos fornecedores de energia da Malásia, em particular, a identificação da lacuna entre as expectativas dos clientes e as experiências reais de quiosques de autoatendimento. Com essas informações, a empresa pode preencher a lacuna e gerenciar a experiência do cliente para aumentar a satisfação do cliente.

Originalidade/Valor: Este estudo expande a investigação da qualidade do serviço de tecnologia de autoatendimento (SST) analisando a diferença entre as expectativas e as experiências reais de consumidores residenciais utilizando o quiosque de autoatendimento SST oferecido pelo principal fornecedor de serviços energéticos da Malásia. Este estudo ajuda a empresa a preencher a lacuna e aprimorar as ofertas de quiosques de autoatendimento para aumentar a satisfação do cliente e gerenciar sua experiência.

Palavras-chave: Tecnologia de Autoatendimento, Quiosque de Autoatendimento, Expectativas e Experiências Reais do Cliente, Empresa de Serviços Públicos, Clientes Residenciais.

EL ESTUDIO DE LAS EXPECTATIVAS Y EXPERIENCIAS REALES DE LOS CLIENTES UTILIZANDO EL QUIOSCO DE AUTOSERVICIO

RESUMEN

Objetivo: Este estudio examina la brecha entre las experiencias esperadas y reales de los clientes residenciales con los quioscos de autoservicio desde la perspectiva de un importante proveedor de servicios eléctricos de Malasia.

Marco teórico: El estudio comparativo de las expectativas y experiencias reales de los clientes utilizando el quiosco de autoservicio es excesivo en varios sectores como la banca y el transporte, pero limitado en el sector energético para impulsar el compromiso del cliente y conducir a la satisfacción del cliente.

Diseño/Metodología/Enfoque: Utilizando un enfoque de muestreo estratificado basado en un marco de muestreo dado por un proveedor de servicios públicos de Malasia, las preguntas de la encuesta se distribuyeron en línea a los clientes residenciales que han utilizado quioscos de autoservicio.

Hallazgos: Los hallazgos demuestran que las expectativas y experiencias reales de los clientes difieren significativamente con unas pocas variables, como seguridad/privacidad, diseño y conveniencia. Sin embargo, los tamaños de efecto fueron pequeños. Además, algunos elementos individuales en varios factores como el disfrute, la seguridad/privacidad, el diseño, la conveniencia y la personalización también mostraron diferencias significativas.

Consecuencias prácticas: Los resultados arrojan luz sobre el sector energético y dan a los proveedores de energía malasios, en particular, identificando la brecha entre las expectativas de los clientes y las experiencias reales de los quioscos de autoservicio. Con esta información, la empresa puede cerrar la brecha y gestionar la experiencia del cliente para aumentar la satisfacción del cliente.

Originalidad/Valor: Este estudio amplía la investigación de la calidad del servicio de la tecnología de autoservicio (SST) al analizar la brecha entre las expectativas y las experiencias reales de los consumidores residenciales que utilizan el quiosco de autoservicio SST ofrecido por el principal proveedor de servicios de energía de Malasia. Este estudio ayuda a la empresa a cerrar la brecha y mejorar las ofertas de los quioscos de autoservicio para aumentar la satisfacción del cliente y gestionar la experiencia del cliente.

Palabras clave: Tecnología de Autoservicio, Quiosco de Autoservicio, Expectativas del Cliente y Experiencias Reales, Empresa de Servicios Públicos, Clientes Residenciales.

INTRODUCTION

Thanks to technology, all industries, including those that provide energy services, have benefited from improved business methods and models. Emerging customer preferences drive stakeholder priorities, decisions, and strategies, which is a key driver of both difficulties and opportunities for utility firms. As a result, the utility industry is rapidly changing in how it adopts technology. Several sectors worldwide, including Malaysia, have implemented SST to engage with their numerous clients as technology progresses (Chow, Yeow & See, 2022; Mclelland, 2021). According to Meuter, Ostrom, Roundtree and Bitner (2000), SST refers to technical interfaces that enable customers to undertake services independently of service providers without speaking with them directly. Applications for SST are used in many commercial areas, including simple interactive voice services, interactive POS devices, and internet-based services (Curran & Meuter, 2005; Li & Liu, 2023). For instance, the majority of banks, hotels, laundries, restaurants, and airports have incorporated SST into their regular business operations to increase productivity and efficiency while reducing operational expenses (Chang, 2015; Othman, Hamzah & Abu Hassan, 2020).

