The effect of service innovation on service loyalty in post offices

Shaian Kiumarsi*
Graduate School of Business (GSB),
Universiti Sains Malaysia (USM),
11800 USM, Malaysia
Email: shaian@usm.my
*Corresponding author

Salmi Mohd Isa
Graduate School of Business (GSB),
Universiti Sains Malaysia (USM),
11800 USM, Malaysia
Email: salmi.mohd.isa@usm.my

K. Jayaraman
Faculty of Business and Law,
Taylor’s University,
47500, Subang Jaya, Selangor, Malaysia
Email: Jayaraman.Krishnaswamy@taylors.edu.my

Azlan Amran
Graduate School of Business (GSB),
Universiti Sains Malaysia (USM),
11800 USM, Malaysia
Email: azlan_amran@usm.my

Shiva Hashemi
School of Housing, Building and Planning (HBP),
(USM), 11800 USM, Malaysia
Email: shhashemi4@gmail.com

Abstract: Globally, post offices are service-oriented organisations which perform many social obligations towards public services. However, the empirical literature on post offices’ service innovation is relatively new. Therefore, this study examines the post offices’ service innovation that ensures their long-term sustainability. It investigates the influence of customer satisfaction and brand loyalty on the link between the predictors of service innovation and service loyalty. It conducts an enormous primary survey
consisting of 123 users of post offices in Malaysia. The study finds that service innovation has a direct positive effect on service loyalty, but service quality has no impact on service loyalty. Remarkably, it shows that service quality influences service loyalty through customer satisfaction. The findings of this study will assist the post offices in their efforts to modernise their services within the limited available resources to satisfy the needs of the society in daily transactions.

**Keywords:** service innovation; service quality; customer satisfaction; service loyalty; post office.


**Biographical notes:** Shaian Kiumarsi is currently a Teaching Fellow at the Graduate School of Business, Universiti Sains Malaysia, where he earned his PhD. His Bachelor degree was in computer software engineering, while he obtained Master’s in Business Administration with a speciality in service science, management and engineering. He is interested in business IT, service innovation, marketing, energy and tourism. His current research focus is on innovation-business information technology. He has several journal articles and conference presentations to his record. He has eight years of educational experience, as well as sufficient work experience.

Salmi Mohd Isa is an Associate Professor and the Deputy Dean of Academic of the Graduate School of Business, Universiti Sains Malaysia. Her research examines the links between marketing, corporate social responsibility and ethics, service innovation, neuromarketing and tourism marketing. For the past five years, her efforts have centred on sustainable development associated with sustainable marketing and food security. Her research is, in part, focused upon educational development and the creation of linkages between academia, industry and communities.

K. Jayaraman has 32 years of teaching, research and consultancy experience in operations management and for the last three years, he has been attached to the Faculty of Business and Law, Taylor’s University, Malaysia. He is specialised in quantitative research methods and has executed a number of major projects for national and international organisations. His areas of research include operations management, service innovation in marketing, quantitative methods, Lean Six-Sigma manufacturing and tourism and transportation. He has published more than 95 research articles in international and national journals. He has guided seven PhD candidates of the Universiti Sains Malaysia, Penang and currently guiding eight research scholars for PhD in Management/Business at Taylor’s. He has been serving as a Visiting Professor for numerous universities all over.

Azlan Amran is the Dean and a Professor at the Graduate School of Business, Universiti Sains Malaysia, Penang. He is also an Associate Fellow for the Center of Global Sustainability Studies. He is an active researcher in the area of sustainability reporting and sustainability management.

Shiva Hashemi had received her Master in Tourism Development in the School of Housing, Building and Planning at Universiti Sains Malaysia, in 2015 and is now a PhD in Tourism Business and Marketing in School of Housing, Building and Planning at USM, Malaysia. Her research interests include convention
tourism, culinary tourism, hospitality, event as well as tourism business and marketing. Her research accomplishments in the past five years are demonstrated in several articles published in international journals and presented at international conferences.

1 Introduction

The delivery of efficient and high-quality service is very important in the service sector (Meesala and Paul, 2018). The variables used for evaluation comprise service quality and customers' satisfaction, which are correlated with the judgements of customers regarding a product or service (Ograjenšek and Gal, 2012). Thus, Velázquez et al. (2011) noted that improvement in profitability resulted from enhanced service quality and customers' satisfaction due to increased customers' loyalty. This is considered as a construct together with multi-dimensional (e.g., attitudinal and behavioural dimensions). This study begins by describing the concept of service loyalty and thereafter differentiates between service quality and customers' satisfaction. It also proposes a meditative model that links service quality and service loyalty through customers' satisfaction (Caruana, 2002). Empirical research on post offices' service loyalty is relatively new. According to Huarng and Yu (2011), the improvement in information and communication technology leads to innovation of service as well as the rapid development of technology.

