

Humanness Features Could be Key Determinant in Driving Adoption Intention of Banking Services from Licensed Digital Banks: A Conceptual Paper

Pooi Mun Yeow, Abu Bakar Sade, Hon Tat Huam

Putra Business School, University Putra Malaysia, Malaysia

Email: pbs21104070@grad.putrabs.edu.my, abubakar.sade@putrabs.edu.my,
huam@putrabs.edu.my

To Link this Article: <http://dx.doi.org/10.6007/IJARBSS/v14-i1/19912> DOI:10.6007/IJARBSS/v14-i1/19912

Published Date: 08 January 2024

Abstract

Licensed digital bank has become the hot topic in Asia and there are primed for growth. However, the path for licensed digital bank remains challenging as it is hard to gain customer affinity, trust and loyalty without human interaction. The establishment of licensed digital bank is significantly affected by the changes of technology and consumer preference in accepting banking innovation that operates fully digital without human interaction. This study integrates Diffusion of Innovation Theory and Anthropomorphic Theory into Stimulus-organism-response framework in investigating consumer perception on licensed digital bank that motivated by consumer innovativeness and humanness features of licensed digital bank. Since trust is crucial in getting consumer affinity in digital environment, the moderating effect of trust will be investigated. Quantitative research method will be used to facilitate the deductive approach for concepts and hypothesis testing. The population of study is scoped into Malaysian who are eligible to own bank account and use mobile banking application for banking activities. They represent diversity in gender and culture as well as people who are deemed likely to adopt licensed digital bank services with the aid of mobile internet. The findings of study will help stakeholders to develop their go-to-market strategy. This will help them to move this innovation from niche to mainstream strategically. Moreover, it provides a framework as a baseline for future research for a deeper knowledge and understanding related to financial technology innovations adoption in emerging countries.

Keywords: Digital Bank, Consumer Innovativeness, Anthropomorphic, Humanness, Humanlike, Adoption Intention

Introduction

Banking industry has evolved rapidly over recent decades. Consumers have gone through the transition of cash to credit in payment method as well as online digital banking with the aid of technology innovation. Technology innovations have been changing the lifestyle of

consumers and they are changing their way on how to manage money at a faster pace than previously. The financial technology evolution leads to the formation of licensed digital bank which focus on online only banking services to cater the customers with independent banking operations. It has become the hot topic in Asia and there are primed for growth as the increase of license allocations by the region's regulators. This new wave of digital disruption has threatened the conventional banks in losing market share as the licensed digital banks pose the affordability to compete with lower cost financial products to the customers in resulting a greater competition in the market.

However, the path forward for licensed digital banks remains challenging because the licensed digital bank is considered in infancy stage and relatively new to the consumers. Mr. Sunny Quek, the head of consumer financial services from OCBC Bank Singapore highlighted that although licensed digital banks are expected to excite the financial space, they face with the existing hyper-competitive environment (The Straits Times, 2020). They are not only need to focus on how to win in this market but also how to play rule the game in the way that suits their business model in this competitive environment. According to a survey conducted by Association of Banks in Malaysia in 2019, 81% of bank customers are satisfied with their bank services. Staff behaviour is the key reason attributed to the high satisfaction scores. Since the customers of licensed digital bank can only perform all the banking activities fully online without visiting to any physical branch or interact with the bank staffs, it will be a challenge for the licensed digital bank to gain customer affinity, trust and loyalty to get-go in the rivalry.

Furthermore, International Business Machines Corporation (IBM) highlighted three success factors for licensed digital bank sustainability. Firstly, consumers rarely trust their life savings to an unknown internet corporation. Therefore, it is easier for a well-known traditional bank's digital subsidiary to grow a licensed digital bank. The second important success factor is the ability to create right experience for customers. It is very much related to how consumer evaluate their experience and perception on interacting with the digital operations. Lastly, the third factor is the ability to become profitability by its innovative financial products (International Business Machines Corporation, 2015).

Overall Landscape of Licensed Digital Bank in Asia

According to Mckinsey quarterly financial services report (Mckinsey, 2010), licensed digital bank can operate with only a registered head office and all banking operations can be performed fully online without visiting to any physical branch. Consumers can benefit from eliminating the hassle queuing at the branches for financial services. Since there are lesser labour costs and operational costs from physical branches, the licensed digital banks could provide highly cost-effective products and services to the customers. The economic value efficiency is achieved by providing the same financial products but lower charges, interest rate and administration fee offered.

To the businesses, licensed digital banks can provide more accessible loans to the small and mediums-sized enterprises (SME) with its simplified lending management, digitalized fast approval process, tailored customer solutions and competitive offering to a wider group of smaller size businesses. Once established, the licensed digital bank can gain greater revenue at lesser cost compared the conventional banks. Its innovative financial products will improve the financial well-being of both individuals and business as well as to the unserved and

underserved populations includes low-income group and start-ups enterprise. This innovation would therefore foster the country economic growth and provide financial inclusion for emerging countries.

However, the path for the licensed digital bank to profitability is challenging. According to the report conducted by Boston Consulting Group (Boston Consulting Group, 2021), out of 249 licensed digital banks globally as of 2020, there is only 5% of them are profitable or achieved break-even. Although there is significant growth in the recent years, these licensed digital banks have captured less than 2% market share in terms of total value of loans and deposits from both retail customers and small and medium sized enterprises (SME).

The South Korea government has authorized two licensed digital banks in 2016 which are K-Bank and Kakao Bank. The licensed digital banks do not only offer useful financial services to the consumers, but they also provide entertaining services such as use deposit interest as token to buy music or gaming content, perform fund transfer via KakaoTalk messenger and offers meeting account services that allows users to create and invite friends to this account to perform financial activities for certain purpose such as travel funding. This does not only provide an enjoyment usage experience to the users, the referral of using such service will increase peer influence in the use of licensed digital banks. Despite the high licensed digital bank prospects in South Korea, the market share of licensed digital bank in South Korean banking industry was only 1.7% in 2018 which is highlighted in Hankyung News (Kim, 2018). South Korea is known as one of the technology well-developed countries in Asia but the consumers' adoption of licensed digital bank does not meet its expectation.

