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EXPLORING THE IMPACT OF SERVICE QUALITY, BRAND TRUST AND ATTITUDINAL LOYALTY ON REPURCHASE INTENTION AMONG SMARTPHONE USERS IN HONG KONG

HOLLY NG, TILO LI, EUGENE LI

Abstract:

Cellular phones have dramatically changed in the last several decades. They changed from a luxury good to a necessity good to most people. New features have been added to cellular phones, and they have become smarter and smarter. Many people can leave home without their wallets but not without their smartphones. In 2022 the smartphone penetration rate in Hong Kong stood at 97.1 percent for people over 10 years old. This penetration rate is higher than most developed economies. The two major players Apple and Samsung alone capture over 76 percent of the Hong Kong smartphone market. Potential rivals to these two leaders are Xiaomi and Huawei collectively account for close to 15 percent of the market. Competition among smartphone providers is extremely fierce. Therefore, a key marketing strategy for smartphone vendors is to strive to keep existing customers and motivate them to repurchase the same brand when they need to replace or upgrade their cellular phones. The purpose of this paper is to investigate the causality between service quality and attitudinal loyalty via brand trust and how brand trust affects attitudinal loyalty and repurchase intention. Data from a sample of 200 smartphone users show that service quality directly affects brand trust and confirm that brand trust plays a crucial role in building attitudinal loyalty and repurchase intentions. Brand trust also mediates the relationship between service quality and attitudinal loyalty. The findings of this study provide important implications to academics and marketing practitioners as they lead to more effective loyalty strategies to deal with the ever-increasing complexity of loyalty issues.

Keywords:

Smartphones, Service quality, Brand trust, Attitudinal loyalty, Repurchase intention

JEL Classification: L19

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Introduction:

According to the Thematic Household Survey Report No. 77 published by the Hong Kong Special Administrative Region (“HKSAR”) Government (CSD 1, 2023), the smartphone penetration rate in 2022 was 97.1 percent among people aged 10 and above. This is translated into about 6,236,000 people using smartphones. The penetration rate published by the HKSAR Government is somewhat different from other reports such as statista.com that estimates the penetration rate as a percentage of the population. According to the Census and Statistics Department (“CSD”) of the HKSAR Government, the population in Hong Kong in mid-year 2022 was 7,346,100 (CSD 2, 2023). The smartphone penetration rate in Hong Kong in 2022 using population as the base was therefore 84.9 percent.

Statista.com estimates that in 2022, France had the highest smartphone penetration rate standing at 82.6 percent, followed by the United Kingdom at 82.2 percent, Germany at 81.9 percent, the United States at 81.6 percent, and Japan at 78.6 percent (Laricchia, 2023). In 2022, the smartphone penetration rate in Hong Kong was higher than these developed economies.

According to statista.com (Slotta, 2023), from December 2018 to December 2022, in Hong Kong, the major smartphone brands included Apple, Samsung, Huawei, Xiaomi, LG, and HTC. The changes in their market shares from December 2018 to December 2022 are provided in Table 1:

Table 1: Market Shares of Major Smartphone Providers in Hong Kong

	Apple	Samsung	Huawei	Xiaomi	LG	HTC
Dec 2018	55.44%	18.53%	6.8%	6.52%	4.15%	1.23%
Dec 2022	44.03%	32.13%	6.53%	8.15%	0.59%	0.08%
Change in Market Share	-11.41%	+13.60%	-0.27%	+1.63%	-3.56%	-1.15%
Percentage Change	-20.58%	+73.39%	-3.97%	+25.00%	-85.78%	-93.50%

Source: <https://www.statista.com/statistics/953646/hong-kong-smartphone-market-share-by-vendor/>

From December 2018 to December 2022, Apple lost 11.41 percent of the smartphone market share in Hong Kong. To Apple, this is a 20.58 percent drop in its market share. On the contrary, Samsung has captured 13.60 percent more of the Hong Kong smartphone market, meaning a 73.39 percent increase in its success. The change of Huawei was marginal. Xiaomi captured 1.63 percent more of the market share, indicating a 25 percent increase. To Xiaomi, this could be substantial. LG and HTC, with less than one percent market share, seemed to have almost lost their market share in Hong Kong in December 2022.