Moreover, Snyder et al. (2016) posited that service innovation serves as an engine of renewal in the society and provides the necessary element for the advancement of the service sector. Witell et al. (2016) also noted that service innovation research abounds in many disciplines, as it had made fundamental contributions to management, marketing and operations research. According to Isa et al. (2017), service innovation represents the basic of all competitive advantages and the key which enhances the capacity of industry to be vastly competitive, gain new customers as well as stay relevant in the contemporary business world. There is competition among products to satisfy customers’ requirements due to modern advanced technologies. Hence, service providers are challenged to engender innovation in their services (Danaher et al., 2001). It is necessary to provide customers with high-quality service. Due to the rapid expansion of services over time, several companies are focusing their attention on technology and services innovation (Bitner and Brown, 2006).

Although Ryu and Lee (2017) documented that technology occupies a central position in service innovation, but the mechanism through which service innovation influences service loyalty has not been thoroughly explored (Parasuraman and Grewal, 2000). According to Kiumarsi et al. (2015b), the development of post offices has been neglected by the governments in both undeveloped and developing countries. Hence, the advancement in information and communication technology impedes the only trustworthy means to send and receive services. In order to distinguish their products from other competitors, post offices are needed to offer their services with excellent innovation. Consequently, this study seeks to provide insights into the mediating role of customer satisfaction on the impact of service innovation on service loyalty. Evidence from the study indicates that customers’ satisfaction mediates the influence of service quality on service loyalty.
2 Review of literature

2.1 Service quality

Generally, service quality is the provision of services to consumers and it depends on their judgements (Qaiser Danish et al., 2018). Producers who want to attain competitive purposes should provide high quality services to customers (Kemp and Rotmans, 2005). Thus, service quality originates from the cognitive assessment of services by the customers (Chiou, 2004) and it has direct influence on customers’ loyalty (Lai et al., 2009). According to Wilson et al. (2012), service quality connotes a global attitude or judgement which is associated with service superiority. For the customers to derive optimum benefits, post offices should directly implement their services (Ltifi and Ghardi, 2012). Moreover, Lenka et al. (2009) investigated whether the service quality of Indian commercial banks increases customers’ satisfaction, which ultimately leads to customers’ loyalty. There are widespread discussions on service quality and customers’ satisfaction in the literature. Moth constructs posited that service quality and customers’ satisfaction are measured as a gap, with a gap model. Basically, a gap is the difference between a customer’s expectation (what he wants) and the customer’s perception (what he gets). According to Gunasekaran et al. (1996), an increase in quality decreases cost, but enhances productivity. In their research, Siringoringo and Thaeras (2018) developed the characteristics of mobile cell phones based on the perceived quality of consumers about mobile cell phones. Kiumarsi et al. (2014) also stated that some vital characteristics of post offices regarding service quality and service innovation include operations and cost effectiveness in terms of implementation of information technology. Thus, it is necessary to minimise the inconvenience associated with service orientation such as long length of queue, waiting time and adequate publicity of post office services.

2.2 Service innovation

Service innovation refers to a new or considerably enhanced service or product offering and it is not often restricted to a modification in the features of the service or product itself (Hertog, 2000). According to Kindström and Kowalkowski (2014), the essence of the entire service innovation is to uniquely integrate the resources and capabilities. Hence, service innovation could be likened to the making of new value propositions through the development of existing or generating new resources and/or practices (Skålén et al., 2015). Thus, Chattopadhyay and Shah (2014) revealed the influence of service innovation on the performance and innovations of business in service marketing. Furthermore, service innovation represents the power of competitiveness in an attempt to attain long-term competitive differentiation (Jiřinová and Kolis, 2017; Ferasso et al., 2017; Yunus, 2017). Serpe et al. (2017) recommended a method to appraise a large number of innovation activities which are helpful in guiding companies to implement service innovation in their crucial structure of decision-making.

Generally, the processes of service innovation are often observed in postal service rather than service innovation. Pedersen and Nysveen (2010) mentioned a typology of service innovation which was often referred to or documented in Hertog (2000). Zakerian et al. (2017) recommended that innovation in marketing occupies a central position in the present competitive market, since it enhances the comprehension of the influence of several marketing practices on innovative marketing. Moreover, service innovation is
regarded as a change in the customer’s role as well as the process of value-creation (Michel et al., 2008). Abdallah et al. (2016) showed that innovation has significant and positive effect on the entire operational performance. It was also revealed that innovation is directly related to customer satisfaction. Accordingly, the feedbacks of users and non-users of the post offices are necessary for the assessment of the prevailing service innovation within the context of postal service. Postal and courier services’ innovations are necessary for their daily survival. Consequently, since digital and physical communications could reinforce each other, the post and courier sector require an integrated development technique. YongQiang et al. (2010) identified some innovations which are applicable to the logistic services, including the postal and courier services. Wu (2014) conducted a study on service innovation for digiservice on loyalty where Bitner and Brown (2006) stated that the rapid evolution of service innovation over time emphasised the need for companies to change their focus from technology to service innovation.