Although licensed digital bank is expected to provide financial inclusion in the Southeast Asia (SEA) region, the adoption is very much relied on the dependency of digital adoption of the region since it provides service fully online. Table I shows the latest Digital Adoption Index provided by the World Bank to measure the global spread of digital technologies across the dimensions of the people, government and business. It is within expectation that Singapore outperforms across the region but other countries in SEA region are still lag behind other adjacent countries in term of new technology catch-up. Hence, the adoption of licensed digital bank in SEA to meet its expectation is still doubtful.

Table I

Digital Adoption Index (DAI)

Country	DAI	World Rank
Singapore	0.87	1
Malaysia	0.69	41
Thailand	0.62	61
Vietnam	0.52	91
Philippines	0.49	101
Indonesia	0.46	109
Cambodia	0.40	123
Myanmar	0.26	160

(Source: The World Bank, 2016)

Licensed digital bank seems to be the next frontier of innovations in financial services sector. However, as per reported by The Edge Malaysia (2020), Maybank Kim Eng Research stated that the licensed digital banks will not pose any material impact on the conventional banks in medium-term and estimated only 1.2% loan market share by the licensed digital banks within three years which is not substantial. This is also agreed by the financial services assurance partner of PwC Malaysia Kelvin Lee who highlighted that there will be no significant threat to the conventional banks in Singapore in the first few years. He added that similar limited impact is expected in Malaysia once the licensed digital bank is launched.

Other than that, the Global Innovations Index captured by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO) indicates that the innovation index of Malaysia is trending down over the past years while there is upward trends for other Asian countries (Cornell University, INSEAD and WIPO, 2020).

According to VISA Consumer Payment Attitudes Study 2021 (VISA, 2021), two-thirds of consumers in SEA are aware of licensed digital banks and have shown interest (66%) in adopting it for the services. On the other hands, they are still fearful of the unauthorized and fraudulent transactions (39%), risk of account being hacked (38%) and preferable on human interaction for banking needs (29%). Despite contactless payment adoption has gained traction in SEA, cash remain widely and 45% of them use cash as most preference payment method (VISA, 2021).

Although technology and digitalization have changed the way how consumer use banking services, it does not mean that the licensed digital bank is automated and robotic. A licensed digital bank could be more human than conventional bank because it leverages technology to understand the customer and exudes intuition and intimation to the customer which might not be perfectly done executed in human to human interaction. The intelligences of licensed digital bank becomes the secret weapon for its competition (Skinner, 2014). For example, licensed digital banks could provide strong customer engagement and financial advices by knowing their customer through Know Your Customer's Context (KYCC) which uses of location based and digital onboarding journey data to formulate customer's needs, wishes and challenges. With the aid of technology and big data revolution, licensed digital banks could segment their customers based on their personas and reach out to them according to their point of life. Skinner (2014) suggested that the licensed digital banks could be designed more on the humanity and human interaction is the heart of everything. Licensed digital banks could be created in the form of which consumer like to interact to create customer affinity and trust.

From financial technology perspective, the demand for artificial intelligence application in financial services is growing. The Edge Markets (2021) stated that there is a shift in trust on financial management among consumers. According to Oracle and Savanta (2021), 63% of consumers trust intelligent robots more than humans to look after their finances while 77% of business leaders trust intelligent robots more than their finance team for financial-related tasks. Trust between humans is broken but filling up by artificial intelligent robots due to its efficiency and automation capability (Oracle and Savanta, 2021). Nevertheless, human element is still crucial. The business organization still prefer human interaction for certain financial-related tasks such as communication, discounts negotiation and approval while

consumer revealed still trust financial advisers in providing guidance on purchasing decisions (Oracle and Savanta, 2021).

Therefore, it remains uncertain whether consumers are keen to adopt the licensed digital bank as an alternative to the conventional banks which provide financial services more than just the contactless payment. The consumers' perception and attitude towards the licensed digital bank becomes one of the key success elements for the licensed digital bank positioning themselves to succeed.

Research Gaps

The establishment of licensed digital banks has direct implication to the technology developments in the financial sectors (Shin *et al.*, 2019) while the success of banking services is significantly affected by the changes of technology and consumer preference (Byers and Lederer, 2001). With this new model of financial service that operates only virtually online, the financial institutions must understand the consumers' behaviour in the region to develop appropriate strategy in creating relationship with the consumers (Fraering and Minor, 2013) in order to facilitate the establishment of licensed digital bank in the region.

Prior researchers focus on Theory of Reasoned Action Fishbein and Ajzen (1975), Theory of Acceptance Model Davis (1989) and Theory of Planned Behaviour Ajzen (1991) to study innovation adoption. There is a little effort to extend the theory from personality traits and technology humanness traits which stimuli the perception and evaluation of innovation in leading consumers' reaction towards technology. This study proposes to integrate Diffusion of Innovation (DOI) Theory Rogers (2003) and Anthropomorphic Theory Epley *et al* (2007) into Stimulus-organism-response (SOR) framework Mehrabian and Russell (1974) in investigating consumer perception on licensed digital banks that motivated by consumer innovativeness and humanness features of licensed digital bank in influencing adoption intention.

