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CONTINUANCE INTENTION OF MOBILE BANKING SERVICES AMONG GENERATION Y

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Abstract

In recent years, especially during the COVID-19 pandemic, more people have been using mobile banking services. Mobile banking will grow in the long run as long as people keep using it. Thus, the objective of this study was to investigate what factors affect Generation Y (Gen-Y) customers' continuance intention to utilize mobile banking services. These factors include perceived usefulness, perceived risk, and security. The researcher also evaluated their level of intention to use these services. This study used quantitative methods by distributing online questionnaires in Google form to Gen-Y users who used mobile banking services in Johor, Malaysia. Respondents are Gen-Y born between 1981 and 1996 who are 26 and 41 years old in year 2022. Data were computed using Statistical Packages for Social Science software. Multiple regression analyses were done to determine how the dependent and independent variables were related. The results showed that perceived usefulness, security, and perceived risk have a positive relationship with continuance intention. There was a high level of Gen-Y intention to keep using mobile banking services in the future. This study could give financial institutions valuable ideas for improving and developing their services.

Keywords: mobile banking, continuance intention, perceived usefulness, perceived risk, security

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Introduction

Self-service technologies (SSTs) are becoming incredibly common as information and communication technologies (ICTs) advance globally. SSTs have restructured an organization's relationship with the customers to improve customer service performance and, as a result, gain a competitive edge in the marketplace (Vakulenko et al., 2018). The advancement of SSTs changes the traditional method of banking services that need customers to wait in a financial institution to be assisted by staff towards a more effortless manner for them to use the bank services on their own (Yi et al., 2020). Some financial advancements include internet banking, automated teller machines (ATMs), and mobile banking services (Yi et al., 2020).

Mobile banking service is a high-tech service platform that is offered by a financial institution to its customers via mobile applications, allowing them to perform banking activities (Baabdullah et al., 2019). Banking activities, including fund transfers, checking account balances and credit loan payments, can be conducted quickly on mobile devices without waiting in line at a physical bank, as long as an internet connection is accessible (Baabdullah et al., 2019). The data from Bank Negara Malaysia in 2021 showed the number of people using mobile banking and signing up for it increased significantly during the COVID-19 lockdown period. The volume of mobile banking transactions reached 82.1 million simultaneously, which was a 46% growth from 56.2 million in January 2020. Cash transactions are reduced because of online transactions (Goh, 2020). Besides focusing on the behavior of new consumers utilizing mobile banking services, financial institutions must also concentrate on how to keep their current customers (Yi et al., 2020).

Previous research has revealed various problems, one of which is the lack of attention paid to Gen-Y's intention to use mobile banking services. However, some researchers have studied users' intentions toward mobile banking (Teo et al., 2015; Baptista & Oliveira, 2016; Karim et al., 2020; Yi et al., 2020), but little is known about the level of continuance intention among Gen-Y users in Malaysia (Karim et al., 2020). Karim et al. (2020) found that perceived usefulness, perceived ease of use, security, and trust significantly influence continuance. According to their study, there is a low level of continuance intention in trust at 0.422 towards mobile banking applications among Gen-Y users in Klang Valley, compared to perceived ease of use at 0.693. While the number of Malaysians who have signed up for mobile banking has increased dramatically, the perspective of their continuance intention was still inadequate because actual mobile banking subscribers may not be active users (Karim et al., 2020). Karim et al. (2020) suggested that other independent variables may be adopted in further studies to evaluate Malaysians' continuance intention accurately.

The growth of mobile transactions during the COVID-19 pandemic increased the risk of fraud (Alex, 2021). Customers spent more time online for both personal and work purposes. The increase has influenced mobile banking services in total transaction volumes. The high Internet penetration rate in Malaysia, which is 91.7%, is attributable primarily to the active participation of customers of all ages (Alex, 2021). As the potential for fraud increased, it became more difficult to detect, especially since many consumers were unaware of common scams. The Federation of Malaysian Consumers has received about 450 complaints and questions about scams since January 2021. The growing number of fraud cases challenges financial institutions when many users worry that they will become the next victim.

The applicability of the Technology Acceptance Model (TAM) has been established as a frugal model in several technology-related contexts in many studies (Davis et al., 1989) referenced in Barry et al., 2018). Furthermore, TAM was used in extensive studies to look into the continuance intention for using technology specifically in the field of electronic commerce, mobile banking, internet banking, and mobile services (Arenas Gaitan et al., 2015; Baptista & Oliveira, 2016; Barry et al., 2018; Gupta et al., 2018). Therefore, TAM is adopted in this study to evaluate the independent variables, such as perceived usefulness, security, and perceived risk influence on the dependent variable, which is the continuance intention of Gen-Y users towards mobile banking services.