2.3 Customer satisfaction

The concept of customer satisfaction has been consistently used as an appraisal of emotion. It also denotes customers’ psychological response regarding their previous experiences as they compare between expected and perceived performances (Shankar et al., 2003). Moreover, Kim et al. (2016) noted that customer satisfaction represents the purpose of business due to its feasible influence on service sector’s purchasing behaviour and profits. Hence, customer satisfaction remains a vital marketing concept (Kurniawan, 2010) since it is a business term that indicates the degree in which customers are satisfied about products or services (Naveed et al., 2012), as well as an affirmative feeling obtained by a customer after utilising a particular good or service (Delafrooz et al., 2013).

Hence, customer satisfaction is progressively considered as a fundamental tool for business achievement, with an increasing understanding that customer satisfaction is necessary to sustain the market in Malaysia (Nawi and Al-Mamun, 2017). Besides, Jiang and Zhang (2016) stated that service quality variable remains a significant variable that influences the levels of customer satisfaction. Similarly, Kasiri et al. (2017) posited that customer satisfaction is significantly associated with service loyalty. Literally, customers who are satisfied with particular services are likely to be loyal to the service or business. Therefore, customer satisfaction is essential because satisfied customers are capable of bringing high-margin profits share to the business (Chowdhury, 2014). Accordingly, this present study considers customer satisfaction as the need or demand in the context of post office.

2.4 Service loyalty

Service loyalty portrays a severe challenge to many companies in this modern era (Liu and Khalifa, 2003). It has been argued that service loyalty’s pursuit has received tremendous attention of both marketing managers and scholars (Punjakajornsak, 2018). Basically, service loyalty refers to the extent to which a customer displays his or her recurring purchasing behaviour for a provider of a specific service, has a positive attitudinal disposition for the provider, as well as considers utilising only the provider whenever there is a need for the service (Gremler and Brown, 1996). Remarkably, in
relationship marketing themes, service loyalty continues to grow among marketing practitioners and scholars (Gupta and Sahu, 2015). According to Lenka et al. (2009), it is more costly to attract new customers than to retain existing ones. Loyal customers usually possess emotional attachment to products or services and they are not often attracted to any other brands even if the brand offers a better deal.

The primary focus of the research was on the behavioural perspective of loyalty (Bodet, 2008), while disregarding what happened in the mind of the customers (Caruana, 2002). Afterwards, these scholars gave their attention to the other potential elements of loyalty. The concept of loyalty was further extended to include intangible products by Gremler and Brown (1996) whose definition of service loyalty entails three particular constituents of loyalty such as the purchase, attitude and cognition. Kamat et al. (2017) conducted a comparative study of hotel with hospitals, retail banking and retail services industries in order to investigate the link between service quality and loyalty. Ltifi and Ghardi (2012) noted that the denotation of action loyalty is accurate via action. Hence, post offices have close competitors such as internet and other providers of global information such as the Google, Facebook, Yahoo, Twitter as well as other private courier services. A switch by post office users to any of these sources either partially or fully implies absence of loyal to post office. Apparently, the users who utilise post office services, off and on, could still be loyal because they have faith in the post office. Conversely, an individual who does not utilise post office services at all and has no faith in post office, cannot be regarded as a post office loyal customer (Kiumarsi et al., 2015b).

3 Underlying theories

This section focuses on the conceptualisation of the variables highlighted in Sections 2.1 to 2.4. It also presents the management theory that underpins the framework of the research. Thus, the theory of planned behaviour (TPB) by Ajzen (1985, 1991) and innovation diffusion theory (Rogers, 2003) support the framework. Nonetheless, the conceptual framework in this present study has been considered in the context of post office with a view to identifying the available challenges and opportunities in the sector. TPB was originally developed based on the theory of reasoned action (TRA) (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975) that was designed to describe virtually every human behaviour. Evidences have shown that it has been successful in the prediction and explanation of human behaviours in diverse application settings (Davis, 1989). Broadly speaking, empirical evidences support the theory, as it has been proved to be valuable in past study by Boonlertvamiich (2011). Basically, TPB hypothesises that the best determinant of an individual behaviour is intention. Accordingly, an individual who possesses a strong intention is most likely to be involved in a behaviour compared to the one who has low intention. Within the context of this study, the TPB posits that customers’ satisfaction will mediate the relationship between service quality and service loyalty. Caruana (2002) examined how service loyalty is influenced by service quality using customers’ satisfaction as the mediator. Nevertheless, the above study recommended the need to conduct further research in related area. Furthermore, Shi et al. (2014) investigated the relationship among service quality, customers’ satisfaction and loyalty within six casinos context in Macau to offer membership to customers. In the context of post office, Ltifi and Ghardi (2012) investigated the relationship between postal services quality and customers’ loyalty using customers’ satisfaction as a
mediating variable (MV). Evidence from the study revealed the presence of causal relationships among service quality, customer satisfaction and service loyalty.