Prior researchers have inconsistent arguments on the impact of humanness features of technology innovations. On one hand, humanness features have been shown to enhance favorable attitudes towards products in triggering anthropomorphic beliefs Kim and McGill (2018); Moriuchi (2020) highlighted that humanlike agent positively influence engagement which subsequently lead to adoption intention. Another hand, uncanny valley theory (Mori, 1970) has proven that humanness features demonstrated perceived eeriness and perceived as creepy which leads to avoidance. In addition, Lu *et al* (2019) showed in a recent study of robot service adoption that anthropomorphism has negative impact for consumer technology adoption. This study reaffirms the effect of humanness features in affecting consumers' assessment from functional level (e.g., perceived value) and psychological level (e.g., trust).

Trust is empirically established to positively influence technology adoption (Kaabachi *et al.*, 2019; Lee and Kim, 2020). Since trust is crucial in getting consumer affinity in digital environment without human interaction. It potentially affects the momentum of consumer perception of licensed digital bank in influencing adoption intention. Hence, the moderating effect of trust between consumer personal trait and adoption intention is worth for investigation.

From prior research on licensed digital bank in Germany, Junger and Mietzner (2020) found that higher price in bank charges does not significantly impact the consumer to switch from conventional banks to licensed digital banks. This is contrary with the findings from several researchers in Asia which showed that consumers tend to use licensed digital bank for the lower charges (Shin *et al.*, 2019; Lee and Kim, 2020; Ahn and Lee, 2019; Yoon and Lim, 2021). This could be due to the different price perception between Western and Asian which has been proven by prior research that Asian has significantly higher price sensitive values than Western (Meng and Nasco, 2009; Brush, 2019). To the Western, service performance has greater influence on satisfaction judgements for customers than price perception (Voss *et al.*, 1998). Most research on licensed digital banks are in the western countries and technology well-developed countries in Asia such as South Korea. The result may not be generalized and robust enough to represent the population of emerging countries in Asia because the digital adoption between developed countries and emerging countries are relatively different (Yoon and Lim, 2020). Moreover, the cultural differences of Western and Asian significantly impact in embracing technology innovations (Lee *et al.*, 2013). Based on the review from the prior research, there is a population gap that show to be important and worthy of investigation in the context of emerging markets due to different culture. A study of this population group is important because it is crucial to examine the significant determinants of licensed digital banks adoption to achieve the financial inclusion of emerging market with the succeed of licensed digital bank in the region.

Based on the above discussion, there is little effort to fill the gaps in understanding the consumers' intention to adopt licensed digital bank services which could help to drive the establishment of licensed digital bank to achieve its expectation.

Significance of Study

The consumer acceptance and adoption on licensed digital banks is crucial to hasten the establishment of licensed digital bank as an innovative alternative financial service especially to foster financial inclusion in the country. At the same time, when innovation moves from niche to mainstream quickly, the existing industry leaders must react and respond immediately too. Therefore, the rate of consumers adoption is interesting for the conventional banks to strategize the reaction on countering the threat of new entrant (licensed digital bank) in the market. This study does not only help the financial service providers to develop a better understanding on consumers acceptance level but also provides insights for both digital and conventional banks to strategize for competitive advantage and to overcome the barriers in consumers' acceptance.

In term of academic perspective, most of the research regarding financial technology innovations had been done in Western countries and technological well-developed countries such as South Korea. There are very little attentions in literature to exactly address the financial technology innovations adoption in emerging countries such as Malaysia. Malaysia has introduced MyDIGITAL, a national initiative to accelerate Malaysia to be transformed as a technologically-advanced economy country that focuses on digitalisation and a regional pioneer in digital economy through the Malaysian Digital Economy Blueprint (Malaysian Investment Development Authority, 2023). Moreover, the Prime Minister has setup Digital Ministry, a dedicated ministry in December 2023 to provide the necessary focus to accelerate the digital transformation of Malaysia (New Straits Times, 2023). Due to the rapid changes of

technology, financial technology innovations adoption research should be done consistently to understand the most recent consumer's attitude towards the financial technology innovations. This study provides a framework as a baseline for future research to consider for a deeper knowledge and understanding related to financial technology innovations adoption in emerging countries. Furthermore, this study provides robust evidence for the suggested constructs to be the reference in the future research in investigating adoption of financial technology innovations from consumer context especially for the emerging countries in Asia.

Scope of Study

The focus of the study is on the consumers' intention to adopt licensed digital bank services. Malaysia, one of the emerging markets in Asia will be selected for the location of primary data collection. The people in the country who are mobile banking users will be the unit of analysis for this study. To access the licensed digital bank services, the target population is limited to people who are eligible to own bank account and use mobile banking application for banking activities. They represent diversity in gender and culture as well as people who are deemed likely to adopt licensed digital bank services with the aid of mobile internet.

Proposed Conceptual Framework

Through the synthesis process of past literature on licensed digital bank, a conceptual framework has been constructed. Stimulus-organism-response (SOR) framework (Mehrabian and Russell, 1974) has been discussed as a base to the theoretical framework of this study. The stimulus in the original SOR framework refers to the stimulus from the external environment. However, several studies suggest that stimuli could be internal and external (Piligrimiene *et al.*, 2020; Chan *et al.*, 2017). Goyal *et al.* (2021) suggested to use personal attributes such as health anxiety and personal habit as internal stimuli that influence the affective cognitive state of an individual (organism). Diffusion of Innovation (DOI) theory (Rogers, 2003) and anthropomorphic theory (Epley *et al.*, 2007) are integrated into the framework to influence consumer' cognitive system by internal stimulus represented by consumer innovativeness and external stimulus posited by humanness features of licensed digital bank services. This is expected to offer a more comprehensive exploration of the relationship between stimulus, organisms and response in corresponding to the adoption intention of licensed digital bank services.