Literature Review

The COVID-19 pandemic has pressured financial institutions to rethink how to conduct daily operations when strictly social distancing is practiced among Malaysians (Yi et al., 2020). Contactless payment is becoming more popular to prevent the virus from spreading through polluted surfaces like cash (Yi et al., 2020). As a result of the epidemic, an increase in the use of cashless payment during online purchases is unavoidable. Thus, mobile banking services play an essential role in fulfilling the newest demand for this type of transaction and have enormous opportunities to benefit from the current trend (Yi et al., 2020). Zhou (2012) emphasized that mobile banking services are a significant development that enables bank customers to solve spatially and temporally limitations in accessing banking services at any time and from any location.

To enhance customer satisfaction and loyalty towards the channel, the banks should improve the quality of services provided and solve the challenges faced during the epidemic period all over time (Yi et al., 2020). It is critical to consider the users' perception of mobile banking services to meet their expectations and demand. Continuance intention from the existing and new users could compete with the competitors in the market from time to time (Hellier et al., 2013). Hellier et al. (2013) emphasized that repurchase intention or continuance intention is based on the decision of a person to repurchase the specified goods and services through the same organization, considering its current situation and plausible circumstances. Table 1 shows previous studies on the continuance intention of mobile banking services.

Table 1. Past studies in the continuance intention of mobile banking services

Authors (Year)	Title	Country	Method	Findings
Bakar et al. (2017)	Perceived ease of use, privacy, and security of mobile banking	Malaysia	150 sets of questionnaires were distributed to the users of CIMB Bank in Kuala Terengganu. The researchers utilised SPPS for the correlation analysis and frequencies.	The findings showed a positive relationship between privacy and security with mobile banking adoption. Meanwhile, there was no positive relationship between perceived ease of use and adoption.
Foroughi et al. (2019)	Determinants of mobile banking continuance usage intention	Malaysia	The partial least squares technique was used to analyse the 369 mobile banking consumers in Malaysia.	The technology continuance theory (TCT) model was used to explain consumers' satisfaction, perceived usefulness, intentions, and attitude toward mobile banking usage. The results demonstrated channel importance and self-efficacy were the major factors of mobile banking intention. Based on the findings, perceived usefulness and attitude were not influenced by perceived ease of use.
Karim et al. (2020)	Determining the intention of mobile banking applications among millennial users in Malaysia	Malaysia	Data was collected from 310 mobile banking application users in Klang Valley, partial least squares structural equation modeling (PLS-SEM) technique was utilized in data analysis.	The results demonstrated that continuance intention was significantly affected by perceived security, perceived trust, perceived ease of use, and perceived usefulness, with perceived trust being strongly affected by perceived security and perceived usefulness affected by perceived ease of use.
Yi et al. (2020)	Determinants of mobile banking services continuance intention in Malaysia	Malaysia	This research included 197 consumers of mobile banking services in Malaysia. SmartPLS and SPSS software were applied to data analysis.	There was a positive relationship between satisfaction and performance expectancy toward consumers' continuance intention. Task Technology Fit (TTF) was significantly affected by technology characteristics and task characteristics. Meanwhile, performance expectancy was significantly affected by TTF. Satisfaction was significantly affected by confirmation and TTF.

Technology Acceptance Model (TAM)

TAM model has been applied by several previous researchers in a variety of technology-related research, including Cheung and Vogel (2013) about e-learning, Muk and Chung (2015) about short message service, Barry et al. (2018) in mobile commerce, and Al-Marrof and Al-Emran (2018) about e-learning, because the TAM variable may not capture the major elements that affect the intention of the consumers towards information system usage (Ha & Stoel, 2009). Based on Jaradat & Al Rababaa (2013), the researcher suggested reinforcing the TAM model by adding more variables. Furthermore, according to Gokhan & Sebnem (2016), TAM is a well-known extension in academic studies investigating the intention to use new technology. Barry et al. (2018) examined "security" as the expanded variable discovered to have intention determinants to adopt a specific information system. Based on the preceding, their research investigated the users' intention to use mobile banking applications by including trust (Singh & Srivastava, 2018) and security (Barry et al. 2018) for the expanded variables. PU and PEOU are the other two variables. Alalwan et al. (2016) investigated the customer adoption of mobile banking through external factors such as self-efficacy and perceived risk.

Perceived Usefulness

Davis (1989) emphasised that perceived usefulness is the extent to which a person thinks their productivity and job performance could be lengthened by utilizing an information system. Based on Park et al. (2014), perceived usefulness theorizes a direct relationship between behavioural intention to utilise information services in the TAM model. Davis et al. (1989) discussed that perceived usefulness is the most significant TAM factor that seems to have a positive and significant influence on behavioural intention.

Previous studies by Yi and Hwang (2003) discovered that perceived usefulness influenced continuance intention positively. There are the most outstanding and significant elements of perceived usefulness to evaluate the intention to utilize a specific information service. The TAM model was extended in the study of Venkatesh et al. (2003). Perceived usefulness significantly affects continual intention toward e-learning systems (Lin & Wang, 2012). A direct relationship between perceived usefulness with the intention to utilize an information system and online travel services was studied by Li and Liu (2014).