4 Conceptual research frameworks

The main purpose of this study is to examine the influence of service quality and service innovation on customer satisfaction and service loyalty in post offices. Thus, it seeks to determine the explanatory model regarding the impact of post office services quality and service innovation on customer satisfaction and service loyalty. Finally, the above-mentioned study showed the presence of connection between service quality, service innovation as well as customer satisfaction and loyalty.

The conceptual framework was developed from the variables explained in Sections 2.1 to 2.4 as shown in Figure 1. In the framework, the independent variables (IVs) are service quality and service innovation, the dependent variable (DV) is service loyalty, while customer satisfaction is the MV. The conceptual framework is employed to determine the direct effects of the link between service quality and the constructs of service innovation on service loyalty in the context of post offices. Moreover, it also examines the indirect effects of customers' satisfaction on the link between the constructs of service quality, service innovation and service loyalty. In this study, individual customers are the unit of analysis.

Figure 1 shows a conceptual framework which investigates the direct relationship between the IVs (service quality and service innovation) and the DV (service loyalty). Additionally, it also determines the mediating role of customer satisfaction in the link between service quality/service innovation and service loyalty. Based on the model, the following hypotheses were developed and tested with Smart-PLS:

H₁ Service quality has a positive influence on service loyalty.
H₂ Service quality has a positive influence on customer satisfaction.
H₃ Service innovation has a positive influence on customer satisfaction.
H₄ Customer satisfaction has a positive influence on service loyalty.
H₅ Influence of service quality on service loyalty is mediated by customer satisfaction.
H₆ Influence of service innovation on service loyalty is mediated by customer satisfaction.

5 Research methodology

The main goal of this study is to determine the relationship between service quality and service innovation on service loyalty. This will enable us to gain better insights into the services provided by post offices in Malaysia with a view to determining the areas that could benefit from service innovation (Kiumarsi et al., 2015a). This present study seeks to analyse the particular issues of post offices; hence, the research framework was developed to be appropriate for quantitative study. Thus, the respondents are the post office users and they revealed their opinions regarding service quality, service innovation and service loyalty. The data were collected by administering a hard copy questionnaire to the respondents. A comprehensive cover letter was addressed to the respondents and it comprised the title of the study, the aim, questionnaire items’ keywords as well as the confidentiality of the survey. The post offices were randomly chosen based on the percentage of the total number of post offices in each state. The researcher administered the survey during office hours with diverse time interval to individuals who visit the post office and have used post office services for at least once in the last two months.

A total of 123 post office users were contacted by the researcher and their responses to the questionnaire were recorded. Thus, the IV, MV and DV were measured with a 7-point Likert scale in postal services. There were also open-ended questions in the questionnaire in order to provide opportunity for the respondents to make comments and suggestions. The data analysis was conducted with Smart-PLS statistical techniques. The first part of the analysis focuses on the information relating to the participants’ profiles as well as the frequency and percentage of profile distribution. Moreover, it also indicates the number of times the respondent has used postal service in Malaysia.

In selecting the respondents from the post offices, the study employs the purposive sampling technique which is a part of convenience sampling. Thus, it is purposive sampling since the questionnaire has filtering questions. Besides, the researcher allocated periodic interval between selecting two respondents. In essence, the researcher administered the questionnaires in the early morning, late morning, afternoon and early evening. This is to allow for variability in the responses to the questionnaire on various working days of the week during the period.

Out of the 123 questionnaires distributed to respondents, 123 of them were collected successfully during the one-month period (1st July to 30th July 2016). The researcher conducted a test of common method bias to evaluate the instrument’s validity and reliability (Podsakoff et al., 2012). Evidence from the test indicated absence of response bias, since the overall variation, 75.664% and first factor, 39.899%, satisfies the 50% threshold recommended by Podsakoff et al. (2003).

From the demographic information, the respondents were classified into gender, age, race, marital status and the number of times they visited post office in Malaysia during the last three months. The results indicated that male respondents are 65 (52.8%), while female respondents are 58 (47.2%). The age distribution showed that 50 (40.7%) respondents are between 18 and 30 years old and 42 (34.1%) respondents are between
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31 and 40 years old. Moreover, the respondents’ race revealed that Malay 70 (56.9%), Indian 21 (17.1%), Chinese 20 (16.3%) and others 12 (9.8 %). Regarding the respondents’ marital status, 68 (55.3%) respondents were married, while 55 (44.7%) were single. The profile of the respondents is shown in Table 1.