To improve customer satisfaction, a major power supplier in Malaysia and other service providers incorporated SST self-service kiosks as one of their client touchpoint alternatives (Rahmat, 2016). Understanding the gap between customers' expectations and their actual experiences with SST self-service kiosks is crucial, given that SST is being steadily introduced throughout sectors (Li & Liu, 2023, Thenahandi, 2023). Otherwise, businesses' significant SST investments will be wasted and may result in customer complaints (Lee & Yi, 2021). Automated service delivery systems, or SSTs, enable users to connect with technology and generate outcomes without assistance from service representatives or other people (Lee & Allaway, 2002; Meuter et al., 2000). SSTs can be split into two kinds, namely on-site and off-site alternatives, according to Dabholkar and Bagozzi (2002). Examples of "on-site" alternatives include self-scanning in retail establishments and libraries, touch displays in airports, and information kiosks in tourist information centers. Off-site possibilities, however, include things like online shopping and banking (Considine & Cormican, 2022). Service providers in Malaysia, like utility companies, have installed on-site self-service kiosks to interact with their clients.

SST not only helps improve customer service by increasing service flexibility and reducing the need for services, but it also serves as a valuable mechanism for gathering consumer consumption data (Lee & Yi, 2021; Ozturk, 2016) and has a significant impact on

both the balance sheets of service providers and the service experiences of customers (Banyan, 2018). As a result, businesses have an obligation to continually search for and practice the most effective services offered by SSTs to maximize customer experience and satisfaction. SST, like other services, is susceptible to failure due to technical issues or user mistakes; in particular, not all customers are equipped with the knowledge or skills necessary to operate SST (Dabholkar & Spaid, 2012). According to Robertson, McDonald, Leckie and McQuilken (2016), the most significant contributor to customer discontent is the complex nature of the SST's design. The intricate design has affected the adoption of SSTs, and after utilizing SSTs, some consumers prefer to go back to having their services supplied by humans (Kaushik, Agrawal & Rahman, 2015). Individuals may be compelled to use SSTs due to enterprises' efforts to phase out face-to-face customer service. This can result in a less-than-desirable customer experience, leading to customer unhappiness (Feng, Tu, Lu & Zhou, 2019; Le, Hill & Troshani, 2022).

Despite this, little effort is made to build SST functionalities and technological specifics to meet these difficulties. Bad SST performance due to technology or service design is one of customers' most annoying SST situations. This stresses the need for SST enhancement (Meuter et al., 2000), particularly in utility businesses employing self-service kiosks, such as energy service providers, where SSTs are less investigated (Shin & Perdue, 2019). So, the Malaysian energy service provider must evaluate the service quality of their self-service kiosk due to the numerous advantages of SST (Bridgwater, 2019). Meuter et al. (2000) warned about SST problems more than two decades ago, but the problem persists. This suggests that SST providers have not fully evaluated the needs of their clients (Fan, Wu, Miao & Mattila, 2020; Robertson, 2012). Oh, Jeong and Baloglu (2013) observed that the present SST does not meet customers' emotional transaction goals; therefore, SST design must address customers' concerns. Hence, it is essential to understand how to build, manage, and promote these technologies optimally from both the business and consumer perspectives by finding gaps between customer expectations and actual experiences (Curran & Meuter, 2005; Kannan & Vasantha, 2022). Thus, the research question of this study is as follows: What is the difference between residential customers' expectations and their real experiences with self-service kiosks provided by a large Malaysian utility company? Based on the stated research question, this study aims to measure the difference between residential customers' expectations and their real experiences using the self-service kiosks accommodated by a leading energy firm in Malaysia. The

following section of the study describes the literature review. Research methodology and results of this study are discussed in Sections 3 and 4. Finally, Section 5 concludes this paper.