Meanwhile, a previous study by Abbas and Hamdy (2015) about cellular services showed that perceived usefulness influenced continuance intention positively. The users' continuance intention of electronic textbook usage was enhanced by its usefulness (Baker-Eveleth & Stone, 2015). The intention of users towards Google classroom usage in the research of Al-Maroof and Al-Emran (2018) discovered a positive relationship between perceived usefulness and continuance intention.

Security

Security is a risk that includes an activity involved in abuse and breaching, fraud cases, modification of data, destruction, and data theft (Kalakota & Whinston, 1997). According to Gitau and Nzuki (2014), consumers might lack faith in the information system's supplier. They could refuse to conduct any e-payment transactions except if security and privacy measures are included. Security becomes the main concern when a cash transaction is completed over electronic platforms.

According to Singh and Srivastava (2018), transaction-related activities of customers which are effectively safeguarded will increase their trust level in new services. Security was revealed to be an essential element in evaluating the continuance intention of youths to utilize technology-related items, including e-wallet applications, in prior research by Karim et al. (2020). Therefore, mobile banking services which offer security features will strengthen users' trust (Karim et al., 2020).

Perceived Risk

Featherman and Pavlou (2003) stated that consumers might face various risks, including physical, psychological, financial, social, and performance which causes the influence of perceived risk on behavioral intention to become more complex. Furthermore, consumers are more worried about the

possibility of disconnection issues. This is compounded by their concerns about cybercrimes, electronic piracy, and third parties, making them more reluctant to adopt online banking platforms (Poon, 2008). Thus, the consumer's perceived risk is critical when determining whether or not to purchase new services or technology (Rivat et al., 2005).

According to Kailani and Kumar (2011), the perceived risk related to e-buying behavior is high when the uncertainty aversion in a society is high, negatively influencing e-commerce. Wu and Wang (2005) discovered a strong correlation between perceived risk and intention for mobile commerce usage in Taiwan. Customer attitudes are influenced by perceived risk, perceived ease of use, and perceived usefulness, which substantially affect intention to utilize online group buying (OGB) sites (Lim, 2014). Lafraxo et al. (2018) discussed a negative relationship between perceived risk, facilitating conditions, and trust of mobile applications toward users' continuance intention. Figure 1 below displays the conceptual framework of the study. These are three main factors that have been adopted by Akturan and Tezcan (2012), Alalwan et al. (2017), and Karim et al. (2020).

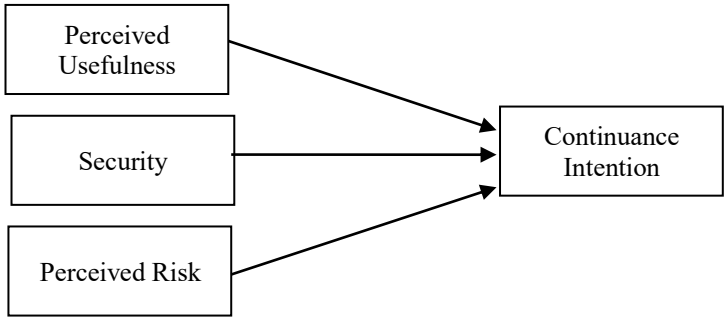

Figure 1. Conceptual framework of the study

The consideration above led to the following set of hypotheses:
Hypothesis 1: Perceived usefulness has a positive impact on continuance intention to use mobile banking services among Gen-Y
Hypothesis 2: Security has a positive impact on continuance intention to use mobile banking services among Gen-Y
Hypothesis 3: Perceived risk has a positive impact on continuance intention to use mobile banking services among Gen-Y

Research Methodology

The researcher utilised a quantitative method and surveyed the respondents by questionnaire to collect data. Basic statistics such as frequency, mean, standard deviation, percentages, and multiple regression are used to analyse and clarify the particular phenomenon. Convenience sampling was involved in this study. Krejcie and Morgan's sampling method was adopted to determine the sample size for the population. According to Jabatan Perangkaan Malaysia (2021), Johor has the third-highest number of Gen-Y in Malaysia, at 943,400. Based on Krejcie and Morgan's table, the sample suggested is 384 respondents.

This study gathered data from Gen-Y mobile banking service users in Johor by distributing online questionnaires in Google form through various social media platforms such as WhatsApp, Facebook, Instagram, and WeChat. Each set of questionnaires is divided into three segments. Part A aimed to collect information about the respondents' demographic characteristics, including gender, age, employment, frequency of using mobile banking, and others. Part B consisted of measurement questions related to the scale of the relationships between perceived usefulness, security, and perceived risk towards Gen-Y's continuance intention to use mobile banking services. Finally, Part C consisted of questions about the level of their continuance intention for these services. The researcher utilised the Likert Scale or 5-point Likert in Part B and C and SPSS software version 26 to analyse data.