Table 1  Profile of the respondents (n = 123)

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>No. respondents</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>65</td>
<td>52.8</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>58</td>
<td>47.2</td>
</tr>
<tr>
<td>Age (years)</td>
<td>18–30</td>
<td>50</td>
<td>40.7</td>
</tr>
<tr>
<td></td>
<td>31–40</td>
<td>42</td>
<td>34.1</td>
</tr>
<tr>
<td></td>
<td>41–50</td>
<td>18</td>
<td>14.6</td>
</tr>
<tr>
<td></td>
<td>51–60</td>
<td>13</td>
<td>10.6</td>
</tr>
<tr>
<td>Race</td>
<td>Malay</td>
<td>70</td>
<td>56.9</td>
</tr>
<tr>
<td></td>
<td>Chinese</td>
<td>20</td>
<td>16.3</td>
</tr>
<tr>
<td></td>
<td>Indian</td>
<td>21</td>
<td>17.1</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>12</td>
<td>9.8</td>
</tr>
<tr>
<td>Marital status</td>
<td>Singe</td>
<td>55</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>68</td>
<td>55.3</td>
</tr>
<tr>
<td>During the last two months, how many times did you go to the post office</td>
<td>1–2 times</td>
<td>77</td>
<td>62.6</td>
</tr>
<tr>
<td></td>
<td>3–4 times</td>
<td>34</td>
<td>27.6</td>
</tr>
<tr>
<td></td>
<td>5–6 times</td>
<td>3</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td>&gt; 6 times</td>
<td>9</td>
<td>7.3</td>
</tr>
</tbody>
</table>

5.1 Significant results

This study conducts VB-SEM statistical approach with Smart-PLS on 123 samples. It analyses the convergent validity which comprises latent variable, question items, main loadings, average variance extracted (AVE) and composite reliability (CR). In all the items, the main loadings are above the 0.5 recommended by Hair et al. (2009). However, two items namely SL2 and SL3 were removed because of the discriminant validity of measurement model. The convergent validity was assessed with AVE. According to Hair et al. (2014), AVE denotes the squared loadings’ grand mean value of each indicator related to the construct. In other words, AVE shows the degree to which the latent construct explains the indicators’ variances. Basically, convergent validity is satisfactory when each construct explains at least 50% of the allocated variance of the indicator (Bagozzi and Yi, 1988; Hair et al., 2014). The AVE obtained for all the constructs in this study are greater than 0.5, suggesting a satisfactory level of convergent validity (Fornell and Larcker, 1981). Moreover, all the constructs have CR and Cronbachs alpha greater than 0.80, satisfying the rule of thumb suggested by Hair et al. (2013). Table 2 and Figure 2 show the final results of the measurement model.
Table 2  Measurement model of PLS (n = 123)

<table>
<thead>
<tr>
<th>Latent variable</th>
<th>Items</th>
<th>Main loading</th>
<th>AVE</th>
<th>Composite reliability</th>
<th>Cronbachs alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service quality</td>
<td>SQ1</td>
<td>0.806</td>
<td>0.769</td>
<td>0.943</td>
<td>0.925</td>
</tr>
<tr>
<td></td>
<td>SQ2</td>
<td>0.930</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SQ3</td>
<td>0.899</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SQ4</td>
<td>0.908</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SQ5</td>
<td>0.836</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service innovation</td>
<td>SI1</td>
<td>0.871</td>
<td>0.805</td>
<td>0.925</td>
<td>0.879</td>
</tr>
<tr>
<td></td>
<td>SI2</td>
<td>0.925</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SI3</td>
<td>0.894</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer satisfaction</td>
<td>CS1</td>
<td>0.905</td>
<td>0.836</td>
<td>0.953</td>
<td>0.935</td>
</tr>
<tr>
<td></td>
<td>CS2</td>
<td>0.923</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CS3</td>
<td>0.910</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CS4</td>
<td>0.920</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service loyalty</td>
<td>SL1</td>
<td>0.877</td>
<td>0.771</td>
<td>0.964</td>
<td>0.957</td>
</tr>
<tr>
<td></td>
<td>SL10</td>
<td>0.821</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SL4</td>
<td>0.856</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SL5</td>
<td>0.906</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SL6</td>
<td>0.890</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SL7</td>
<td>0.894</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SL8</td>
<td>0.891</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SL9</td>
<td>0.883</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: SL2 and SL3 were deleted based on discriminant validity of measurement model. The squared root of AVE, while the other entries represent the correlations.