Competition among smartphone vendors is extremely severe. If they cannot retain their customers with innovative add-on features to their products, they can easily be outcompeted. Some people might not have heard of Motorola, Nokia, Siemens, Sony Ericsson, Sharp, and BlackBerry. These were popular smartphone brands once upon a time. They have either disappeared from the Hong Kong market, or their market share is simply invisible.

Table 1 shows a brand can substantially lose its market share if it cannot retain its existing customers. The drop in Apple's market share in Hong Kong should be alarming to the company. "Can Samsung and Xiaomi continue to increase their market shares?" becomes an important question for these companies. "How can smartphone vendors motivate existing customers to repurchase the same brand when customers upgrade or replace their existing smartphone?" is a difficult question for these vendors. We understand that there are numerous factors affecting one's decision to purchase whatever brand one buys. However, in this paper, we will focus on the relationship among service quality, brand trust, attitudinal loyalty, and repurchase intention. Our research questions are given below:

1. Does service quality have a positive effect on brand trust?
2. How does brand trust affect attitudinal loyalty and repurchase intention?
3. Is there a mediating effect of brand trust on the relationship between service quality and attitudinal loyalty?

In the next section, we will review some of the relevant literatures about the topic, followed by our conceptual model, methodology, discussion of findings, and a conclusion.

Service Quality and Brand Trust

Brand trust is defined as customers' belief or expectation that the brand they chose is dependable in the areas of quality, and after-sale service (Nurifadila et al., 2015). It is, thus, the ability of the brand to be trusted, where customers believe that the brand can deliver the services and value promised (Sahin et al., 2011; Suhardi & Irmayanti, 2019). Brand trust can also refer to the situation when a customer faces risks, the customer will rely on the brand with the expectations that the brand will bring positive outcomes (Lau & Lee, 1999; Rizan et al., 2012).

Brand trust can be viewed as a belief, a sentiment or expectation about something good. Once brand trust is built, it can easily lead to the halo effect. Applying to human beings as an example, the halo effect is when one believes Chris is a good person, whatever Chris does is correct and good. When the halo effect applies to a merchandize item, including smartphone, if a customer has built brand trust on a particular merchandize, whatever the brand offers is perceived to be good. If occasionally the product does not deliver fully satisfactory services, the customer may find excuses to cover for that insufficiency.

Smartphone users use their phones to store a lot of personal information, connect with other people, and make digital payments. There are so many electronic payment applications that people store in their smartphones. Nowadays, losing a smartphone can be disastrous. There were cases involving celebrities who had their private photos or messages leaked leading to tremendous damage to their careers. Therefore, consumers need to be assured absolute security in their smartphones. With more brand trust, the uncertainty concerning security can be reduced (Chaudhuri & Holbrook, 2001; Juliana et al., 2021).

Brand trust is a multidimensional concept with two main components: brand reliability and brand intentionality (Delgado-Ballester & Munuera-Aleman, 2003). When customers believe that a brand fulfills its value promised meeting their expectations, it is brand reliability. For service quality, reliability is developed when a brand does it right the first time and continues with the same performance (Davis & Mentzer, 2006; Suhardi & Irmayanti, 2019). In other

words, brand reliability is built if a brand can solve customer problems and meet customer needs (Lau & Lee, 1999).

The idea of brand reliability is consistent with the ‘reliability’ dimension of the famous service quality framework SERVQUAL. Reliability in SERVQUAL refers to the ‘ability to perform the promised service dependably and accurately’ (Parasuraman et al., 1988, p. 23). Customers always look for the promises that fulfil their expectations from the brand (Atulkar, 2019). Smartphone users will certainly be happy if their phones perform the promised services dependably and accurately. Therefore, smartphone producers must ensure their phones perform the first time and continue to perform, to meet the needs of their customers and help their customers to solve problems.

Brand intentionality can be defined as ‘the attribution of good intentions of the brand in relation to the consumers’ interests and welfare’ (Delgado-Ballester & Munuera-Aleman, 2005, p. 188). Therefore, it is essential for customers to believe that their interests and welfare are taken care of. It also reflects the customer’s feeling of security (Juliana et al., 2021), and the belief that the producer will compensate a customer in some way for problems with the product (Hawass, 2013). The idea of brand intentionality is consistent with the ‘responsiveness’ dimension of the well-known service quality framework SERVQUAL. Responsiveness in SERVQUAL refers to the ‘willingness to help customers and provide prompt service’ (Parasuraman et al., 1988, p. 23). Customers certainly look for prompt services provided by smartphone producers whenever their phones have problems. If smartphone companies can provide prompt service and assistance, customers will trust that the company will treat customer interests with priority. Therefore, service quality should affect brand trust in the smartphone market.