Nevertheless, consumer evaluation on the licensed digital banks services are not limited to the functionality aspect. The psychological level of the affective system will be investigated. Most prior studies on investigating consumers' behavioural intention have extended the research framework with the construct of trust in the context of financial related technology adoption (Alwi *et al.*, 2019; Putranto and Sobari, 2021) and licensed digital bank adoption (Kaabachi *et al.*, 2019; Lee and Kim, 2020; Junger and Mietzner, 2020). Kaabachi *et al.* (2019) proved that initial trust has significant impact on intention usage of licensed digital bank services while Nel and Boshoff (2021) highlighted that initial distrusting beliefs is found to be the licensed digital bank adoption barrier. Therefore, trust from the psychological level and perceived value in term of functional level are studied in the context of organism of the framework. It is a crucial element to gain customer affinity to drive intention to adopt since licensed digital bank provides services only online without interaction between consumers and bank staffs. Lastly, the moderating effect of trust in between consumer innovativeness and adoption intention will be investigated to find out in what extend trust will moderate the

influence of consumer personal traits to adoption intention. Therefore, a conceptual framework has constructed as shown in Figure 1.

The research objectives of this study are as follows

1. To investigate the influence of consumer innovativeness to adoption intention of licensed digital bank services.
2. To investigate the influence of licensed digital bank's humanness features to adoption intention of licensed digital bank services.
3. To investigate the mediating effect of perceived value on the relationship between consumer innovativeness and adoption intention of licensed digital bank services.
4. To investigate the mediating effect of trust on the relationship between consumer innovativeness and adoption intention of licensed digital bank services.
5. To investigate the mediating effect of perceived value on the relationship between licensed digital bank's humanness features and adoption intention of licensed digital bank services.
6. To investigate the mediating effect of trust on the relationship between licensed digital bank's humanness features and adoption intention of licensed digital bank services.
7. To investigate the moderating effect of trust on the relationship between consumer innovativeness and adoption intention of licensed digital bank services.

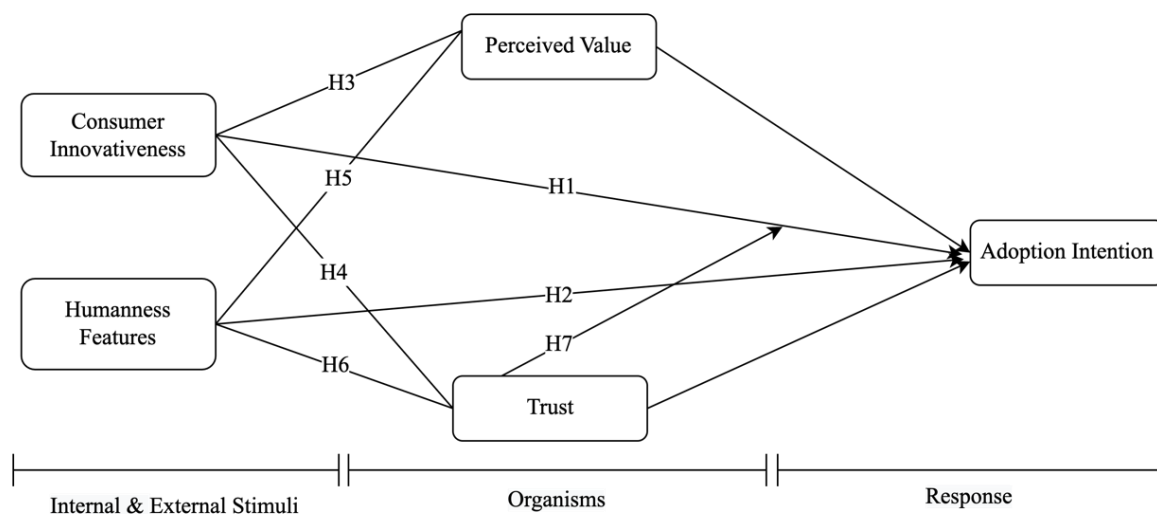


Figure 1: Proposed Conceptual Framework

Hypothesis Development

The relationship of consumer innovativeness, humanness features of licensed digital bank, perceived value, trust on behavioural intention are guided by the Stimulus-organism-response (SOR) framework. Consumer innovativeness is suggested with the basis of Diffusion of Innovation Theory Roger (2003) while humanness features of licensed digital bank is inspired by the Anthropomorphic Theory (Epley *et al.*, 2007). Moreover, perceived value and trust are incorporated with the theoretical concept of perceived value Zeithaml (1988) and trust (Mayer *et al.*, 1995). Hence, the below hypotheses are developed to address the research objectives and to test the theoretical concepts.

Relationship between consumer innovativeness and adoption intention

Consumer innovativeness has obtained attention from researchers in innovation adoption studies and proven to be a significant factor in predicting innovative technology adoption behaviour (Chauhan *et al.*, 2019; Ho *et al.*, 2020). Ho *et al.* (2020) also showed that the degree of innovativeness determine the likelihood of consumer to explore and adopt mobile banking services.

H1: *Consumers innovativeness positively affect adoption intention of licensed digital bank services.*

Relationship between humanness features and adoption intention

Humanness features have been shown to enhance favorable attitudes towards products in triggering anthropomorphic beliefs (Kim and McGill, 2018) while Moriuchi (2020) highlighted that humanlike agent positively influence engagement which subsequently lead to adoption intention. However, the findings from study about robot service by Lu *et al.* (2019) showed that humanlike agent drawbacks consumer adoption due to the deterrence of perceived threats. This study is expected to re-affirm the relationship between humanness features and adoption intention.