Results and Discussion

The response rate for this study was 92% with 386 out of 420 questionnaires returned. The results showed that females comprised 65% of the sample, while males comprised only 35%. 58.6% were between the ages of 26 and 30, and 22.9% were between the ages of 31 and 35. The lowest proportion, 18.6% was attained by respondents aged 36–41. 195 people were working, occupying 50%, while 20% were unemployed. The most significant participants were Chinese at 167, followed by Malay at 133 and Indian at 86. Half of them lived in the urban area and another half in the rural area. Mobile banking services were utilised by 38.6% at least once per week and 32.1% at least once per month. 72 respondents said they used Bank Islam Malaysia, while another 37.9% said they used CIMB Bank. The lowest usage rate was attained by Hong Leong Bank, with only 10.6%.

Reliability analysis was performed to ensure the study's accuracy. The researchers could determine the internal reliability by Cronbach's Alpha by identifying the questionnaires consisting of Likert scale questions (Bhatnagar et al., 2014). The greater the value, the more desirable it was, as the reliability gave a value between 0 to 1.0. Some improvements are needed to improve Cronbach's Alpha value below 0.7 (Bhatnagar et al., 2014). The following Table 2 shows the reliability test.

Table 2. Reliability test

	Variables	Cronbach's Alpha (n=386)	N of Items
	Overall	0.939	9
PU	Perceived Usefulness (PU)	0.945	3
SEC	Security (SEC)	0.948	3
PR	Perceived Risk (PR)	0.924	3

The outcome of the reliability test for the variables is displayed above. There had 386 respondents with 9 items. The overall Cronbach's Alpha value was 0.939, indicating high levels of reliability. Cronbach's Alpha for PU was 0.945, SEC was 0.948, and PR was 0.924.

Table 3. Normality test

	Kolmogorov-Smirnov[a]		Shapiro-Wilk	
	Statistic	Sig.	Statistic	Sig.
Mean PU	.274	.000	.737	.000
Mean SEC	.256	.000	.869	.000
Mean PR	.208	.000	.898	.000

Kolmogorov-Smirnov test was used to decide if a sample comes from a population with a specific distribution (Karson, 1968) as shown in Table 3. All the p-value of the tested item were less than 0.05 which were not normally distributed. Hence, the researcher evaluated skewness and kurtosis values to finalise the normality of all the tested variables. According to Hair et al. (2010), data can be considered normal if the skewness is between -2 and +2 and the kurtosis is between -7 and +7.

Table 4. Skewness and Kurtosis

Variables	Skewness	Kurtosis
PU	-1.502	3.329
SEC	-0.234	-0.787
PR	-0.095	-0.925

According to Table 4, all the variables' normality was accepted. The skewness of PU, SEC, and PR was between -2 and +2 which were -1.502, -0.234, and -0.095 respectively. Meanwhile, their kurtosis was

between -7 and +7 which were 3.329, -0.787, and -0.925 separately. Table 5 shows the central tendency level measurement.

Table 5. Central tendency level measurement (Neuman, 2014)

Central of tendency level	Mean range
High	3.67 - 5.00
Medium	2.33 - 3.66
Low	1.00 - 2.32

Perceived usefulness obtained a high central tendency level. Table 6 shows the descriptive statistics data of PU, SEC, and PR where two attributes achieved the highest mean at 4.34 such as "I feel that adopting mobile banking in my job could allow me to complete my tasks faster" and "I feel that adopting mobile banking could enhance my performance in conducting banking transactions." Besides that, the results displayed a medium central tendency level for security. "I believe that the mobile banking website possesses the technical ability to assure that no other firm can supplant its online identity" gained the highest mean at 3.63. The standard deviation ranges from 0.916 to 0.940. There was a medium central tendency level in perceived risk as well. "Using mobile banking exposes my bank account to the risk of fraud" obtained the lowest mean at 2.99.

Table 6. Descriptive statistics data of PU, SEC, and PR

Factors	Attributes	Mean	Std. Deviation	Central of Tendency Level
Perceived Usefulness	1. I feel that adopting mobile banking in my job could allow me to complete my tasks faster.	4.34	0.783	High
	2. I feel that adopting mobile banking could enhance my performance in conducting banking transactions.	4.34	0.819	High
	3. In my opinion, mobile banking is beneficial.	4.24	0.785	High
Security	1. I believe that the privacy and confidentiality of my details are protected during mobile banking.	3.54	0.940	Medium
	2. I believe that all mobile banking transactions are secure.	3.53	0.933	Medium
	3. I believe that the mobile banking website possesses the technical ability to assure that no other firm can supplant its online identity.	3.63	0.916	Medium
Perceived Risk	1. I think using mobile banking threatens my privacy.	3.01	1.103	Medium
	2. Using mobile banking exposes my bank account to the risk of fraud.	2.99	1.135	Medium
	3. Mobile banking may not function properly and will create issues with my bank account.	3.05	1.102	Medium

Table 7 shows the level of Gen-Y continuance intention where the highest mean at 4.08 was achieved by "I intend to continue using mobile banking services in the future." One of the variables, "I will continue to use mobile banking services although there are no incentives," obtained the lowest mean at 3.80.