LITERATURE REVIEW

Background of SST

As a result of technological improvements, SSTs are becoming more prevalent in numerous services, which has increased customer-owned self-responsibility (Ding, Verma & Iqbal, 2007). With less connection between service providers, businesses must ensure SSTs can promptly address consumer problems and deliver greater benefits such as customer satisfaction (Le et al., 2022; Mastana, 2023). Businesses generally implemented SST, such as Automatic Teller Machines (ATMs), online banking, and self-service kiosks, to increase quality, competence, efficacy, and efficiency by offering clients cutting-edge services (Kelly, Lawlor & Mulvey, 2017). The electricity supplier in Malaysia uses self-service kiosks to provide essential services like electric bill payments outside business hours. The self-service kiosks are dispersed throughout Malaysia's states at the headquarters and branches of major energy providers. The company has included the self-service kiosk in its list of touchpoints to engage with clients. Several businesses offer SSTs connected with multi-channel touchpoints to benefit from faultless customer service, enhancing customer satisfaction and loyalty and making it simpler to reach new client segments (Curran & Meuter, 2005; Musso, 2010).

According to evidence from the literature, research on technology-based service quality measurement is overly concentrated on the internet, and there are still no systematic mechanisms for assessing consumer behavior for SST service quality (Hilton, Hughes, Little & Marandi, 2013; Shiwen, Kwon & Ahn, 2022; Verhoef, Lemon & Parasuraman, 2009; Wei, Torres & Hua, 2017). Using the SERVQUAL model created by Parasuraman et al. (1988), numerous earlier works have investigated the effect of service quality on customer satisfaction and loyalty (Boon-itt, 2015; Chang & Wang, 2016; Fernandes & Pedroso, 2017; Su, Nguyen, Nguyen, Luu & Nguyen-Phuoc, 2022). Although traditional human interaction-based and virtual internet-based services do not communicate well with integrated SSTs, Lee and Yi (2022) have advised academics and practitioners to look at SST service quality consumer expectations. Consequently, this study aims to determine whether there is a discrepancy between residential consumers' expectations and real experiences regarding key aspects of self-service kiosks offered by a leading Malaysian utility service provider.

Self-service Kiosk's

According to Abdul Hamid (2021), self-service kiosks, also known as interactive kiosks, are small, independent structures used to display information or facilitate operations. In addition, self-service kiosks are sometimes referred to as information kiosks. Self-service kiosks invented moving technologies to improve services throughout a new period marked by rapid societal development (Algarawi & Khan, 2021). Customers do not need to take time from work to acquire the required services because self-service kiosks may typically be accessed at any time, day or night. The self-service kiosk has emerged as a practical instrument for resolving uncertainties in the new service setting and meeting the increasing customer demand in various industries (Abdul Hamid, 2021). For instance, public sectors are fast embracing self-service kiosks because they know these devices can transform service delivery by enhancing efficiency, experience, burden alleviation, and cost, and increasing customer satisfaction (Algarawi & Khan, 2021; McGrath & Astell, 2017). Because of these factors, self-service terminals increasingly play a significant role in customers' lives. Many companies are using self-service kiosks as one of their primary communication channels.

Since Maybank launched the country's first automated teller machine (ATM) in 1981, SST has been ingrained in the culture of Malaysia. The vast daily transactional activities of Malaysia's banking industry are supported by self-service kiosks offering services such as cash deposit machines and check deposit machines. In the context of smart services, SST refers to providing end-user interfaces for the sensing, actuation, processing, and communication of customer requests. Information can be processed at self-service kiosks, which are also interactive and open to the public (Meuter et al., 2000). Information kiosks, automated teller machines, vending machines, and similar devices fall under the "self-service kiosk." Regarding Malaysia's most prominent energy provider, in 2013, they began offering a self-service kiosk primarily intended for customers to pay their electric bills. Furthermore, there have only been a small number of studies, such as the one done by Rahmat (2016), that have evaluated the effect that self-service kiosks have on the experiences and satisfaction of customers. On the other hand, there are a lot of studies on self-service kiosks, also known as SSTs, in the retail, banking, and tourism sectors.

