Customer-centric e-payment factors: An exploratory study for dining establishments in Hong Kong

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Abstract:

Electronic payment has become a prevailing trend across the world. Cashless transactions are particularly important in this new normal. This was an exploratory study aiming to investigate customer-centric e-payment factors for dining establishments in Hong Kong with 267 quantitative data items collected through an online survey. The results from the exploratory factor analysis identified five factors: "trustworthy security system", "efficient to use", "fast and safe cashless transactions", "discounts and incentives", and "uncertainty reduction". Regression analysis suggested a 3-factor model for improving customers' experience which would foster satisfaction and revisit intention. Theoretical and managerial implications are discussed.

Keywords: Customer satisfaction, Dining, Electronic payment, Hong Kong

1. Introduction

Given the advancements in technology, the swelling internet coverage, and the mounting penetration rate of smartphones, using electronic payment (e-payment) has become a prevailing trend across the world, and various e-payment platforms have been growing in leaps and bounds in recent years. In 2020, the world's total transaction value in the e-payment segment has exceeded US$4,700,000 million (Ilic, 2020).

Hong Kong has long been renowned for being one of the most developed and wealthy cities in the world possessing an extensive financial and technological infrastructure. Surprisingly, Hong Kong is lagging behind in terms of e-payment development and popularity, in particular compared to mainland China. A survey revealed that over two-thirds of Hong Kong consumers have never paid by their smartphones and more than half of them claimed that they do not intend to do so in the future (Law, 2018). The same survey revealed that China is the pioneer in the e-payment industry; over 98% of its consumers have already switched from cash to mobile payment methods. Singapore's e-commerce market share of $2.1 billion also surpasses Hong Kong's $1.4 billion, while the mobile payment industry in Singapore accounts for 42% of all e-commerce transactions, which is much higher than the 36% in Hong Kong. It is predicted by J.P. Morgan that, in Hong Kong, the development of e-payment will exceed credit card transactions in 2021, increasing to an annual growth rate of 28%.

In 2020, as the outbreak and spread of the coronavirus continues, many people are now staying at home, practising quarantine and social distancing. The pandemic has drastically changed people's shopping and dining experience, leading to an unprecedented growth in the demand

for and usage of electronic payment methods. As the hygiene awareness of the general public increases, people are becoming more interested in contactless electronic payment methods, as it is unclear whether the virus can latch onto paper notes; thus, a number of consumers are switching to e-payment in order to stay safe (Adlina, 2020). E-payment companies in Hong Kong have seen significant growth. As Huang (2020) mentioned, Octopus card (a reusable stored value smart card) experienced growth rates of 20% and 30% in terms of transaction values during the first two months of 2020, while the average transaction of O! ePay Mastercard rose 60% during the same period. Though the pandemic has caused a severe economic recession, it has created a golden opportunity for e-payment companies in Hong Kong to partner with hospitality merchants, such as hotels and dining establishments, to provide value-added services to enhance customer satisfaction in the local market.

Customer satisfaction is positively correlated to repurchasing intention and fosters customer loyalty (Anton, 1997; Evans & Berman, 1997; Sivadas & Baker-Prewitt, 2000). Clark (1997) described the achievement of customer satisfaction and retention as "powerful weapons" for businesses, as it gives companies a cutting edge over competitors in the increasingly fierce market; hence, it is essential to identify and understand the e-payment factors that would potentially increase customer satisfaction during their service experience. However, there is a dearth of research investigating these factors in relation to the hospitality industry in the new normal. Therefore, this exploratory study purports to identify the general e-payment dimensions that are considered important by customers. Then, the customer-centric factors for application in the dining establishments, such as hotels, in Hong Kong are examined.

2. Literature Review

2.1 Definition of e-payment

Numerous studies have provided definitions of electronic payments. As defined by Wrobel-Konior (2016), an electronic payment system, also known as mobile payment system, is a method to conduct transactions or pay for services and goods by an electronic or mobile device without using cash or cheque. Mallat (2007) further explained that electronic payment is a process whereby money is transferred through electronic devices from payers to receivers. Major and traditional payment methods, such as cash, debit and credit cards, and electronic bill payments, could be potentially substituted by electronic payment systems. It was highlighted by Oliveira, Thomas, Baptista, and Campos (2016) that electronic payment is different from online and mobile banking, as the latter is related to the relationships between the banks and customers, while the former represents the transaction processes among individual users, banks, and merchants.