Table 7. The level of Gen-Y continuance intention

Variables	Mean	Std. Deviation	Central of Tendency Level
I intend to continue using mobile banking services in the future.	4.08	0.796	High

I will continue to use mobile banking services although there are no incentives (e.g., cashback, rebates, promotions, or discounts offered).	3.80	1.012	High
I prefer to continue using mobile banking instead of other payment alternatives.	3.89	0.945	High
I will strongly recommend that others use mobile banking services during the COVID-19 pandemic period.	3.94	0.846	High

Multiple regression analyses were performed to investigate the relationship between the dependent and independent variables. For numerical variables, the Pearson correlation method is the most commonly used. It allocates a number between 0 and 1, with 0 representing no correlation, 1 representing total positive correlation, and -1 representing total negative correlation (Nettleton, 2014). Table 8 shows the correlations between PU, SEC, and PR.

Table 8. The correlations between PU, SEC, and PR

	PU	**SEC**	**PR**
PU	1		
SEC	0.321	1	
PR	0.276	0.239	1

Note: * Correlation is significant at the 0.01 level (2-tailed).
** Correlation is significant at the 0.05 level (2-tailed).

All determinants are statistically correlated with Continuance Intention with correlation values ranging from 0.239 to 0.321 as shown in Table 8.

Table 9. Summary of Multiple Regression Analysis Buying (n=386)

Determinants	**β**	**t**	**Sig.**
Perceived Usefulness	0.143	3.649	0.002**
Security	0.283	6.309	0.000**
Perceived Risk	0.104	2.340	0.001**

*Note: R=0.602; R^2= 0.348; Adjusted R^2=0.332; F=47.857; Sig. F Change=0.000; Durbin-Watson=1.778; *p<0.01; **p<0.05*
B=Unstandardized Coefficient; SE B=Standard error of coefficient; ß=Beta coefficient

Results shown in Table 9 suggest that all variables have significant influence on continuance intention ($p \leq 0.05$). The factors were Perceived Usefulness, Security, and Perceived Risk. All hypotheses i.e. Hypothesis 1, Hypothesis 2, and Hypothesis 3 are accepted since the three variables are statistically significant ($p \leq 0.05$) and positively related to continuance intention (Beta = 0.143, 0.283, and 0.104). Therefore, Perceived Usefulness, Security, and Perceived Risk have significant contribution to Continuance Intention among Gen-Y in Johor.

Table 10. Hypothesis result

Hypothesis	Description	Result
H1	Perceived usefulness has a positive impact on continuance intention to use mobile banking services among Gen-Y	Supported
H2	Security has a positive impact on the continuance intention to use mobile banking services among Gen-Y	Supported
H3	Perceived risk has a positive impact on continuance intention to use mobile banking services among Gen-Y	Supported

According to the hypothesis result in Table 10, H1, H2, and H3 were supported. This can be concluded that perceived usefulness, security positively, and perceived risk impact continuance intention to use mobile banking services among Gen-Y in Johor.

Conclusion

Perceived usefulness, security, and perceive risk positively impact continuance intention to use mobile banking services. Firstly, for the perceived usefulness, the respondents thought that mobile banking services were helpful as they can save time when their tasks can be completed faster. These services also could enhance their performance in conducting banking transactions. They thought that mobile banking was beneficial. Gu et al. (2009) conducted a study about continuance intention to use mobile banking, and their findings found that perceived usefulness was the primary determinant of users.

Secondly, the Gen-Y respondents who answered the survey were convinced that their information was secure while using mobile banking. Customers had faith in the security of all mobile banking transactions. On the other hand, they reasoned that the mobile banking website had the necessary infrastructure to guarantee that no competing business could usurp its online reputation. According to research by Singh and Srivastava (2018), security had a positive relationship with continuance intention.

Lastly, the users felt that mobile banking would threaten their privacy and expose them to the risk of fraud. The respondents felt mobile banking would not fully secure and issues might happen with their bank accounts. Past study by Akturan and Tezcan (2012) found that the attitudes toward mobile banking adoption were influenced directly by perceived risk. However, according to Tarawneh (2021), perceived risk had the most negligible impact on intention and use. It is assumed that users do not feel threatened by mobile banking services when they become acquainted with sophisticated technology. This can vary according to country the respondents reside showing that this study found perceived risk had positive impact on continuance intention among Gen-Y in Johor.