While service quality being a determinant of brand trust sounds obvious and reasonable, previous studies have found contradictory results. There were studies supporting the direct relationship between service quality and trust. They have found that an increased level of interaction between consumers and the brand is fundamental for building trust (Schau et al., 2009; Zhou, 2012). It makes sense: as more and better service quality are provided to customers, trust can be built. The direct relationship between service quality and trust has been confirmed in different industries such as mobile telecommunication industry (Aydin & Ozer, 2005), e-wallet applications (Pratiwi, 2021), and e-commerce platform (Subhan & Thalib, 2022).

Other studies have found otherwise. For example, for online pharmacy market, the direct relationship between the two has not been found. It is suspected that product category could have affected the relationship between quality and trust (Chen et al., 2012). In Hong Kong, some popular but old restaurants that have been in business for decades do not necessarily provide good services. They hire very “experienced” waiters who could have been with the restaurant for ages. These waiters can be rude to patrons at times, but people still go for nostalgic or sentimental reason.

Considering the contradictory findings and real life observations on the relationship between service quality and brand trust, and product category can be a determinant of such relationship. It is necessary to test whether service quality has a direct effect on brand trust in the smartphone market. This leads to our first research question.

Attitudinal Loyalty, and Repurchase Intention

Reichheld and Schefter (2000) suggest that to gain loyalty from customers, companies must first gain their trust. Brand trust leads to a higher level of attitudinal loyalty because trust can build bonds (McKnight et al., 2002; Barusman & Riorini, 2016), and the effect of trust on attitudinal loyalty is direct and strong (Hong & Cho, 2011; Atulkar, 2019). Customers with brand trust will maintain their attitudinal loyalty and resist attractive short-term benefits offered by other brands (Junaid-ul-haq et al., 2013).

For the smartphone market, brand loyalty is high when customers have high trust in the smartphone brands. Smartphone customers are very unlikely to remain loyal if they cannot trust a brand (Lee et al., 2015).

Brand trust is certainly an important factor for repurchase intention (Dayani et al., 2022). Most people are conservative and reluctant to handle changes. Different smartphones have different operating systems and features. A lot of people, once they are used to operating a particular brand of smartphone, are reluctant to switch to another brand. Changing brand means they will need to learn a different operating system and a lot of different functions of a different brand.

When customers have developed trust in a brand, they will develop their commitment to the brand and convince themselves to continue purchase of the same brand (Herbst et al., 2013; Ikramuddin, 2017). Since no studies are found for the smartphone market in this particular relationship between brand trust, attitudinal loyalty and repurchase intention, our second research question addresses this relationship.

The chain of causes going from service quality to brand trust, attitudinal loyalty, and repurchase intention looks logical. However, whether brand trust can mediate the relationship between service quality and attitudinal loyalty in the smartphone market is worth investigating. This leads to our third research question.

Conceptual Model

This study examines the effects of service quality on brand trust, and how brand trust affects attitudinal loyalty and repurchase intention in the Hong Kong smartphone market. In addition, a mediation effect of brand trust on the relationship between service quality and attitudinal loyalty is also investigated. A model representing the three research questions is presented in Figure 1 below:

Figure 1: Conceptual model of the research questions:

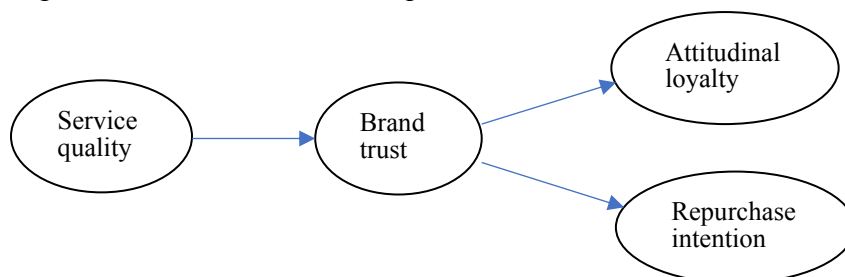


Figure 1 represents the construct of the research questions. The model posits relationships among the variables service quality, brand trust, attitudinal loyalty and repurchase intention.