2.2 Mobile payment methods

Smartphones were gaining in popularity in the early 2010s, which led to the emergence of various mobile payment methods. The first mobile payment method launched in Hong Kong was local brand Tap & Go, followed by the entry of Apple Pay, Google Pay, and Samsung Pay from the U.S and South Korea in the following year. In 2017, WeChat Pay and Alipay were introduced to Hong Kong from mainland China. A number of local e-payment systems have emerged in recent years, including Faster Payment System, TNG Wallet, and O!e Pay (Cai, Qi, & Li, 2019). In Hong Kong, the Octopus card has taken roots for more than two decades, while the penetration rate and usage of credit cards are very high, meaning that the existing payment system in Hong Kong is already stable and mature. Therefore, there was no urgent need for an alternative payment method. Cai et al.'s study (2019) found that fourth fifths of the respondents

said that they "never" or "seldom" conducted transactions with their mobile devices. The result reflected and explained the strange phenomena that the adoption rate of mobile payment in Hong Kong and among hotels is still low, albeit that Hong Kong ranks top for mobile phone penetration rates, and has long been regarded as one of the smartest and most well-developed cities in the world.

2.3 Technology Acceptance Model

Proposed by Davis (1989), the Technology Acceptance Model is a theory which is applied to predict and explain the acceptance and adoption of various information systems, including mobile payments (Matemba & Li, 2018; Moores, 2012; Shankar & Datta, 2018). As Lim & Kim (2009) stated, perceived usefulness and perceived ease of use are the two factors that may affect one's intention regarding the adoption of new technology. The former represents the extent to which users feel that such technology can improve the performance of their tasks, while the latter is the extent to which customers take the view that they will face no difficulties when using such technology. The TAM can be adopted to explain why Hong Kong consumers have been willing to use Octopus card since first launched and throughout the years. The functions of recharging and contactless transaction provide great convenience to users, and the card is easy to operate as it does not require any authentication or verification processes. Contactless transactions are completed within two seconds by simply placing the card on the reader. Apparently, customers' perceived usefulness and ease of use of the Octopus Card are significantly high, and this explains why Hong Kong consumers have continued using it over the years. In contrast, as most of the mobile payment methods require identity confirmation processes, while currently, the mobile payment methods are not widely accepted by the merchants, their perceived usefulness and ease of use, therefore, are not as high as for the Octopus card.

2.4 Technology satisfaction theories

Technology-oriented products and services emerged gradually in the past decades. Therefore, the customer satisfaction theories and models are shifting to value-added services that also place emphasis on customer satisfaction along with the advancements in technology. Meuter, Ostrom, Roundtree, and Bitner (2000) conducted a study to investigate the determinants that would affect satisfaction with self-service technologies. The study defined the concept as any kind of technology which allows customers to obtain services without any direct involvements from employees such as contactless e-payment methods. The study explained that technology satisfaction is achieved by addressing customers' demands and performing their expected functions. In addition to the theory, Fournier and Mick (1999) proposed a comparison standards paradigm, which suggests customers to compare the standards of technology products with their actual performance to form a judgment of satisfaction. Therefore, not only physical products or services provided by the hotels, such as the restaurants or cake shops, are important to customers, but also the technological aspects offered to them at the hotel premises.

2.5 Preliminary e-payment dimensions

Traditional payment methods commonly offered at hotels such as credit cards are no longer adequate to meet customer demand in the new normal. In order to provide value-added services to customers, preliminary e-payment dimensions that impact on positive customer satisfaction were identified from previous literature. Table 1 presents 12 factors clustered in five

dimensions, namely convenience (access convenience, transaction convenience); financial benefits (price discounts, reward programme); security (transaction procedure, technical protection, security statements); brand reputation (business integrity, word of mouth, customer loyalty); and user familiarity (user experience, uncertainty reduction).