H2: *Licensed digital bank's humanness features positively affect adoption intention of licensed digital bank services.*

Relationship between consumer innovativeness and perceived value

In order to investigate effect of consumer innovation in depth, the evaluation of relationship between consumer and product itself cannot be neglected (Hong *et al.*, 2017). It started with the perceived value of the innovation product from the view of consumers of different personal trait. The relationship between consumer innovativeness and perceived value have been proven by Hong *et al.* (2017); Karjaluo *et al.* (2019) that consumer innovativeness strongly affected both utilitarian value and hedonic value with respect to new products and services. Their findings are attributed to the fact that innovativeness is considered as part of consumer decision making mechanisms which influence the cognitive and affective dimensions of consumer's mental orientation (Sprotles and Kendall, 1986). Chauhan *et al.* (2019) highlighted that consumers are likely to adopt financial related technology when they found that its utilitarian value in their daily banking needs.

Relationship between Consumer Innovativeness and Trust

Consumers have high level of innovativeness are sensitive to innovations and are seeking information actively (He *et al.*, 2018). Yang *et al.* (2012); He *et al.* (2018) have proven that innovative individual tends to be a risk-taker in innovation adoption. In other words, innovative consumers are more receptive to innovations. They could bear the high uncertainty and have more positive attitude to use innovation (Hu *et al.*, 2019). Therefore, they should have more confidence on digital platform provider on their ability to protect consumers from cybercriminals.

Relationship between Humanness Features and Perceived Value

Humanlike features of anthropomorphized object has been associated with the enhancement of favourable attitudes when people perceives the object to have positive quality or helpful

functionality. This is because it gives sense of efficacy with respects to nonhuman entities or to form social connection with them (Kim and McGill, 2018). People who have anthropomorphised beliefs about objects show increase sense of attachment and liking. This is proven by Moussawi *et al.* (2020) in recent study that perceived functional value represented by perceived usefulness and perceived hedonic value represented by perceived enjoyment are positively affected by perceived intelligence and perceived humanness of personal intelligent agent.

Relationship between Humanness Features and Trust

According to Blut *et al* (2021), when a person attributes humanlike capability to a nonhuman agent, he or she tends to believe that the agent is capable to perform the intended tasks competently. In the other words, consumer has more trust on the ability of humanlike agent to deliver service and task. This effect have been proven by (Waytz *et al.*, 2014; de Visser *et al.*, 2016; van Pinxteren *et al.*, 2019). Blut *et al.* (2021) also demonstrated that there is strong effect of humanlike perceptions in facilitating human-robot interactions. The perceived intelligence is tested to have positive impact on trust in personal intelligent agent adoption study (Moussawi *et al.*, 2020).

Relationship between Perceived Value and Adoption Intention

From the result of several technology adoption studies, perceived value have been proven to positively influence technology adoption intention includes licensed digital bank Ahn and Lee (2019), smartwatch Hong *et al* (2017), electronic vehicles Kim *et al* (2018) and mobile learning (Magsayo, 2021). Ahn and Lee (2019) found that perceived value with the components of economic value, convenience value and emotional value increases licensed digital bank usage intention. Kim *et al.* (2018) stated that the overall perceived value of electronic vehicle determine the adoption intention while economic benefit of cost savings has a strong effect on value perception in electronic vehicle adoption. Magsayo (2021) found that functional value, social value and spiritual value are significant impact on mobile learning adoption.

Relationship between trust and adoption intention

In the financial industry, consumers pose certain level of trust in expecting the financial institutions can keep their promises and perform according to the procedures and outcomes (van Esterik-Plasmeijer and van Raaij, 2017). Trust in digital banking services has gained special attention in research area and has been found as a crucial determinant for financial technology innovations adoption (Alwi *et al.*, 2019; Putranto and Sobari, 2021) and licensed digital bank adoption (Kaabachi *et al.*, 2017; Lee and Kim, 2020; Mangini *et al.*, 2020; Junger and Mietzner, 2020; Zhang *et al.*, 2018). This is because licensed digital banks only provide financial services virtually online and there is no face-to-face interaction, consumers' trust on licensed digital bank is a crucial factor for adopting the services (Kaabachi *et al.*, 2017). Trust is found to be important not only for the initial adoption stage but also for the continuous usage after adoption (Kaabachi *et al.*, 2017; Zhang *et al.*, 2018; Lee and Kim, 2020). It is expected to influence consumers' adoption intention of licensed digital banks.

Mediator role of Perceived Value

Previous studies demonstrated the mediating effect of perceived values in the relationship between consumer innovativeness and adoption intention. He *et al.* (2018) found that perceived monetary value mediates the effect of personal innovativeness on innovation

adoption. Hong *et al* (2017) proved that perceived hedonic value and utilitarian value of smartwatch not only directly affect consumer usage intention, but also have significant mediating effects between consumer innovativeness and usage intention. Based on the relationship discussion above, perceived value is considered as mediator to examine the mediating effect between consumer innovativeness and adoption intention of licensed digital bank services as well as between humanness features and adoption intention of licensed digital bank services.

Mediator Role of Trust

This has been proven by Kaabachi *et al* (2019) that trust is an important element in initiating customer's adoption intention. Based on the relationship discussion, trust is considered as mediator to examine the mediating effect between consumer innovativeness and licensed digital bank adoption intention as well as between humanness features and adoption intention of licensed digital bank services.

The following hypotheses have been constructed

H3: *Perceived value mediates the effect of consumers innovativeness to adoption intention of licensed digital bank services.*

H4: *Trust mediates the effect of consumers innovativeness to adoption intention of licensed digital bank services.*

H5: *Perceived value mediates the effect of licensed digital bank's humanness features to adoption intention of licensed digital bank services.*

H6: *Trust mediates the effect of licensed digital bank's humanness features to adoption intention of licensed digital bank services.*

Moderating Role of Trust

The direct effect of trust on licensed digital bank adoption has been proven by previous studies in recent years (Kaabachi *et al.*, 2019; Lee and Kim, 2020; Mangini *et al.*, 2020). In this study, we consider trust as a moderator between consumer innovativeness and licensed digital bank adoption. It leads us to expect that although licensed digital bank adoption is dependent upon the consumer personal traits, trust in licensed digital bank encourages to develop confidence in using the licensed digital bank services.