Customers' Expectation and Real Experiences using the SST Self-service Kiosk

The research on customer expectations and actual experiences is crucial because it will lead to the management of customer experiences and the development of customer satisfaction

and loyalty in many service industries (Agarwal, Singh & Thakur, 2013, Park, Lehto & Lehto, 2021; Siagian, 2020). Companies must always review the service quality of their SSTs to satisfy client expectations and continue to provide the best service possible (Agarwal et al., 2013). The purpose of evaluating service quality is to enhance services, identify problems, and increase customer happiness. According to Parasuraman, Zeithaml and Berry (1985), service quality is a global evaluation of service excellence. Numerous past studies have examined the service quality paradigm using a variety of scales, including SERVQUAL (Parasuraman, Zeithaml & Berry, 1988), SERVEPREF (Cronin & Taylor, 1992), WebQual Index (Barnes & Vidgen, 2001), SITEQUAL (Yoo & Donthu, 2001), E-S-QUAL (Parasuraman, Zeithaml & Malhotra, 2005), eTransQual (Bauer et al (Ding et al., 2011)). Yet, consumer opinions of service quality vary by self-service type (Curran & Meuter, 2005). In light of this, the researcher must employ the appropriate model to evaluate the service quality of the interaction channels offered by service providers.

The SSTQUAL model, developed by Lin and Hsieh (2011), was employed in the current study to evaluate the SST self-service kiosk service quality. Many studies spanning businesses and consumer behaviors have used this paradigm (e.g., Considine & Cormican, 2016; Orel & Kara, 2014; Kumar & Mittal, 2015; Iqbal, Hassan & Habibah, 2018; Park et al., 2021). The SSTQUAL comprises 20 components and seven aspects: functionality, enjoyment, security, design, assurance, convenience, and customization (Lin & Hsieh, 2011). However, one dimension—assurance—has been left out of this study because the items in this variable did not correspond to the study's focus on Malaysia's energy service provider setting. In connection with this, a recent study by Thenahandi (2023) noted that a few self-service kiosk components, such as convenience and design, significantly differ between customers' expectations and actual experiences. Similar findings could also be found in the past work of Mary, Sharma, Malviya, Hamida, and Zala (2023). The large discrepancy between customers' expectations and actual experiences concerning kiosk design was also noted by Abdul Aziz, Harun, Baharom, Kamaruddin and Zamin (2023). Previous studies by Xu, Jeong and Baiomy (2022) and Wei et al. (2017) also showed that customers' expectations and actual experiences differ significantly regarding the convenience of the kiosk. Wei et al. (2017) also demonstrated that a kiosk's functioning significantly impacts residential clients' expectations and real experiences. In their study, Park et al. (2021) also discovered a significant gap between customers' expectations and actual experiences regarding enjoyment and functionality.

In addition to the SSTQUAL adaptation, this study uses the gap analysis model to investigate the disparity between the expectations of customers and their actual experiences when it comes to residential customers who use the self-service kiosk that a prominent energy company in Malaysia provides. The Gap Analysis methodology, developed by Parasuraman et al. (1985), is applied to determine the degree to which customer expectations differ from actual service delivery. The findings of this study will assist the energy company in improving its self-service kiosk and better managing customer experiences, both of which will increase customer satisfaction. Empirical research conducted in the past has demonstrated that the level of service provided by a self-service kiosk is directly related to the level of customer satisfaction achieved by the business. This is because the level of service provided bridges the gap between the experiences that customers have had using the self-service kiosk and the expectations that (Bakar, Tabassi, Razak & Yusof, 2012; Gonu, Agyei, Richard & Asare-Larbi, 2023; Iqbal et al., 2018; Vakulenko, Oghazi & Hellstrom, 2019). In addition, previous studies that have been validated have noted that businesses that used SST-based service channels were capable of increasing both their productivity and their customers' contentment (Orel & Kara, 2014; Demoulin & Djelassi, 2016). Additional research, such as the ones conducted by Bogicevic, Bujisic, Bilgihan, Yang and Cobanoglu (2017), Lin and Hsieh (2011), and Iqbal et al. (2018), have explained that customer satisfaction and service quality are highly linked from the standpoint of consumer technology interface. For example, Bogicevic et al. (2017) investigated the perspectives of airport SSTs and discovered that their presence has a favorable impact on the pleasure of travelers. Iqbal et al. (2018) discovered that factors such as service quality, corporate image, and customer loyalty partially mediated the relationship between customer satisfaction. Hence, the gap between consumers' expectations and their real experiences is tied to both the quality of service SST provides and their level of customer satisfaction.