3. Methodology

3.1 Research design

The key objective of this exploratory research was to identify the customer-centric e-payment factors for dining establishments in Hong Kong. Prior to the commencement of the data collection process, a literature review identified 12 preliminary dimensions with 24 statement items. An expert review suggested to reword three statement items to increase its face validity. The results of the measurement items were then transformed into a bilingual questionnaire (in English and Cantonese). A trial run of the questionnaire was carried out with 25 respondents. The overall feedback confirmed that the questionnaire was easy to comprehend.

The questionnaire comprised three sections. The first section was a screening question, "Have you ever used any of the following e-payment methods". It was a sampling strategy designed to screen out non-users. The second section consisted of the 24 statements to measure the e-payment factors. The last question was a statement, "Overall speaking, I am satisfied with the e-payment methods", aiming to obtain the respondents' overall satisfaction. The respondents were asked to indicate their level of agreement with each statement based on a scale of "1" (strongly disagree) to "5" (strongly agree). The last section was demographic information of the respondents, including gender, age group and education level.

The study population of this research was customers who had experience using e-payment methods in the hospitality industry. Convenience and snowball sampling methods were adopted. Data were collected in February 2020 using an online survey and 267 valid responses were obtained. Using SPSS, descriptive statistics, exploratory factor analysis and regression analysis were conducted.

4. Findings

4.1 Demographic profile

Among the 267 valid responses, male and female respondents accounted for 51.7% and 48.3% respectively, 15% of the respondents were 51 to 60 years old, 17.6% were 31 to 40 years old, 28% were 21 to 30 years old, and 11.6% were below 21 years old. Half of the respondents had obtained a bachelor's degree or above (49.8%), 15.7% had attained a post-secondary certification and 34.5% had attained primary or secondary education level.

4.2 Mean ratings of statements

Among the 24 statements, the item "have a high level of perceived trust among customers'' scored the highest mean rating of 4.57. This was followed by "provide a privacy-protection mechanism to ensure that my personal information is kept confidential" (4.55) and "have a high level of transparency" (4.47). This reflected that the respondents perceived the "security" of the e-payment method as their major area of concern. Conversely, the three lowest indicators were ''provide the latest updates of the business' current actions to reduce uncertainty'' (3.85), ''enable me to comprehend the future plan of the business to reduce uncertainty'' (3.83), and

''appear frequently on conversation/social media sites'' (3.65). The results revealed that the respondents had less interest in companies' business and marketing strategy, implying future communications to customers can make less effort in this area.

4.3 Exploratory factor analysis results

The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was 0.925 and Bartlett's Test of Sphericity was 3688.938 with a 0.000 significance level, indicating that exploratory factor analysis (EFA) could be proceeded. Principal Components Analysis and Varimax rotation were used. Table 2 presents the results of five factors with twenty indicators. The eigenvalue ranged from 1.06 to 10.30, while the factor loadings ranged from 0.52 to 0.82. The coefficient of the reliability test was above 0.7 (Hair, Black, Babin, & Anderson, 2010), i.e. between 0.71 and 0.93. The EFA result loaded five factors, namely factor 1 ''trustworthy security system'' (factor mean 4.43); factor 2 "efficient to use" (factor mean 4.29); factor 3 ''uncertainty reduction'' (factor mean 3.84); factor 4 ''discounts and incentives'' (factor mean 4.10) and factor 5 ''fast and safe cashless transactions'' (4.11). The cumulative variance was 66.25% which was above the threshold (Hair et al., 2010).

4.4 Regression analysis of customer satisfaction on e-payment experience

Regression analysis using a stepwise method was conducted to estimate the coefficients of the linear equation constituting 12 factors that best predicted the value of the dependent variable (customer satisfaction on e-payment experience). The overall regression model was significant, $F(3, 255) = 278.608$, $p < .001$, $R^2 = .766$. Factor 1 "trustworthy security system" (.510), factor 5 "fast and safe cashless transactions'' (.236) and factor 2 ''efficient to use'' (.362) exerted positive influences on the dependent variable.

5. Discussion and Conclusion

Three customer-centric e-payment factors for dining establishments were derived from the regression analysis.