Figure 2  PLS-path analysis of beta value (n = 123)
5.2 Discriminant validity of measurement models

As for the discriminant validity, the square roots of AVEs are greater than the off indirect elements in their associated row and column, which discloses the desired discriminant validity. In essence, satisfactory convergent and discriminant validity is confirmed via the measurement model. Thus, the discriminant validity is established for every construct’s square root of AVE (Fornell and Larcker, 1981), which is higher than the construct’s inter-correlations with other constructs in the model. Hence, a latent variable has a larger explanation for its indicators variance compared to the variance of another latent variable. The analysis certified the discriminant validity of all the constructs as presented in Table 3.

Table 3  Discriminant validity of measurement model (n = 123)

<table>
<thead>
<tr>
<th>Latent variable</th>
<th>CS</th>
<th>SI</th>
<th>SL</th>
<th>SQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer satisfaction (CS)</td>
<td>0.914</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service innovation (SI)</td>
<td>0.752</td>
<td>0.897</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service loyalty (SL)</td>
<td>0.875</td>
<td>0.664</td>
<td>0.878</td>
<td></td>
</tr>
<tr>
<td>Service quality (SQ)</td>
<td>0.668</td>
<td>0.611</td>
<td>0.614</td>
<td>0.877</td>
</tr>
</tbody>
</table>

Note: Italic numbers represent the squared root of AVE while the other entries represent the correlations.

Figure 3  PLS-path analysis of t-values (n = 123)

5.3 Assessment of structural models

The study measures the path coefficients of the structural model and applies a bootstrap analysis with 5,000 samples to test the structural model regarding the significance of the direct effects path coefficients. It evaluates the significant effects indicated in the research model. The results show a significant and positive effect of service quality on customer satisfaction (β = 0.332, t-value = 2.929, p < 0.01) and service innovation on customer satisfaction (β = 0.549, t-value = 4.834, p < 0.001). As for the effect of
customer satisfaction on service loyalty, a positive relationship is also highly supported ($\beta = 0.839$, $t$-value = 13.158, $p < 0.001$). Hence, Hypotheses 2, 3 and 4 are supported. Conversely, there is no significant relationship between Service quality and service loyalty ($\beta = 0.054$, $t$-value = 0.689, $p > 0.05$). Consequently, Hypothesis 1 is not supported. The study uses variance inflation factor (VIF) to test for multicollinearity. Accordingly, there exists multicollinearity when VIF value is above 5 (Hair et al., 2011). In this study, the VIF values reported in Table 4 are below 3. Hence, multicollinearity is not a problem among the predictor constructs in the structural model. Table 4 and Figure 3 present the relationship and results.

### Table 4  Significance of direct effects – path coefficients and collinearity assessment (n = 123)

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Relationship</th>
<th>Beta value</th>
<th>SE</th>
<th>$t$-value</th>
<th>Decision</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 1</td>
<td>Service quality $\rightarrow$ service loyalty</td>
<td>0.054</td>
<td>0.078</td>
<td>0.689</td>
<td>Not supported</td>
<td>1.804</td>
</tr>
<tr>
<td>Hypothesis 2</td>
<td>Service quality $\rightarrow$ customer satisfaction</td>
<td>0.332</td>
<td>0.114</td>
<td>2.929**</td>
<td>Supported</td>
<td>1.596</td>
</tr>
<tr>
<td>Hypothesis 3</td>
<td>Service innovation $\rightarrow$ customer satisfaction</td>
<td>0.549</td>
<td>0.114</td>
<td>4.834***</td>
<td>Supported</td>
<td>1.596</td>
</tr>
<tr>
<td>Hypothesis 4</td>
<td>Customer satisfaction $\rightarrow$ service loyalty</td>
<td>0.839</td>
<td>0.064</td>
<td>13.158***</td>
<td>Supported</td>
<td>1.804</td>
</tr>
</tbody>
</table>

Note: *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

### 5.4 Mediating effect of customer satisfaction

As for the mediating effect of customer satisfaction, it was revealed that both service quality and service innovation positively mediate service loyalty. Remarkably, the mediating role of customer satisfaction revealed in this study is considered as the first research conducted within the context of post office in Malaysia. A significant relationship exists between service quality (service quality $\rightarrow$ customer satisfaction $\rightarrow$ service loyalty, $\beta = 0.279$, $t$-value = 3.206, $p < 0.01$) and service innovation (service innovation $\rightarrow$ customer satisfaction $\rightarrow$ service loyalty, $\beta = 0.460$, $t$-value = 4.149, $p < 0.001$); with customer satisfaction playing a mediating role on service loyalty. Therefore, Hypotheses 5 and 6 are supported. Comparatively, a significant relationship was established between service quality and service innovation with customer satisfaction playing a mediating role on service loyalty. Table 5 presents the significance of the indirect effects and path coefficients.