Consumers nowadays favour SSTs that provide hassle-free, private, simple, user-friendly services, rapid response to enquiries, and instant service delivery. In order to boost customer satisfaction and loyalty, IT service consumers must implement the most up-to-date design and technology of SSTs, including such self-service kiosks, in accordance with the consumers' preferences (Parasuraman et al., 2005; Tam & Thuy, 2023). The design of a kiosk's user interface supports customers in identifying the kiosk's functional elements, which influences its efficiency and effectiveness (Galdolage, 2020). Even though the kiosks are intended to deliver consumer-generated services, employee help is still required and training is required. It enhances client satisfaction and prevents system faults (Porter, 2001).

METHODOLOGY

A total of 171 energy residential consumers in Klang Valley, Malaysia, were involved in this study. All of them are selected using a stratified sampling technique from the sampling frame shared by the utility company. The respondents answered the online survey question (using the survey sparrow platform) about their expectations and actual experiences using the self-service kiosk provided by the utility company from mid of June to August 2022. The survey was e-mailed to respondents' e-mail addresses, and to increase the response rate, the researchers placed several e-mail reminders for respondents. The respondents had to answer a screening question to ensure they had experienced using the self-service kiosk before they could proceed with the survey question. The questionnaire was structured in two distinctive sections. The first part is about the expectations and real experiences using the self-service kiosk, which consists of 19 items and is measured with a 5-point of Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). All items were adapted from Iqbal et al. (2018). The second part, consisting of 7 items (gender, age, race, education level, marital status, job position, and monthly income), captures the characteristic of respondents. Four experts opinions from academics and utility managers were used to validate the questions. On top of that, 20 pre-test participants were also used to validate the survey questions. The input obtained from these procedures is used to improvise the survey question. The data was then analysed using the IBM Statistical Package of Social Science (SPSS) for Windows, Version 26.0. Frequency, descriptive, reliability analysis, and paired-samples t-test are the main analysis used in this study.

RESULTS AND DISCUSSION

The results of this study are separated into three sections: respondents' profiles, descriptive and reliability reports, and analysis from paired-samples t-test methods. Table 1 shows the sample characteristics of the demographic profile of 171 residential customers, including information about their gender, age, race, education level, marital status, job position, and monthly income. The majority of the respondents surveyed were female (55.6%), and 44.4% were male. Moreover, most of them were married (73.1%). The largest age group was 31- 40-year-olds (33.3%), followed by below 30-year-olds (28.1%). In terms of race, the great majority of respondents were of Malay ethnicity (83.6%). The highest education degree was a Bachelor's Degree (64.3%), and the largest occupational position was professional (24.6%). The largest monthly income group was RM 12,001 - RM 15,000 (32.2%), followed by RM 9,001 – RM12,000 with 23.4%.

Table 1. Sample characteristic

Profile	Item	Frequency (N = 171)	Percent (%)
Gender	Male	76	44.4
	Female	95	55.6
Age	30-year-old and below	48	28.1
	31-40 year-old	57	33.3
	41-50 year-old	40	23.4
	51-60 year-old	18	10.5
	More than 60 year-old	8	4.7
Race	Malay	143	83.6
	Chinese	15	8.8
	Indian	13	7.6
Education level	Malaysian Higher School Certificate/ Malaysian Certificate of Education and below	7	4.1
	Diploma	26	15.2
	Bachelor's Degree	110	64.3
	Master's or PhD	27	15.8
	Other (Professional Certification)	1	0.6
Marital Status	Single	42	24.6
	Married	125	73.1
	Divorced	2	1.2
	Widowed	2	1.2
Job Position	Professional	42	24.6
	Top Management	24	14.0
	Middle Management	38	22.2
	Supervisory	7	4.1
	Administrative or Clerical	12	7.0
	Technical	13	7.6
	Retiree	6	3.5
	Entrepreneur	20	11.7
Other (e.g., Broker, Farmer, Student, Security)	9	5.3	
Monthly Income	Less than RM 3,000	27	15.8
	RM 3,000 - RM 6,000	17	9.9
	RM 6,001 - RM 9,000	16	9.4
	RM 9,001 - RM 12,000	40	23.4
	RM 12,001 - RM 15,000	55	32.2
	More than RM 15,000	16	9.4