H7: *Trust moderates the effect of consumers innovativeness to adoption intention of licensed digital bank services.*

Research Methodology

The research objective is to investigate the factors influencing consumers' behavioural intention to adopt licensed digital bank services. The theories discussed above will be applied to develop the conceptual framework and hypotheses to explain the behavioural intention. Since it is guided by existing theories and fact-oriented, it is situated in the positivism philosophy. Deductive approach will be applied to explain the casual relationship between concepts and variables. Quantitative method will be used to facilitate the deductive approach for concepts and hypotheses testing to obtain conclusive and justified result (Saunders *et al.*, 2019).

Quantitative research will be applied to facilitate this study for concepts, variables and hypotheses testing by collecting appropriate data. Survey strategy is more appropriate within the context of this study because it is relatively cost-effective in collecting large amounts of information in short period of time (Sekaran and Bougie, 2020). As this research is to understand the factors relate to the consumers behavioural intention, cross-sectional study will be applied to capture the snapshot of the phenomenon and it would be sufficient to finding the answer to the research question (Sekaran and Bougie, 2020).

The target population of this study will focus on individual Malaysians who are eligible to own bank account and use mobile banking application for banking activities. This population is considered because they are deemed likely to use licensed digital bank services in the next future with the aid of mobile internet. The unit of analysis of this study will focus on individual level for data aggregation and data analysis. Judgement sampling technique will be applied to collect appropriate data to represent the entire population and to use for statistical inference from the sample (Saunders *et al.*, 2019). Individual who fulfils the specific criteria in the population will be intentionally chosen as a sample.

Krejcie and Morgan (1970) suggested population size beyond 1 million, a sample size of 384 will be adequate. Besides, Roscoe (1975) proposed the appropriate rule of thumb for sample size larger than 30 and less than 500 for most research. Therefore, 400 sample data will be collected for the representation of the population. Several recent research regarding financial technology product adoption in Malaysia have shown a response rate of 80-90% via self-administrated questionnaire (Alwi *et al.*, 2019; Shaikh *et al.*, 2020). Therefore, at least 500 questionnaires will be distributed to get the appropriate sample size for this study. This study will be conducted using a self-administered questionnaire. The collected data will then be analysed by using the SPSS and SmartPLS statistical tools. Expert review and pilot test will be administered to evaluate the validity and dependability of the instrument.

Implication

This paper conceptualized the factors influencing the adoption intention of banking services from licensed digital banks. The consumer acceptance and adoption on licensed digital banks is crucial to hasten the establishment of licensed digital bank as an innovative alternative financial service especially for the emerging countries in Asia. This is because the licensed digital banks are expected to provide financial inclusion to the financial underserved population in emerging markets to suit their needs.

At the same time, when innovation moves from niche to mainstream quickly, the existing industry leaders must react and respond immediately too. The rate of consumers adoption is also interesting for the conventional banks to strategize the reaction on countering the threat of new entrant (licensed digital bank) in the market. This study does not only help the financial service providers to develop a better understanding on consumers acceptance level but also provides insights for both digital and conventional banks to strategize for competitive advantage and to overcome the barriers in consumers' acceptance.

In term of academic perspective, most of the research regarding financial technology innovations had been done in Western countries and technological well-developed countries such as South Korea. There are very little attentions in literature to exactly address the

financial technology innovations adoption in emerging countries such as Malaysia. Due to the rapid changes of technology, financial technology innovations adoption research should be done consistently to understand the most recent consumer's attitude towards the financial technology innovations. This study provides a framework as a baseline for future research to consider for a deeper knowledge and understanding related to financial technology innovations adoption in emerging countries. Furthermore, this study provides robust evidence for the suggested constructs to be the reference in the future research in investigating adoption of financial technology innovations from consumer context especially for the emerging countries in Asia.

References

- Ahn, S. J. and Lee, S. H. (2019). The effect of consumers' perceived value on acceptance of an internet-only bank service. *Sustainability*, 11(17), 4599.
- Ajzen, I. (1991). The Theory of Planned Behavior. *Organization Behavior and Human Decision Processes*. Academic Press, Inc, 179-211.
- Alwi, S., Salleh, M. N. M., Razak, S. A., and Naim, N. (2019). Consumer acceptance and adoption towards payment-type fintech services from Malaysian perspective. *International Journal of Advanced Science and Technology*, 28(15), 148-163
- Blut, M., Wang, C., Wunderlich, N. V., and Brock, C. (2021). Understanding anthropomorphism in service provision: a meta-analysis of physical robots, chatbots, and other AI. *Journal of the Academy of Marketing Science*, 49(4), 632-658.
- Boston Consulting Group. (2021). Emerging challengers and incumbent operators battle for Asia Pacific's digital banking opportunity, available at: <https://www.bcg.com/emerging-challengers-and-incumbent-operators-battle-for-asia-pacifics-digital-banking-opportunity> (accessed 17 Nov 2023)
- Brush, G. J. (2019). Similarities and differences in Asian and Western travelers' service performance measurement, evaluation and outcomes. *Journal of Retailing and Consumer Services*, 50, 351-361.
- Byers, R. E., and Lederer, P. J. (2001). Retail bank services strategy: a model of traditional, electronic, and mixed distribution choices. *Journal of Management Information Systems*, 18(2), 133-156.
- Chan, T. K., Cheung, C. M., and Lee, Z. W. (2017). The state of online impulse-buying research: A literature analysis. *Information & Management*, 54(2), 204-217.
- Chauhan, V., Yadav, R., and Choudhary, V. (2019). Analyzing the impact of consumer innovativeness and perceived risk in internet banking adoption: A study of Indian consumers. *International Journal of Bank Marketing*, 37(1), 323-339
- Cornell University, INSEAD and WIPO. (2020). *The Global Innovations Index 2020: Who Will Finance Innovation?*. WIPO, Ithaca, Fontainebleau and Geneva.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.
- de Visser, E. J., Monfort, S. S., McKendrick, R., Smith, M. A., McKnight, P. E., Krueger, F. and Parasuraman, R. (2016). Almost human: Anthropomorphism increases trust resilience in cognitive agents. *Journal of Experimental Psychology: Applied*, 22(3), 331.
- Epley, N., Waytz, A., and Cacioppo, J. T. (2007). On seeing human: a three-factor theory of anthropomorphism. *Psychological review*, 114(4), 864.
- Fishbein, M., and Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Massachusetts: Addison-Wesley.