### Table 5  Significance of indirect effects – path coefficients (n = 123)

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Relationship</th>
<th>Beta value</th>
<th>SE</th>
<th>$t$-value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 5</td>
<td>Service quality $\rightarrow$ customer satisfaction $\rightarrow$ service loyalty</td>
<td>0.279</td>
<td>0.087</td>
<td>3.206**</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 6</td>
<td>Service innovation $\rightarrow$ customer satisfaction $\rightarrow$ service loyalty</td>
<td>0.460</td>
<td>0.111</td>
<td>4.149***</td>
<td>Supported</td>
</tr>
</tbody>
</table>

Note: *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. 
5.5 Blindfolding and predictive relevance ($Q^2$)

From the results, the value of R square for customer satisfaction was 63.4%, while that of service loyalty was 76.8%. This signifies that 63.4% of the variance in customer satisfaction is explained by service quality and service innovation. Moreover, service loyalty is substantially explained by customer satisfaction. Hence, it is shown that the predictive relevance of cross-validated redundancy values ($Q^2$) for endogenous variables of customer satisfaction and service loyalty are 0.492 and 0.547. This implies that these values are greater than zero (Fornell and Cha, 1994). This technique signifies the adequacy of the model to predict the manifest indicators of each latent construct. The $Q^2$ values in the structural model are greater than 0.5 for a certain reflective endogenous latent variable which indicate the predictive relevance of a specific construct in the path model (Chin, 2010). Since the predictive relevance $Q^2$ of service quality is larger than 0.5, it suggests that service quality satisfies the rule of thumb recommended by Chin (2010) as displayed in Table 6.

Table 6 R-square and predictive value (n = 123)

<table>
<thead>
<tr>
<th>Endogenous variable</th>
<th>$R^2$</th>
<th>$Q^2$</th>
<th>Predictive relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer satisfaction</td>
<td>0.634</td>
<td>0.492</td>
<td>Yes</td>
</tr>
<tr>
<td>Service loyalty</td>
<td>0.768</td>
<td>0.547</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 7 Effect size ($f^2$) (n = 123)

<table>
<thead>
<tr>
<th>Path</th>
<th>$f^2$</th>
<th>Degree of effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service loyalty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service quality → service loyalty</td>
<td>0.007</td>
<td>Not effect</td>
</tr>
<tr>
<td>Customer satisfaction → service loyalty</td>
<td>1.682</td>
<td>Large</td>
</tr>
<tr>
<td>Customer satisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service quality → customer satisfaction</td>
<td>0.189</td>
<td>Medium</td>
</tr>
<tr>
<td>Service innovation → customer satisfaction</td>
<td>0.515</td>
<td>Large</td>
</tr>
</tbody>
</table>

5.6 Assessing effect size ($f^2$)

The effect size ($f^2$) measures the impact of a particular predictor construct on an endogenous construct. It indicates the change in $R^2$ value occasioned by the omission or inclusion of a specific exogenous construct from the model. Hence, the model fit can be determined by investigating the effect size of the path between the respective predictor variables to the DV. A certain independent construct’s strength on the dependent constructs can be examined through the effect size (Chin, 2010). All the predictors that have significant effects on the exogenous variables have the effect size greater than 0.02. According to Cohen (1988), the criteria for evaluating $f^2$ values are: 0.02 = small, 0.15 = medium and 0.35 = large. In this present study, the highest effect size is that of customer satisfaction on service loyalty which is considered as a large effect size ($f^2 = 1.682$). The effect size of service innovation on customer satisfaction is also large ($f^2 = 0.515$), while the effect size of service quality on customer satisfaction is medium
(\(f^2 = 0.189\)). Hence, service quality on service loyalty is not effective in this study as indicated in Table 7.

6 Discussions

This study revealed that service quality has direct effect on customer satisfaction in post offices in Malaysia, suggesting the importance of service quality to post offices customer satisfaction. However, the results indicated that service quality is not a significant predictor of service loyalty. These results are based on the analysis of the feedback from the respondents about the performance of post offices. When the service provider offers the associated and fundamental elements of service quality, customers or users of the post office services will derive satisfaction, which is capable of leading to service loyalty. This finding agreed with Sureshchandar et al. (2002) who found similar outcomes in the Indian banking industry. According to Kiumarsi et al. (2015a), as post offices strive to achieve the goal of making profits, it is necessary for them to serve the general public with social responsibilities in mind.

Moreover, this study showed that customer satisfaction is positively and significantly related to service loyalty. Apart from enhancing service loyalty, customer satisfaction also reinforces the cause and effect relationship that exists between service quality/service innovation and service loyalty, thereby performing the role of a MV. From the mediation analysis, it was revealed that two mediation paths are positively and significantly supported. In the service industry for example, reliability influences the degree of service loyalty that promotes the ties of trust and ultimately intensifies the long-term customer’s relationships (Kheng et al., 2010). Accordingly, this study’s respondents have adequate customer satisfaction and consequently have ties with post office via customer relationship. This is consistent with the outcomes of Sureshchandar et al. (2002). Hence, it is necessary for post offices’ service providers to improve the level of satisfaction of their customers by focusing on the improvement of the service quality with a view to increasing service loyalty. Hayes (2009) suggested the use of bootstrapping technique to estimate the significance of indirect effect. In this study, our results revealed that customer satisfaction plays a positive mediating role in the link between service quality and service loyalty.