Some recommendations are given to other researchers. For example, they can explore different generations and states in the future. They could conduct a comparative study on the determinants of continuance intention for mobile banking services among Baby Boomers, and Generation X. Future studies should also focus on mobile Islamic banking services, which have huge potential in modern banking services (Adrutdin et al., 2020). The bank's efforts to improve services lead to higher customer satisfaction, and creating loyal customers benefits these financial institutions directly (Hasim et al., 2015).

In conclusion, Gen-Y mobile banking users in Johor had a high level of continuance intention to use mobile banking services. Having grown up during the information age, Gen-Y understands how to use various forms of technology. They are well-versed in all things digital, so using mobile banking services is more effortless. Even more so than usual during the COVID-19 pandemic, mobile banking service providers must guarantee the safety and utility of their services at all times. Financial services are no different from any other industry in that the customer is the most crucial part of the business. To ensure that customers keep using their services, they are constantly improving their performance by adding new security and trust features.

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Author Contribution

TJ Hui – Conceptualization; MA Hasim – Formal Analysis, Methodology, Supervision; MA Shafi – Validation, Writing–Original Draft

Conflict of Interest

The authors whose names are listed immediately below certify that they have NO affiliations with or involvement in any organization or entity with any financial interest or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

References

Abbas, H. A., & Hamdy, H. I. (2015). Determinants of continuance intention factor in Kuwait communication market: Case study of Zain-Kuwait. *Computers in Human Behavior*, 49, 648-657. https://doi.org/10.1016/j.chb.2015.03.035

Akturan, U., & Tezcan, N. (2012). Mobile banking adoption of the youth market: Perceptions and intentions. *Marketing Intelligence and Planning*, *30*(4), 444–459. https://doi.org/10.1108/02634501211231928

Alalwan, A. A., Dwivedi, Y. K., Rana, N. P. P., & Williams, M. D. (2016). Consumer adoption of mobile banking in Jordan: Examining the role of usefulness, ease of use, perceived risk and self-efficacy. *Journal of Enterprise Information Management*, *29*(1), 118–139. https://doi.org/10.1108/JEIM-04-2015-0035

Alalwan, A. A., Dwivedi, Y. K., & Rana, N. P. (2017). Factors influencing adoption of mobile banking by Jordanian bank customers: Extending UTAUT2 with trust. *International Journal of Information Management*, *37*(3), 99–110. https://doi.org/10.1016/j.ijinfomgt.2017.01.002

Alex Rad. (2021, December 19). Technology is a double-edged sword for financial fraud risk management. The Asian Banker. https://www.theasianbanker.com/updates-and-articles/technology-a-double-edged-sword-for-financial-fraud-risk-management

Al-Maroof, R. A. S., & Al-Emran, M. (2018). Students acceptance of google classroom: An exploratory study using PLS-SEM approach. *International Journal of Emerging Technologies in Learning*, *13*(6), 112. https://doi.org/10.3991/ijet.v13i06.8275

Adrutdin, K. F., Gadar, K., Rahim, N. S. A., & Hasim, M. A. (2020). Customer Education in Islamic Banking in Malaysia. Journal of Critical Reviews, *7*(8), 127–131. https://doi.org/10.31838/jcr.07.08.26

Arenas-Gaitán, J., Peral-Peral, B., & Ramón-Jerónimo, M. A. (2015). Elderly and internet banking: An application of UTAUT2. *Journal of Internet Banking and Commerce*, *20*(1), 1–23. http://www.arraydev.com/commerce/jibc/

Gokhan A. & Sebnem B. (2016). Adoption of mobile payment systems: a study on mobile wallets. *Pressacademia*, *5*(1), 73–73. https://doi.org/10.17261/pressacademia.2016116555

Baabdullah, A. M., Alalwan, A. A., Rana, N. P., Patil, P., & Dwivedi, Y. K. (2019). An integrated model for m-banking adoption in Saudi Arabia. *International Journal of Bank Marketing*, *37*(2), 452–478. https://doi.org/10.1108/IJBM-07-2018-0183

Bakar, R. A., Aziz, N. A., Muhammud, A., & Muda, M. (2017). Perceived Ease of Use, Security and Privacy of Mobile Banking. *International Journal of Business, Economic and Law*, *13*(2), 56–62.

Baker-Eveleth, L., & Stone, R. W. (2015). Usability, expectation, confirmation, and continuance intentions to use electronic textbooks. *Behaviour and Information Technology*, *34*(10), 992–1004. https://doi.org/10.1080/0144929X.2015.1039061

Bank Negara Malaysia (2021, October 7). Noticeable rise in mobile banking, and internet banking subscribers. The Edge Markets. https://www.theedgemarkets.com/article/noticeable-rise-mobile-banking-internet-banking-subscribers

Baptista, G., & Oliveira, T. (2016). A weight and a meta-analysis on mobile banking acceptance research. *Computers in Human Behavior*, *63*, 480–489. https://doi.org/10.1016/j.chb.2016.05.074

Barry, M., Jan, M. T., & Islamic, I. (2018). Factors Influencing the Use of M-Commerce: An Extended Technology Acceptance Model Perspective. *International Journal of Economics, Management and Accounting*, *26*(1), 157–183.