- Fraering, M., and Minor, M. S. (2013). Beyond loyalty: customer satisfaction, loyalty, and fortitude. *Journal of Services Marketing*, 27(4), 334–344.
- Goyal, S., Chauhan, S., and Gupta, P. (2022). Users' response toward online doctor consultation platforms: SOR approach. *Management decision*, 60(7), 1990-2018.
- He, X., Zhan, W., and Hu, Y. (2018). Consumer purchase intention of electric vehicles in China: The roles of perception and personality. *Journal of Cleaner Production*, 204, 1060-1069.
- Ho, J. C., Wu, C. G., Lee, C. S., and Pham, T. T. T. (2020). Factors affecting the behavioral intention to adopt mobile banking: An international comparison. *Technology in Society*, 63, 101360.
- Hong, J. C., Lin, P. H., and Hsieh, P. C. (2017). The effect of consumer innovativeness on perceived value and continuance intention to use smartwatch. *Computers in Human Behavior*, 67, 264-272.
- Hu, Z., Ding, S., Li, S., Chen, L., and Yang, S. (2019). Adoption intention of fintech services for bank users: An empirical examination with an extended technology acceptance model. *Symmetry*, 11(3), 340.
- International Business Machines Corporation. (2015). Designing a sustainable digital bank, available at: <https://www.ibm.com/downloads/cas/XGJGOJWA> (accessed 17 Nov 2023)
- Junger, M., and Mietzner, M. (2020). Banking goes digital: The adoption of FinTech services by German households. *Finance Research Letters*, 34, 101260.
- Kaabachi, S., Mrad, S. B., and O'Leary, B. (2019). Consumer's initial trust formation in IOB's acceptance: The role of social influence and perceived compatibility. *International Journal of Bank Marketing*, 37(2), 507-530
- Kaabachi, S., Mrad, S. B., and Petrescu, M. (2017). Consumer initial trust toward internet-only banks in France. *International Journal of Bank Marketing*, 35(6), 903-924
- Karjaluoto, H., Shaikh, A. A., Saarijärvi, H., and Saraniemi, S. (2019). How perceived value drives the use of mobile financial services apps. *International Journal of Information Management*, 47, 252-261.
- Kim, H. Y., and McGill, A. L. (2018). Minions for the rich? Financial status changes how consumers see products with anthropomorphic features. *Journal of Consumer Research*, 45(2), 429-450.
- Kim, M. K., Oh, J., Park, J. H., and Joo, C. (2018). Perceived value and adoption intention for electric vehicles in Korea: Moderating effects of environmental traits and government supports. *Energy*, 159, 799-809.
- Kim, Y. B. (2018). It is difficult to apply commercial bank-level regulation to digital banks. *Hankyung*, 22 August, p.A35.
- Krejcie, R. V., and Morgan, D. W. (1970). Determining sample size for research activities. *Educational and psychological measurement*, 30(3), 607-610.
- Lee, J. M., and Kim, H. J. (2020). Determinants of adoption and continuance intentions toward Internet-only banks. *International Journal of Bank Marketing*, 38(4), 843-865
- Lee, S. G., Trimi, S., and Kim, C. (2013). The impact of cultural differences on technology adoption. *Journal of world business*, 48(1), 20-29.
- Lu, L., Cai, R., and Gursoy, D. (2019). Developing and validating a service robot integration willingness scale. *International Journal of Hospitality Management*, 80, 36-51.
- Magsayo, R. T. (2021). Intention to continue using mobile learning: the effects of perceived values and role of locus of control. *The International Journal of Information and Learning Technology*, 38(5), 493-517