Source: Prepared by the authors (2023)

Table 2 displays the mean values (univariate and multivariate) for the constructs and items applied in this study. The indicators with the highest mean score of customers' expectations (4.146) were 'the service process of the self-service kiosk is clear' and 'the layout of the self-service kiosk is aesthetically appealing' were derived from the functionality and design constructs. On the other hand, 'I can complete my service smoothly at a self-service kiosk' is the item with the highest mean score of customers' real experiences (4.070). This item was from a functionality variable. Furthermore, the lowest score of customers' expectations (3.965) pertained to the construct functionality, with an indicator of 'each service item/function of the self-service kiosk is error-free'. With regards to customers' real experiences, the same

item was recorded with the lowest mean score (3.819). Design and customization were recorded as the highest and the lowest mean score values of customers' expectations using self-service kiosks, with 4.126 and 4.045, respectively. Besides, functionality (3.985) and design (3.921) were the variables associated with the highest and the lowest mean score values of customers' real experiences using self-service kiosks.

Additionally, Table 2 also provides the standard deviation scores for factors and individual items applied in this study. No single item in this study was reported with standard deviations greater than 1.0. All standard deviation scores of customers' expectations and real experiences were below 1 on a 5-point scale which is relatively small and indicates that the responses are reasonably close to the sample's mean scores. Hair, Money, Samouel and Page (2007) mentioned that if the score for an estimated standard deviation is below 1.0 or higher than 3.0, they are considered small and large dispersions, respectively. On average, design (customers' real experiences) is quite weak ($M = 3.921$, $SD = .688$). Similarly, the average customization (customers' expectations) is also quite weak ($M = 4.045$, $SD = .766$). On another note, on average, the design of self-service kiosks (customers' expectations) is quite high ($M = 4.126$, $SD = .789$). In addition, the functionality of the kiosk in customers' actual experiences is rated highly ($M = 3.985$, $SD = .598$). In general, the findings of this study are consistent with those found in previous research carried out by Park et al. (2021).

Table 2. Measures of the constructs and descriptive statistics

Variable/Item	Expectations		Real experiences	
	Mean	SD	Mean	SD
Functionality	4.081	0.738	3.985	0.598
I can complete my service at a self-service kiosk in a short time	4.111	0.800	4.029	0.715
The service process of the self-service kiosk is clear	4.146	0.809	4.029	0.655
Using the self-service kiosk requires little effort	4.041	0.863	3.977	0.719
I can complete my service smoothly at a self-service kiosk	4.140	0.856	4.070	0.732
Each service item/function of the self-service kiosk is error-free	3.965	0.900	3.819	0.831
Enjoyment	4.053	0.707	3.943	0.645
The operation of the self-service kiosk is interesting	4.111	0.815	4.035	0.766
I feel good being able to use the self-service kiosk	4.053	0.806	4.018	0.747
The self-service kiosks have interesting additional functions	3.982	0.815	3.830	0.744
The self-service kiosk provides me with all relevant information	4.064	0.834	3.889	0.785
Secure/privacy	4.064	0.794	3.924	0.722
I feel safe in my transactions with the self-service kiosk	4.094	0.849	3.971	0.770
A clear privacy policy is stated when I use the self-service kiosk	4.035	0.860	3.877	0.828
Design	4.126	0.789	3.921	0.688
The layout of the self-service kiosk is aesthetically appealing	4.146	0.824	3.936	0.745
The self-service kiosk appears to use up-to-date technology	4.105	0.848	3.906	0.746
Convenience	4.101	0.715	3.939	0.701
The self-service kiosk has operating hours convenient to customers	4.099	0.795	3.936	0.805
It is easy and convenient to reach and use the self-service kiosk	4.088	0.803	3.930	0.801
The self-service kiosks of the Kedai Tenaga are at convenient spaces	4.117	0.803	3.953	0.758

Customization	4.045	0.766	3.938	0.689
The self-service kiosk understands my specific needs	3.971	0.815	3.889	0.731
The self-service kiosk has my best interests at heart	4.058	0.824	3.965	0.774
The self-service kiosk has features that are personalized for me	4.105	0.819	3.959	0.746

Note: N = 171 for all items; All items are measured using 5-point Likert scale; SD = Standard Deviation; The minimum and maximum level of each variable is reported at 1 and 5, respectively.