Bhatnagar, R., Kim, J., & E. Many, J. (2014). Candidate Surveys on Program Evaluation: Examining Instrument Reliability, Validity, and Program Effectiveness. *American Journal of Educational Research*, *2*(8), 683–690. https://doi.org/10.12691/education-2-8-18

Cheung, R., & Vogel, D. (2013). Predicting user acceptance of collaborative technologies: An extension of the technology acceptance model for e-learning. *Computers and Education*, *63*, 160–175. https://doi.org/10.1016/j.compedu.2012.12.003

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, *13*(3), 319. https://doi.org/10.2307/249008

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, *35*(8), 982–1003. https://doi.org/10.1287/mnsc.35.8.982

Featherman, M. S., & Pavlou, P. A. (2003). Predicting e-services adoption: A perceived risk facets perspective. *International Journal of Human-Computer Studies*, *59*(4), 451–474. https://doi.org/10.1016/S1071-5819(03)00111-3

Federation of Malaysian Consumers. (2021, April 2). Consumer alert – Scam cases are rising. FOMCA. https://www.fomca.org.my/v1/index.php/fomca-di-pentas-media/fomca-di-pentas-media-2021-21/1314-consumer-alert-scam-cases-are-rising

Foroughi, B., Iranmanesh, M., & Hyun, S. S. (2019). Understanding the determinants of mobile banking continuance usage intention. *Journal of Enterprise Information Management*, *32*(6), 1015–1033. https://doi.org/10.1108/JEIM-10-2018-0237

Gitau, L., & Nzuki, D. (2014). Analysis of Determinants of M-Commerce Adoption by Online Consumers. *International Journal of Business, Humanities and Technology*, *4*(3), 88–94.

Goh, J. (2020, October 7). Noticeable rise in mobile banking, and internet banking subscribers. The Edge Markets. https://www.theedgemarkets.com/article/noticeable-rise-mobile-banking-internet-banking-subscribers

Gu, J. C., Lee, S. C., & Suh, Y. H. (2009). Determinants of behavioral intention to mobile banking. *Expert Systems with Applications*, *36*(9), 11605–11616. https://doi.org/10.1016/j.eswa.2009.03.024

Gupta, A., Dogra, N., & George, B. (2018). What determines tourist adoption of smartphone apps: An analysis based on the UTAUT-2 framework. *Journal of Hospitality and Tourism Technology*, *9*(1), 48–62. https://doi.org/10.1108/JHTT-02-2017-0013

Ha, S., & Stoel, L. (2009). Consumer e-shopping acceptance: Antecedents in a technology acceptance model. *Journal of Business Research*, *62*(5), 565–571. https://doi.org/10.1016/j.jbusres.2008.06.016

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2010). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). Sage Publications. *European Journal of Tourism Research*, *6*(2), 211–213.

Hasim, M. A., Mahmud, K. N., Shamsudin, M. F., Hussain, H. I., & Salem, M. A. (2015). Loyalty Program and Customer Loyalty in the Banking Industry. *Global Journal of Interdisciplinary Social Sciences*, *15*, 16-21. https://www.longdom.org/abstract/loyalty-program-customer-loyalty-in-banking-industry-2594.html

Hellier, P. K., Geursen, G. M., Carr, R. A., & Rickard, J. A. (2013). Customer repurchase intention. *European Journal of Marketing*, *37*(11/12), 1762–1800. https://doi.org/10.1108/03090560310495456

Jabatan Perangkaan Malaysia (2021, November 1). Population Quick Info. Population Quick Info. Retrieved from http://pqi.stats.gov.my/searchBI.php

Jaradat, M.-I. R., & Al Rababaa, M. S. (2013). Assessing Key Factors that Influence the Acceptance of Mobile Commerce Based on Modified UTAUT. *International Journal of Business and Management*, *8*(23), 102–112. https://doi.org/10.5539/ijbm.v8n23p102

Kailani, M., & Kumar, R. (2011). Investigating Uncertainty Avoidance and Perceived Risk for Impacting Internet Buying: A Study in Three National Cultures. *International Journal of Business and Management*, *6*(5), 76–92. https://doi.org/10.5539/ijbm.v6n5p76

Kalakota, R., & Whinston, A. B. (1997). Electronic Commerce: A Manager's Guide Table of Contents.

Karim, M. W., Ulfy, M. A., & Huda, M. N. (2020). Determining intention to use smartphone banking application among millennial cohort in Malaysia. *International Journal of Management and Sustainability*, *9*(1), 43–53. https://doi.org/10.18488/journal.11.2020.91.43.53

Karson, M. (1968). Handbook of Methods of Applied Statistics. Volume I: Techniques of Computation Descriptive Methods, and Statistical Inference. Volume II: Planning of Surveys and Experiments. I. M.