- Malaysian Investment Development Authority. (2023). Blueprint to help Malaysia achieve digital economy aspirations, available at: <https://www.mida.gov.my/mida-news/blueprint-to-help-malaysia-achieve-digital-economy-aspirations> (accessed 30 Dec 2023)
- Mangini, E. R., da Silva, N. G., and de Carvalho, J. R. C. (2020). Virtual banks and the perceived risk and development and effort expectancy on behavioral intention. *Brazilian Journal of Marketing*, 19(4), 838-861.
- Mayer, R. C., Davis, J. H., and Schoorman, F. D. (1995). An integrative model of organizational trust. *Academy of management review*, 20(3), 709-734.
- Mckinsey. (2010). Counting the world's unbanked, available at: <https://www.mckinsey.com/industries/financial-services/our-insights/counting-the-worlds-unbanked> (accessed 17 Nov 2023)
- Mehrabian, A., and Russell, J. A. (1974). *An approach to environmental psychology*. the MIT Press.
- Meng, J. G., and Nasco, S. A. (2009). Cross-cultural equivalence of price perceptions across American, Chinese, and Japanese consumers. *Journal of Product & Brand Management*, 18(7), 506-516
- Mori, M. (1970). The uncanny valley. *Energy*, 7, 33-35.
- Moriuchi, E. (2020). An empirical study on anthropomorphism and engagement with disembodied AIs and consumers' re-use behavior. *Psychology & Marketing*, 38(1), 21-42.
- Moussawi, S., Koufaris, M., and Benbunan-Fich, R. (2020). How perceptions of intelligence and anthropomorphism affect adoption of personal intelligent agents. *Electronic Markets*, 31(2), 343-364.
- Nel, J., and Boshoff, C. (2021). Traditional-bank customers' digital-only bank resistance: evidence from South Africa. *International Journal of Bank Marketing*, 39(3), 429-454.
- New Straits Times. (2023). PIKOM: Appointment of digital minister significant milestone in Malaysia's digital journey, available at: <https://www.nst.com.my/business/corporate/2023/12/990084/pikom-appointment-digital-minister-significant-milestone-malaysias> (accessed 30 Dec 2023)
- Oracle and Savanta. (2021). Money and Machines: 2021 Global Study, available at: <https://www.oracle.com/a/ocom/docs/applications/erp/money-and-machines-report-2021.pdf> (accessed 17 Nov 2023)
- Piligrimiene, Z., Zukauskaitė, A., Korzilius, H., Banyte, J., and Dovaliene, A. (2020). Internal and external determinants of consumer engagement in sustainable consumption. *Sustainability*, 12(4), 1349.
- Putranto, B. D., and Sobari, N. (2021). Predicting intention of using Fintech lending to bank users in Indonesia. In *18th International Symposium on Management (INSYMA 2021)*. Atlantis Press, 206-211.
- Rogers, E. (2003). *Diffusion of Innovations (5th ed.)*. New York: Free Press.
- Roscoe, J. T. (1975). *Fundamental research statistics for the behavioral sciences*. New York: Holt, Rinehart & Winston.
- Saunders, M., Lewis, P., and Thornhill, A. (2019). *Research methods for business students (8th ed.)*. New York: Pearson Education Limited.
- Sekaran, U., and Bougie, R. (2020). *Research methos for business: a skill-building approach (8th ed.)*. Chichester: John Wiley & Sons Limited.

- Shaikh, I. M., Qureshi, M. A., Noordin, K., Shaikh, J. M., Khan, A., and Shahbaz, M. S. (2020). Acceptance of Islamic financial technology (FinTech) banking services by Malaysian users: an extension of technology acceptance model. *Foresight*, 22(3), 367-383
- Shin, J. W., Cho, J. Y., and Lee, B. G. (2019) Customer perceptions of Korean digital and traditional banks. *International Journal of Bank Marketing* 38(2), 529-547.
- Skinner, C. (2014). *Digital bank: Strategies to launch or become a digital bank*. Singapore: Marshall Cavendish International Asia Pte Ltd.
- Sprotles, G. B., and Kendall, E. L. (1986). A methodology for profiling consumers' decision-making styles. *Journal of Consumer Affairs*, 20(2), 267-279.
- The Edge Malaysia. (2020). After Singapore awards digital bank licences, all eyes now on Malaysia, available at: <https://www.theedgemarkets.com/article/after-singapore-awards-digital-bank-licences-all-eyes-now-malaysia> (accessed 17 Nov 2023)
- The Edge Markets. (2021) Fintech: Demand for robots in financial services growing, available at: <https://www.theedgemarkets.com/article/fintech-demand-robots-financial-services-growing> (accessed 17 Nov 2023)
- The Straits Times. (2020). Singapore to have 4 digital banks, with Grab-Singtel and Sea getting digital full bank licenses, available at: <https://www.straitstimes.com/business/banking/mas-awards-digital-full-bank-licences-to-grab-singtel-and-sea-ant-gets-digital> (accessed 17 Nov 2023)
- The World Bank. (2016). Digital Adoption Index, available at: <https://www.worldbank.org/en/publication/wdr2016/Digital-Adoption-Index> (accessed 17 Nov 2023)
- van Esterik-Plasmeijer, P. W., and van Raaij, W. F. (2017). Banking system trust, bank trust, and bank loyalty. *International Journal of Bank Marketing*, 35(1), 97-111.
- Van Pinxteren, M. M., Wetzels, R. W., Rüger, J., Pluymaekers, M., and Wetzels, M. (2019). Trust in humanoid robots: implications for services marketing. *Journal of Services Marketing*. 33(4), 507-518.
- VISA. (2021). Consumer Payment Attitudes Study 2021: Powering the Acceleration of Digital-First Experiences, available at: <https://www.visa.com.my/dam/VCOM/regional/ap/documents/visa-cpa-report-2021-smt.pdf> (accessed 17 Nov 2023)
- Voss, G. B., Parasuraman, A., and Grewal, D. (1998). The roles of price, performance, and expectations in determining satisfaction in service exchanges. *Journal of marketing*, 62(4), 46-61.
- Waytz, A., Heafner, J., and Epley, N. (2014). The mind in the machine: Anthropomorphism increases trust in an autonomous vehicle. *Journal of experimental social psychology*, 52, 113-117.
- Yang, S., Lu, Y., Gupta, S., Cao, Y., and Zhang, R. (2012). Mobile payment services adoption across time: An empirical study of the effects of behavioral beliefs, social influences, and personal traits. *Computers in Human Behavior*, 28(1), 129-142.
- Yoon, C., and Lim, D. (2020). An empirical study on factors affecting customers' acceptance of internet-only banks in Korea. *Cogent Business & Management*, 7(1), 1792259.
- Yoon, C., and Lim, D. (2021). Customers' Intentions to Switch to Internet-Only Banks: Perspective of the Push-Pull-Mooring Model. *Sustainability*, 13, 8062.
- Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. *Journal of marketing*, 52(3), 2-22.

Zhang, Y., Chen, X., Liu, X., and Zhu, N. (2018). Exploring trust transfer between internet enterprises and their affiliated internet-only banks: An adoption study of internet-only banks in China. *Chinese Management Studies*, 12(1), 56-78.