The proposed model focuses on the study of attitudinal loyalty and examines its relationship with its antecedents – service quality and brand trust. This study aims to identify how attitudinal loyalty and repurchase intention are affected by service quality and brand trust in the Hong Kong smartphone market. It also provides further understanding of the mediating effects that brand trust has on the relationship between service quality and attitudinal loyalty. The question, “whether brand trust must be developed by providing high service quality before attitudinal loyalty can be built”, will be answered.

Methodology

This study adopts a deductive-based quantitative research approach. Quantitative research analyzes data on variables and explains the relationships among variables. This study also uses a positivist methodology because it attempts to investigate the relationship, and in particular the causality of the identified variables (Creswell, 2009). Once causality of variables is confirmed statistically significant, a generalized model can be established so that it will become the base for prediction of dependent variable(s) given relevant independent variable(s) (Scotland, 2012).

The purpose of this study is to analyze the effects of antecedents of loyalty in the Hong Kong smartphone market. The population of the study are all smartphone users in Hong Kong. With a high smartphone penetration rate at 97.1 percent in 2022 for people aged 10 and above, and 99.9 percent of smartphone users have used their home internet to go online (CSD 1, 2023), the sample of the study was conveniently available online. Therefore, convenience random sampling method was adopted for the study. The sample consists of individuals who are always present online in various social media discussion forums.

Convenience random sampling may create doubt about the representation of the target population. However, the demographic profile of the sample recruited is quite consistent with that of the target population. Hedt and Pagano (2011) advocate that samples from the convenient population may indicate greater access to resources, better education, or knowledge. Respondents with better education are more likely to provide more relevant feedback to surveys.

For this study, the convenience sample was obtained through an online survey, and the participants were recruited through online discussion forums specifically for smartphone users. Many smartphone users use online discussion forums opened specifically for them to share and seek information concerning smartphone features and performance. Such online behavior enabled them to be sampled for the online study. Respondents, to be included in the sample, had to be current smartphone users living in Hong Kong. They had to have experience dealing with their smartphone vendors so that they could opine on the service quality, brand trust, loyalty and repurchase intention on the smartphone brands that they were using. In addition, respondents had to be at least 18 years old. It is because for a 10-year-old smartphone user, he/she may not understand much about brand trust and loyalty. They may not make repurchase decision.

The minimum sample size for regression analysis is 10 times of the number of variables (Bougie & Sekaran, 2019). There are four variables in the study. The minimum size is 40. Therefore, a sample of 200 for this study is sufficient.

An anonymous questionnaire survey was conducted with a sample of 200 Hong Kong smartphone users aged 18 and above. The questionnaire was distributed through popular online platforms. According to the Thematic Household Survey Report published by the Census and Statistics Department of the HKSAR Government (CSD 1, 2023), in 2022, 98.6 percent of all people aged 10 and above have used internet for social activities. The penetration rate of different online discussion forums is high in Hong Kong. Whoever wants to start a topic or thread can easily initiate a discussion. There are numerous social media platforms with almost uncountable discussion forums, including certainly forums for smartphones. People can easily search and access to these forums by typing the keywords “smartphone forum”. Anyone can create a thread with any topic related to smartphones. A major advantage of these forums is that they have neither time nor physical boundaries.

The survey questionnaire was posted on smartphone forums of Hong Kong groups on the facebook.com and discuss.com.hk websites. Since there are numerous junk posts, it is important to have the forum administrators’ prior approval before posting a link to the page on the forum websites.

A challenge to data collected online is validity. We cannot ensure that information provided by respondents is absolutely true through face-to-face interviews or paper-based questionnaire. However, online questionnaires provide a lot of benefits to researchers. Respondents choose voluntarily to fill in the questionnaire; they may feel anonymous so that they can honestly answer the questions. There are no time and physical boundaries. With proper design of an online questionnaire, respondents must fill in all compulsory questions before they can submit it. Therefore, invalid or incomplete questionnaires can be reduced. Some online questionnaires show remaining time to complete. Finally, data collected from questionnaires are entered and stored immediately once a questionnaire is collected. Some online questionnaire platforms even provide a spreadsheet of all data so that preliminary data analysis can be quickly done.

To check for linearity, scatterplots of residuals against predicted values were produced. To measure internal consistency or reliability of variables, Cronbach’s alpha coefficients were found. To determine the relationships between the measured variables and their latent constructs, confirmatory factor analysis was performed. Several linear regressions were done after these. First, brand trust (dependent variable) was regressed against service quality (independent variable) to be reported in Table 6 and Equation 5. Second, attitudinal loyalty was regressed against brand trust. Third, repurchase intention was regressed against brand trust.