Source: Prepared by the authors (2023)

Table 3 displays the results of the reliability test. The results depicted in Table 3 indicate that the five variables (customers' expectations), namely functionality, enjoyment, design, convenience, and customization, have shown a very good internal consistency with Cronbach Alpha coefficient values reported at 0.921, 0.887, 0.880, 0.874, and 0.928 respectively. These coefficients are considered very good because the internal consistency scale is greater than 0.850 (Pavot, Diener, Colvin & Sandvik, 1991). Despite this, one construct, namely secure/privacy is reflected as good internal consistency with a value of 0.843. On top of that, only four variables (customers' real experiences), such as functionality (0.875), enjoyment (0.869), convenience (0.867), and customization (0.908), have recorded very good internal consistency with Cronbach Alpha coefficient values over 0.850.

Table 3. Reliability results

Variables	Cronbach's Alpha (Expectations)	Cronbach's Alpha (Real experiences)
Functionality	0.921	0.875
Enjoyment	0.887	0.869
Secure/privacy	0.843	0.773
Design	0.880	0.823
Convenience	0.874	0.867
Customization	0.928	0.908

Source: Prepared by the authors (2023)

Table 4 shows the paired-samples t-test results for this current study. The results illustrated in Table 4 show that nine items significantly differ between customers' expectations and real experiences. Specifically, no single item from the functionality factor has a significant difference. Two items from the enjoyment factor have a statistically significant decrease in customer effort scores from expectations (M = 3.982, SD = 0.815; M = 4.064, SD = 0.785) to real experiences (M = 3.830, SD = 0.744; M = 3.889, SD = 0.785), $t(170) = 2.223; 2.374, p < .0005$ (two-tailed). The eta squared statistic for both items (0.028 and 0.032) indicated a small effect size. Similarly, one item from the secure/privacy factor and two from the design variable also recorded a small effect size. The same results can also be associated with the three items of the convenience factor and one from the customization variable. In short, the small effect size is not only reflected to univariate results but also linked to multivariate results. For

example, the convenience factor has a statistically significant decrease in customer effort scores from expectations (M = 4.101, SD = 0.715) to real experiences (M = 3.940, SD = 0.701), $t(170) = 2.433$, $p < .0005$ (two-tailed).

Table 4. Paired-samples t-test results

Item	E*		RE*		t	Sig. (2-tailed)	Eta-squared
	Mean	SD	Mean	SD			
Functionality	4.081	0.738	3.985	0.598	1.640	0.103	
I can complete my service at a self-service kiosk in a short time	4.111	0.800	4.029	0.715	1.202	0.231	
The service process of the self-service kiosk is clear	4.146	0.809	4.029	0.655	1.838	0.068	
Using the self-service kiosk requires little effort	4.041	0.863	3.977	0.719	0.954	0.342	
I can complete my service smoothly at a self-service kiosk	4.140	0.856	4.070	0.732	1.007	0.315	
Each service item/function of the self-service kiosk is error-free	3.965	0.900	3.819	0.831	1.831	0.069	
Enjoyment	4.053	0.707	3.943	0.645	1.778	0.077	
The operation of the self-service kiosk is interesting	4.111	0.815	4.035	0.766	1.080	0.282	
I feel good being able to use the self-service kiosk	4.053	0.806	4.018	0.747	0.489	0.626	
The self-service kiosks have interesting additional functions	3.982	0.815	3.830	0.744	2.223	0.028	0.028
The self-service kiosk provides me with all relevant information	4.064	0.834	3.889	0.785	2.374	0.019	0.032
Secure/privacy	4.064	0.794	3.924	0.722	2.285	0.024	0.029
I feel safe in my transactions with the self-service kiosk	4.094	0.849	3.971	0.770	1.833	0.068	
A clear privacy policy is stated when I use the self-service kiosk	4.035	0.860	3.877	0.828	2.302	0.023	0.030
Design	4.126	0.790	3.921	0.687	3.271	0.001	0.059
The layout of the self-service kiosk is aesthetically appealing	4.146	0.824	3.936	0.745	3.029	0.003	0.051
The self-service kiosk appears to use up-to-date technology	4.105	0.848	3.906	0.746	3.029	0.003	0.051
Convenience	4.101	0.715	3.940	0.701	2.433	0.016	0.034
The self-service kiosk has operating hours convenient to customers	4.099	0.795	3.936	0.805	2.417	0.017	0.031
It is easy and convenient to reach and use the self-service kiosk	4.088	0.803	3.930	0.801	2.060	0.041	0.024
The self-service kiosks of the Kedai Tenaga are at convenient spaces	4.117	0.803	3.953	0.758	2.184	0.030	0.027