Lafraxo, Y., Hadri, F., Amhal, H., & Rossafi, A. (2018). The effect of trust, perceived risk and security on the adoption of mobile banking in Morocco. ICEIS 2018 - Proceedings of the 20th International Conference on Enterprise Information Systems, 497–502. https://doi.org/10.5220/0006675604970502

Li, H., & Liu, Y. (2014). Understanding post-adoption behaviors of e-service users in the context of online travel services. *Information and Management*, *51*(8), 1043–1052. https://doi.org/10.1016/j.im.2014.07.004

Lim, W. M. (2014). Sense of virtual community and perceived critical mass in online group buying. In Journal of Strategic Marketing (Vol. 22, Issue 3, pp. 268–283). Taylor & Francis. https://doi.org/10.1080/0965254X.2013.876068

Lin, W.S. & Wang, C.H. (2012). Antecedences to continued intentions of adopting e-learning system in blended learning instruction: A contingency framework based on models of information system success and task-technology fit. *Computers & Education*, *58*(1), 88-99. Elsevier Ltd.

Muk, A., & Chung, C. (2015). Applying the technology acceptance model in a two-country study of SMS advertising. *Journal of Business Research*, *68*(1), 1–6. https://doi.org/10.1016/j.jbusres.2014.06.001

Nettleton, D. (2014). Commercial Data Mining: Processing, Analysis and Modeling for Predictive Analytics Projects (The Savvy Manager's Guides) (1st ed.). Morgan Kaufmann.

Neuman, S. (2014). Bayesian analysis of data-worth considering model and parameter uncertainties. *Advances in Water Resources*, *36*, 75–85. https://doi.org/10.1016/j.advwatres.2011.02.007

Park, N., Rhoads, M., Hou, J., & Lee, K. M. (2014). Understanding the acceptance of teleconferencing systems among employees: An extension of the technology acceptance model. *Computers in Human Behavior*, *39*, 118–127. https://doi.org/10.1016/j.chb.2014.05.048

Poon, W. C. (2008). Users' adoption of e-banking services: The Malaysian perspective. *Journal of Business and Industrial Marketing*, *23*(1), 59–69. https://doi.org/10.1108/08858620810841498

Rivat, C., Rodrigues, S., Bruyneel, E., Piétu, G., Robert, A., Redeuilh, G., Bracke, M., Gespach, C., & Attoub, S. (2005). Erratum: Implication of STAT3 signaling in human colonic cancer cells during intestinal trefoil factor 3 (TFF3)- and vascular endothelial growth factor-mediated cellular invasion and tumor growth (Cancer Research (January 1, 2005) 65 (195-202)). *Cancer Research*, *65*(6), 2505. https://doi.org/10.1158/0008-5472.

Singh, S., & Srivastava, R. K. (2018). Predicting the intention to use mobile banking in India. *International Journal of Bank Marketing*, *36*(2), 357–378. https://doi.org/10.1108/IJBM-12-2016-0186

Tarawneh, M., Nguyen, L. T. P., & Fie, Y. (2021). Mobile banking adoption and usage among Generation Y Malaysians. F1000Research, 10, 1170. https://doi.org/10.12688/f1000research.73459.1

Teo, A. C., Tan, G. W. H., Ooi, K. B., Hew, T. S., & Yew, K. T. (2015). The effects of convenience and speed in m-payment. *Industrial Management and Data Systems*, *115*(2), 311–331. https://doi.org/10.1108/IMDS-08-2014-0231

Vakulenko, Y., Hellström, D., & Oghazi, P. (2018). Customer value in self-service kiosks: a systematic literature review. *International Journal of Retail and Distribution Management*, *46*(5), 507–527. https://doi.org/10.1108/IJRDM-04-2017-0084

Venkatesh, V., Morris, M. G., Speier, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly: *Management Information Systems*, *27*(3), 425–478. https://doi.org/10.2307/30036540

Wu, J. H., & Wang, S. C. (2005). What drives mobile commerce? An empirical evaluation of the revised technology acceptance model. *Information and Management*, *42*(5), 719–729. https://doi.org/10.1016/j.im.2004.07.001

Yi, E. L. Y., Sng, W. C., Leong, C. M., & Ho, S. J. (2020). Determinants of mobile banking services continuance intention in Malaysia. *Journal of Marketing Advances and Practices*, *3*(1), 20-41.

Yi, M. Y., & Hwang, Y. (2003). Predicting the use of web-based information systems: Self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model. *International Journal of Human-Computer Studies*, *59*(4), 431–449. https://doi.org/10.1016/S1071-5819(03)00114-9

Zhou, T. (2012). Examining mobile banking user adoption from the perspectives of trust and flow experience. *Information Technology and Management*, *13*(1), 27–37. https://doi.org/10.1007/s10799-011-0111-8