5.1 Trustworthy security system

A trustworthy security system was found to be a major underlying factor influencing customer satisfaction with the e-payment experience. This showed how consumers attach importance to the information system protection of e-payment. Gul (2014) mentioned that trust is considered as a special psychological state, and it occurs when a party shows their honesty and reliability to others. Customer perceived value is directly related to the actual performance. Since Hong Kong consumers have a relatively high level of awareness of information systems, dining establishment providers should market this value-added service whilst emphasizing the provision of comprehensive data privacy protection. Board, Sutcliffe, and Wells (2002) stated that having a high level of transparency and offering users "right to know" information are important. When customers can receive or obtain more details about their transactions, the risks or uncertainty of their e-payment will be reduced. Customers may tend to trust the hotels because of their brand names and form judgments to use the stable and secure services provided by them.

5.2 Efficient to use

Efficient to use exerts an important influence on the customer satisfaction with e-payment experience. As opposed to traditional payment methods such as credit card or cash that require a much longer transaction time, the characteristic of e-payment is the convenience of access. Without doubt, being accessible anytime is an essential feature of dining products and services, such as food takeaways, in today's world.

Usability is also an element affecting the customer experience. When the interface design and the internal functions of e-payment methods are user friendly and comprehensive, the requests of the users could be fulfilled successfully. Especially, when the multiple demands of users could be both solved by a multi-functional e-payment method with simple verification procedures, the favourable impression and customer satisfaction of users will be boosted. Customer loyalty will be generated if the e-payment method is suitable for them. When the e-payment can provide all the services that customers need on a website or app, it will be convenient and efficient for them. When user familiarity is created, usage mistakes and errors are minimized, thereby, customer satisfaction and the user experience can be optimized.

5.3 Fast and safe cashless transactions

In view of the development and popularity of e-commerce in Hong Kong, customer buying behaviour has changed. The speed of transactions for take-away businesses has become the customer-centric factor expected of hotels and dining establishments. Also, because of the COVID-19 pandemic, the risks of carrying and using cash have increased substantially. According to Lamichhane, Adhikary, and Gautam (2009), currency is a type of vector in the transmission of viruses and bacteria in the community. Choi (2020) also mentioned that several banks in China and South Korea's central bank at one time were quarantining bank notes for at least seven days to stem the outbreak. Therefore, using e-payment to avoid the risk of carrying cash can reduce public concerns. This important factor can meet the multiple needs of the e-payment user in Hong Kong, so their customer satisfaction can be enhanced.

5.4 Contribution

This study explores the measurement items for customer-centric e-payment dimensions for adoption in the hospitality industry. The mobile payment methods developed in recent years have created a new variety of perceived security risk, that is, users' mobile devices may be damaged, stolen, lost or hacked (Stiakakis, Georgiadis & Andronoudi, 2016).This study was corroborated in their study as it was found that a trustworthy system is perceived important by respondents. This suggests that managers should put more effort into improving the security systems with their e-payment platform providers as this is valued by customers. As customers' information is stored on servers and the cloud, e-payment methods can establish a passcode for logging in or allow e-payment accounts to link with their email address, so that customers can retrieve and freeze their e-payment accounts easily, thereby avoiding any monetary loss or leaks of personal information. Moreover, if customers' mobile devices are disconnected from the Internet or run out of batteries, the e-payment system will be paralyzed. As such, mobile charging stations and the internet connection at the dining establishments are also the hygiene factors to maintain customer expectations regarding the accessibility of their service.

Finally, bacteria or viruses may cling to the surface of banknotes and facilitate the spread of the disease as transactions are conducted among people (Gardner, 2020). This study found that "fast and safe cashless transactions" is one of the important factors contributing to customer

satisfaction, while the indicator of "avoid the risk of carrying cash" is proven to be significant. This implies that customers are concerned about the risks of carrying cash, especially during the Covid-19 pandemic. Managers should, therefore, offer contactless e-payment methods as a pull factor to ensure their safety and health.

5.5 Limitations of the study

In view of the convenience sampling method used and the cross-sectional data collected at one point in Hong Kong, the generalizability of the results may be limited. The growth of e-payment platforms is highly likely to continue in the future, while the factors affecting customer perception and satisfaction will vary across time. Qualitative research using interviews and focus groups could yield more results to develop pull factors that attract and retain customers.