For mediating effect of brand trust on service quality and attitudinal loyalty, several regressions were done to identify the mediating effect. First, regression was done between attitudinal loyalty (dependent variable) against service quality (independent variable). Second, brand trust was the dependent variable, and service quality was the independent variable. Third, attitudinal loyalty was regressed against service quality and brand trust. By comparing the changes in beta coefficients from these regressions, the mediating effect of brand trust could be identified.

The threshold for a reliable prediction using a linear regression model is having the coefficient of correlation at plus/minus 0.7 ($r > 0.7$ or $r < -0.7$), or the coefficient of determination higher

than 0.5 ($r^2 > 0.5$) (Lind et al., 2024). That is to say, for a regressed model to generate reliable prediction to a certain extent, at least 50 percent of the variation in the dependent variable should be explained by the change in independent variable(s).

Discussion of Findings

A total of 200 valid responses were received. Among them, 56 percent were male; 52.5 percent were between 35 and 54 years old (that is quite close to the general demographics in Hong Kong); 82 percent held a degree or above indicating that most of them could judge the service quality provided by different smartphone vendors and provide feedback about their trust with different smartphone brands. As for monthly income, 78 percent earned over HK\$20,000. This indicates that respondents could afford expensive smartphones such as Apple iPhone and Samsung Galaxy. This was consistent with 80 percent of respondents using iPhone and Galaxy, and over 76 percent of people in Hong Kong use the two brands combined. Overall, the respondents' demographics indicate that most of them are mature and have a high education level. Their opinions should be reliable.

Residuals appear randomly on a scatterplot of residuals against their predicted values. This means there is no clear relationship between the residuals and the predicted values. This is consistent with the assumption of linearity. The data points of the two variables exhibit equal dispersion across all data values on the scatterplots. This means the pattern of residuals had about the same spread on either side of the horizontal line drawn through the average residual. This is an indication of homoscedasticity. The data points of independent as well as mediating variables on the normal plot of regression standardized residual for the dependent variable fell close to the diagonal reference line. This means the rate of change in the dependent variable is the same for all the values of the independent variables. This is evidence of a strong linear relationship between the dependent and independent variables. Such normal plots also indicate a relatively normal distribution. These findings fulfil the assumptions required for regression analysis (Islam et al., 2021).

To measure internal consistency, or reliability of variables, Cronbach's alpha coefficients are presented in Table 2. All coefficients are higher than 0.90 exceeding the reliability threshold of 0.7. These values indicate high internal consistency and reliability (Islam et al, 2021).

Table 2: Cronbach's Alpha Coefficients for Consistency and Reliability

Variables	Alpha Coefficients
Service Quality	0.954
Brand Trust	0.972
Attitudinal Loyalty	0.939
Repurchase Intention	0.932

The measurement scales used have been empirically tested in previous studies. To test how well the measured variables represent the construct in Hong Kong market, confirmatory factor analysis ("CFA") was performed. For factor analysis to be appropriate, the Bartlett test of sphericity should be statistically significant at 0.05, and the Kaiser-Meyer-Olkin MSA ("MSA") should be at least 0.50 (Hair et al., 2018).

The Bartlett test of sphericity for all constructs show that the results of factor analysis are statistically significant ($p < 0.001$), indicating that the correlation matrix of each construct is not an identity matrix and has significant correlations among variables. All constructs score over 0.80 for the MSA, except for repurchase intention with a score of 0.50. These numbers indicate that most of the variables are meritorious to be predicted (Hair et al., 2018).

The factor loadings of all items were ideally above 0.7, indicating the strong relationship between the measure items and their associated constructs (Hair et al., 2010). For all items, the eigenvalue is greater than 1 and the percentage of total variance explained by the factor ranged from 76.97 to 93.67 percent, meaning individual measured items represented only one latent construct. The results confirmed that all measurement scales used in the survey were valid.

Simple regression was done to test if brand trust influences attitudinal loyalty and repurchase intention. The effect of attitudinal loyalty on repurchase intention was done and reported in our earlier study (Ng et al., 2020).

Table 3 below shows the results of regression on attitudinal loyalty (dependent variable) against brand trust (independent variable).