7 Conclusions

The fundamental contributions of this study to both management theories and practical applications within the context of post offices are not only relevant to Malaysia but also to other Asian countries. As the TPB posited that intention could be regarded as the greatest determinant of the behaviour of an individual, the post office user who has strong intention could most likely utilise post office services compared to an individual with low intention. Moreover, TPB also connects the link between service quality and service loyalty with customers’ satisfaction as a MV in this study. This research comprehensively explored the link between service quality and customers’ satisfaction and we expect this study’s findings to stimulate future researches which will concentrate on the individuals’ intention to use post offices in Malaysia. In addition, this study indicated that service quality and service innovation significantly influence customer satisfaction, while the
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latter significantly determines service loyalty. Both service quality and service innovation are significantly and positively related and the relationship is mediated by customer satisfaction. Conversely, service quality has no significant relationship with service loyalty. Hence, it is necessary for post offices in Malaysia to extensively enhance the satisfaction of their customers in order to encourage greater patronage.

Irrespective of the limitation of this study, the findings will be of immense benefits to post offices in terms of assessing service loyalty, service quality and service innovation as well as the attainment of customer satisfaction. Generally, we hope this study will significantly contribute and provide insights into greater understanding of service loyalty in Malaysia’s post offices. Because post office serves diverse customers with various needs, it becomes necessary to embark on incremental innovations that are capable of developing new products and services. Hence, the users of post office services need drastic innovation regarding the core products and services such as the use of latest service sector software as well as the provision of e-commerce services via online. According to post office respondents, they expect services such as expanded online products and services which are capable of meeting the needs of customers including online purchase of stamps, online bill payment, as well as online shopping facilities. These services have the capacity to attract greater customers. Therefore, this study provided practicable solutions and recommendations to Malaysia’s post office regarding the introduction of new products as well as the development of services that can satisfy the customers’ demands. In essence, this study’s findings will enable post offices to improve their services by using modern digital technology within the available resources and infrastructures with a view to fulfilling the needs of the society.

7.1 Theoretical contributions

This study contributes to management theories, since it determines the relationship between intention and behaviour (service loyalty) of post office services users in line with the TPB. Accordingly, the theory perceives intention as the greatest determinant of the behaviour of an individual. Proposed by Ajzen (1985, 1991), TPB was utilised in this study to connect service quality and service loyalty with customer satisfaction as a MV (Shi et al., 2014). Moreover, the link between the features of service quality and customer satisfaction was examined by Sureshchandar et al. (2001, 2002). The DV (service loyalty) serves as a response in TPB. A study of the prevailing post offices service innovation as well as the needed future changes could reveal the interests of customers to continue to revisit the post office (Wu, 2014).

7.2 Practical contributions

As a service-oriented industry, the post office has a large number of social responsibilities to public services. Therefore, the findings of this study are capable of improving the understanding of the influence of service quality/service innovation and customer satisfaction on service loyalty within the context of a developing country such as Malaysia. It has immense practical contributions to the post office system. Therefore, it stressed the need for post office service providers to consider the significance of perceived service quality and service innovation with a view to improving their services in contemporary globalised marketplace. In its model, this study emphasised the
prominence of customer satisfaction and service quality within post office setting. This is importance since it draws managerial attention on how to enhance the perceptions of customers about post office services.

7.3 Limitations of the study

In spite of the immense contributions of this study, there are three unavoidable limitations because of practical considerations. Firstly, this study only considered post offices service users in West Malaysia, while those of East Malaysia (Sabah, Sarawak) were not considered. Secondly, although the officials of post office could also be respondents in this study but they were not included in the sample population because it is beyond this research scope. Thirdly, the researchers are aware that this study could have been better, had it compared post office with other related service providers such as DHL and FedEx. But the focused of this research was solely on post office due to the magnitude of business transactions and the degree of post office associated challenges in its daily operations.

7.4 Future research directions

According to the respondents, post office provides services to the public with their social responsibilities in mind regarding their commercial survival. This study indicated that enhancement in service quality and service innovation is capable of improving service loyalty. In their practical decision-making options, post office officials should consider some of the innovations highlighted by the respondents. In this regard, regular publicity in social media and television are capable of improving service loyalty. Hence, future researchers should focus on these issues from the perspectives of post office’s vision and mission statement.

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References


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