Customization	4.045	0.766	3.938	0.690	1.841	0.067	
The self-service kiosk understands my specific needs	3.971	0.815	3.889	0.731	1.303	0.195	
The self-service kiosk has my best interests at heart	4.058	0.824	3.965	0.774	1.453	0.148	
The self-service kiosk has features that are personalized for me	4.105	0.819	3.959	0.746	2.301	0.023	0.030

Note: E* = expectations; RE* = Real experiences; df = degrees of freedom (170).

Source: Prepared by the authors (2023)

The findings from this study align with the past work of Thenahandi (2023), who mentioned that a few elements of self-service kiosks, like convenience and design, have significant differences between customers' expectations and real experiences. On another note, in their study, Abdul Aziz et al. (2023) also proved the significant difference between customers' expectations and real experiences regarding kiosk's design. Studies from Xu et al. (2022) and Wei et al. (2017) also revealed that the kiosk's convenience significantly differs between the customers' expectations and real experiences. Their study also demonstrated the difference between customers' expectations and real experiences in the kiosk's enjoyment dimension. However, the current results did not support the findings of Xu's work. On another note, there is no significant difference between residential customers' expectations and real experiences in functionality construct. It did not support the results of past studies by Wei et al. (2017) and Park et al. (2021). Another variable that demonstrates the insignificance difference is enjoyment. Thus, it is not in line with the past work of Park et al. (2021), who revealed a significant difference in enjoyment with customers' expectations and actual experiences.

CONCLUSION

In this digital age, service providers are adopting new technologies to provide fast and easy customer service to communicate with their numerous types of customers. The current research aims to leverage the gap analysis model to evaluate the difference between residential customers' expectations and real experiences using the SST self-service kiosk provided by a leading energy provider in Malaysia. Additionally, this study has incorporated six dimensions of SSTQUAL, namely, functionality, enjoyment, secure/privacy, design, convenience, and customization, to measure the quality of self-service kiosk service. Findings show three dimensions of self-service kiosks, such as secure/privacy, design, and convenience, significantly differ between customers' expectations and real experiences. Nevertheless, the effect sizes measured by eta squared demonstrate small effect sizes. On another note, the

remaining dimensions, like functionality, enjoyment, and customization, have no significant difference between customers' experiences and real experiences. The results also reveal that a few individual items from five self-service kiosk dimensions (enjoyment, secure/privacy, design, convenience, and customization) have shown significant differences between customers' experiences and real experiences. For instance, two items from the enjoyment construct reported significantly differ from residential customers' expectations and real experiences. However, all individual items have significant differences associated with small effect sizes.

This study provides practical and managerial insights into customer experience and self-service kiosk demands. Accordingly, service providers must focus on understanding how technological advancements affect customer experience. The service provider must also maintain high security and privacy standards to build trust in the technology. When SST service quality, especially on self-service kiosks, meets customers' expectations and experiences, they are more satisfied with the interaction channel provided by the firms. By monitoring and evaluating SSTs, the service provider can make positive changes and improve customers' self-service kiosk experiences, which will facilitate customer satisfaction, particularly among residential customers. On another note, future research should be inspired by this study's limitations. First, the study was limited to a leading electricity provider in Malaysia and only focused on the residential customers' segmentation. Thus, future research may include multiple companies in the energy sector and extend the customer segments. Moreover, other SST types and constructs should also be included in future research. Future studies must also consider factors that can enhance and influence customer experience using the self-service kiosk. Finally, the next study should discover the future needs of self-service kiosks among residential customers so that the firm can improve its services and generate customer satisfaction.

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