Table 3: Regression results of Attitudinal Loyalty against Brand Trust

Constant (p-value)	Slope (p-value)	R-Square (r^2)
- 0.077 (p = 0.724)	0.984 (p = 0.000)	0.724

Data from Table 3 can be expressed by the following equation:

$$\text{Attitudinal Loyalty} = - 0.077 + 0.984 \times \text{Brand Trust} \dots\dots\dots (1)$$

According to Equation 1, each unit change in brand trust will induce a 0.984 unit change in attitudinal loyalty. This rate of change is statistically significant ($p < 0.001$). A coefficient of determination (r^2) of 0.724 means that 72.4 percent of the variations in attitudinal loyalty can be explained by the change in brand trust. Given this R-Square, brand trust and attitudinal loyalty are highly positively related with a coefficient of correlation at 0.85 ($r = 0.85$). Therefore, brand trust is a good predictor for attitudinal loyalty. It is interesting to note that the regressed constant is negative, - 0.077, but statistically insignificant ($p = 0.724$). According to Equation (1), if there is zero brand trust, attitudinal loyalty will be negative.

Table 4 below shows the results of regression on repurchase intention (dependent variable) against brand trust (independent variable).

Table 4: Regression results of Repurchase Intention against Brand Trust

Constant (p-value)	Slope (p-value)	R-Square (r^2)
2.479 (p = 0.000)	0.651 (p = 0.000)	0.335

Data from Table 4 can be expressed by the following equation:

$$\text{Repurchase Intention} = 2.479 + 0.651 \times \text{Brand Trust} \dots\dots\dots (2)$$

According to Equation 2, each unit change in brand trust will induce a 0.651 unit change in repurchase intention. This rate of change is statistically significant ($p < 0.001$). A coefficient of determination (r^2) of 0.335 means that only 33.5 percent of the variations in repurchase intention are due to the change in brand trust. Brand trust and repurchase intention are weakly positively related with a coefficient of correlation at 0.579 ($r = 0.579$). In general, if R-Square is less than 0.50, the regressed model does not generate a reliable prediction (Lind et al., 2024). Therefore, brand trust alone may not be a good and reliable predictor for repurchase intention.

What affects repurchase intention more is attitudinal loyalty. The impact of attitudinal loyalty on repurchase intention is reproduced from our previous study (Ng et al., 2020) in Table 5 below:

Table 5: Regression results of Repurchase Intention against Attitudinal Loyalty

Constant (p-value)	Slope (p-value)	R-Square (r^2)
2.380 (p = 0.000)	0.693 (p = 0.000)	0.509

Data from Table 5 can be expressed by the following equation:

$$\text{Repurchase Intention} = 2.380 + 0.693 \times \text{Attitudinal Loyalty} \dots\dots\dots (3)$$

According to Equation 3, each unit change in attitudinal loyalty will induce a 0.693 unit change in repurchase intention. This rate of change is statistically significant ($p < 0.001$). A coefficient of determination (r^2) of 0.509 means that 50.9 percent of the variations in repurchase intention come from the change in attitudinal loyalty. Repurchase intention and attitudinal loyalty are positively related with a coefficient of correlation at 0.713 ($r = 0.713$). Therefore, attitudinal loyalty can be used as a predictor for repurchase intention.

For the mediating effect of brand trust on service quality and attitudinal loyalty, a mediation analysis was conducted following the model developed by Baron and Kenny (1986). The model suggests three steps to be done to investigate if mediation effect exists. First, attitudinal loyalty is regressed against service quality. Second, brand trust is regressed against service quality. Third, attitudinal loyalty is regressed against service quality and brand trust. The results of these regressions are presented in Table 6 below.

Table 6: Regression results for Mediating Effects

Constant (p-value)	Slope (p-value)	R-Square (r^2)
Regression of attitudinal loyalty against service quality		
0.297 (p = 0.257)	0.930 (p = 0.000)	0.606
Regression of brand trust against service quality		
0.696 (p = 0.000)	0.879 (p = 0.000)	0.724
Regression of attitudinal loyalty against service quality and brand trust		
-0.253 (p = 0.256)	0.236 (p = 0.005) 0.789 (p = 0.000)	0.734

Data from Table 6 can be expressed by the following equations:

$$\text{Attitudinal Loyalty} = 0.297 + 0.930 \times \text{Service Quality} \dots\dots\dots (4)$$

$$\text{Brand Trust} = 0.696 + 0.879 \times \text{Service Quality} \dots\dots\dots (5)$$

$$\text{Attitudinal Loyalty} = -0.253 + 0.236 \times \text{Service Quality} + 0.789 \times \text{Brand Trust} \dots\dots (6)$$

Results shown in Table 6 and equations (4) to (6) are explained in the following paragraphs.