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Appendixes

Table 1. Preliminary e-payment factors

Dimensions		Definition	Reference
Convenience	Access convenience	Customers' perceived time and efforts spend to accustom the service.	Berry et al. (2002); Moeller et al. (2009); Ozkan et al. (2009)
	Transaction convenience	Customers' perceived time and efforts spent to conduct a transaction.	Chavosh et al. (2011); Jiang et al. (2013)
Financial benefits	Price discounts	Monetary incentives offer to customers that could facilitate buyers' satisfaction.	Ghosh and Saha (2018); Kour and Bedia (2015)
	Reward program	Incentives used to encourage future repurchase behaviours.	Putri (2018); Safa and Von Solms (2016)
Security	Transaction procedure	The process interaction of the e-payment methods.	Chaudhry et al. (2016); Hanzaee and Alinejad (2012); Nguyen and Huynh (2018); Tsiakis and Sthephanides (2005)
	Technical protection	The technical measures to protect e-payment system.	Huang and Cheng (2012); Jajaee and Tahernejad (2011); Tsiakis and Sthephanides (2005); Vinitha and Vasantha (2018)
	Security statements	The declaration and commitment of safety precautions to protect the security of e-payment system.	Barkhordari et al. (2017); Cotteleer et al. (2007); Lim (2008); Yoon (2002)
Brand reputation	Business integrity	Customers' perceived trust on the companies' business integrity.	Elbeltagi and Agag (2016); Piercy (1995); Scherling and Antinoja (2019)
	Word of mouth	People speaking or discussing on the positive experiences they have or events regarding the businesses.	Anderson (1998); Kim et al. (2009), Linda (2010); Ranaweera and Prabhu (2003)
	Customer loyalty	Consumers' acts to adopt one brands' products and services consistently.	Ariff et al. (2013); Castañeda (2011); Chen (2012); Moshan et al. (2011); Murray and Haubl (2002); Safa and Von Solms (2016)
User familiarity	User experience	Overall customer experience and enjoyment during the buying and using of products and services.	De Kerviler and Demoulin (2017); Huang and Cheng (2012); Ogara et al. (2014)
	Uncertainty reduction	Customers gaining understanding on the businesses to reduce the uncertainty, and establish trust.	Field et al. (2006); Gefen (2000)

Table 2. Results of the exploratory factor analysis

An e-payment method provided by merchants should	Factor loading	Factor name (factor mean)	Eigenvalue	% of variance	Cumulative variance	Cronbach alpha
be able to provide a security statement.	0.80	Factor 1 Trustworthy security system (4.45)	10.30	23.78	23.78	0.93
have a confirmation process to ensure that my payments have been received successfully.	0.79					
provide a privacy-protection mechanism to ensure that my personal information is kept confidential.	0.77					
be able to provide a security statement which is easy to comprehend.	0.73					
be able to provide a security statement which is easy to comprehend.	0.69					
have a high level of transparency.	0.69					
have an authentication process to verify my identity.	0.68					
receive a high level of perceived trust from me due to excellent integrity.	0.63					
make it easier for me to complete the transactions successfully once I am familiar with the method.	0.52					
contain a simple verification procedure.	0.67	Factor 2 Efficient to use (4.29)	1.78	14.89	38.67	0.82
be accessible at any time.	0.65					
be convenient to use.	0.64					
be easy to get familiar with.	0.62					
be user-friendly.	0.58					
Enable me to comprehend the future plan of the business to reduce uncertainty.	0.82	Factor 3 Uncertainty reduction (3.84)	1.58	10.61	49.28	0.83
Provide the latest updates of the businesses' current actions to reduce uncertainty.	0.74					
have exclusive discounts to motivate me to continuously use it.	0.81	Factor 4 Discounts and incentives (4.10)	1.19	9.12	58.40	0.87
provide a reward programme with incentives to motivate me to continuously use it.	0.80					
be faster to complete the transaction as compared to physical payment.	0.78	Factor 5 Fast and safe cashless transaction (4.11)	1.06	7.85	66.25	0.71
avoid the risk of carrying cash.	0.70					

Note: extraction method: principal component analysis; rotation method: varimax with Kaiser normalization. Five-point Likert scale was used, ranging from 1 = "strongly disagree" to 5 = "strongly agree".