Referring to Equation (4), each unit change in service quality will induce a 0.930 unit change in attitudinal loyalty. This rate of change is statistically significant ($p < 0.001$). A coefficient of determination (r^2) of 0.606 means that 60.6 percent of the variations in attitudinal loyalty can be explained by the change in service quality. Service quality and attitudinal loyalty are positively related with a coefficient of correlation at 0.78 ($r = 0.78$). Therefore, service quality is a good predictor for attitudinal loyalty, although the constant of the regressed model, 0.297, is statistically insignificant ($p = 0.257$). However, in general, the slope indicates the rate of change, but the impact of the independent variable on the dependent variable is a lot more important than the constant.

Referring to Equation (5), each unit change in service quality will induce a 0.879 unit change in brand trust. This rate of change is statistically significant ($p < 0.001$). A coefficient of determination (r^2) of 0.724 means that 72.4 percent of the variations in brand trust are due to the change in service quality. Service quality and brand trust are strongly positively related with a coefficient of correlation at 0.85 ($r = 0.85$). Therefore, service quality is a good predictor for brand trust.

Equation (6) is the result of a multiple regression. Referring to Equation (6), each unit change in service quality will induce a 0.236 unit change in attitudinal loyalty, and each unit change in brand trust will induce a 0.789 unit change in attitudinal loyalty. These rates of change are statistically significant ($p < 0.01$). A coefficient of determination (r^2) of 0.734 means that 73.4 percent of the variations in attitudinal loyalty come from the change in service quality and brand trust. Service quality together with brand trust and attitudinal loyalty are strongly positively related with a coefficient of correlation at 0.86 ($r = 0.86$). Therefore, service quality and brand trust collectively make a good predictor for attitudinal loyalty. It is interesting to note that the constant (vertical intercept) of the regression model is negative, -0.253 but statistically insignificant ($p = 0.256$). Given this equation, if a customer rates zero for both service quality and brand trust, the customer will have negative attitudinal loyalty of the vendor.

To further analyze the above results by comparing Equations (4) and (6), brand trust does mediate the relationship between service quality and attitudinal loyalty. While the effect of brand trust on attitudinal loyalty is significant (slope = 0.789, $p < 0.001$), the effect of service quality on attitudinal loyalty drops substantially (β or slope drops from 0.930 to 0.236) but remains statistically significant ($p < 0.01$). Therefore, brand trust has a mediation effect on the relationship between service quality and attitudinal loyalty. The mediation effect is 0.694 ($0.930 - 0.236$). The percentage of the direct effect being mediated is around 75 percent, demonstrating a significant partial mediation.

Conclusion:

Findings of this study provide the following answers to the research questions. First, service quality is a good and reliable predictor of attitudinal loyalty. Second, brand trust is a good and reliable predictor of attitudinal loyalty. Although the results show that the relationship between brand trust and repurchase intention is statistically significant, brand trust alone may not be a good predictor of repurchase intention due to the low value of the coefficient of determination (r^2). This means even if there is brand trust, without attitudinal loyalty, smartphone users may not have repurchase intention. Repurchase intention can be affected by other factors, such as price, income, accessibility to the product, peer pressure, fashion trend, and sentiment.

The mediating effect of brand trust on the relationship between service quality and attitudinal loyalty is substantial. This effect links the three variables. Good service quality can build attitudinal loyalty through brand trust.

The sample size of this study is five times the minimum requirement suggested by the theory (Bougie & Sekaran, 2019), so a larger sample size is planned for a wider coverage of the smartphone user population in Hong Kong. In general, the larger the sample size, the closer the result will be towards the population.

One last thing to note is that while regression analysis provides generalized model, there are implications. First, a generalized model does not indicate what actions are needed to achieve the predicted result. Second, totally relying on generalized model to predict results sometimes can be dangerous because in most cases, if not all. It is impossible to exhaust all independent variables in regression analysis. To put this statistically, it is highly unlikely, if not impossible, to have the coefficient of determination (R-square) equals 100 percent.

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