

Critical Factors Affecting Micro-Entrepreneur's Adoption of Digital Financial Services Offered by Islamic Microfinance Institution

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Abstract

A review of literature suggests that limited access and low adoption of technology is one of the reasons resulting in a lack of financial inclusion among poor. Realizing this, many microfinance institutions (MFIs) have taken initiatives by strategizing to improve their financial services through the adoption of Digital Financial Services (DFS), particularly among the micro-entrepreneurs. Technology adoption in the provision of financial services benefits the various stakeholders in terms of saving cost and time, addressing space constraint and enhancing decision-making quality by the MFIs. Apart from the efforts taken by the MFIs, it is also equally important for the micro-entrepreneurs to be willing to accept and adopt technology advancement in their operations. Differences in knowledge background of low-income groups as compared to common IT users have been identified as one of the reasons for differences in the level of technology acceptance. Amid the backdrop of these issues, this paper intends to propose a refined conceptual analysis of the factors affecting micro-entrepreneur's acceptance towards DFS provided by the MFIs particularly Islamic MFIs in Malaysia. This study adopts the technology acceptance model (TAM) with the additional modification of constructs in order to provide better goodness of fit result of the model.

Keywords: Islamic Microfinance Institutions, Technology Acceptance Model, Micro-entrepreneur, Digital Financial Services, Islamic Finance

Introduction

Malaysia has strived hard towards sustaining economic growth and reducing poverty through a series of efforts to reduce the income gap in various of its development plans. As a result of this effort, the country's poverty rate has been successfully reduced to 0.9% in 2015 as compared to 5.7% in 2004. In fact, as reported by the World Bank, Malaysia had succeeded in nearly eradicating poverty based on the share of household living below the national poverty line (US\$8.50 per day in 2012) which fell from over 50% in the 1960s to less than one percent currently. In the Malaysia's new development model under 2030 Shared Prosperity Vision focus has been given towards alleviating poverty and uplifting the B40 group households towards a middle-income society. In essence, the plan strategizes to transform rural areas by uplifting the wellbeing of the rural communities by increasing financial inclusion, as part of the government's effort to reduce poverty which in line with the Sustainable Development Goal (2030) agenda (Malaysia SDG Summit, 2019). Besides, under the Financial Sector Blueprint (2011–2020), in order to further enhance financial inclusion, one of the strategies is to leverage on the technology-based innovative channels through agent banking and mobile banking, and these are part of the Digital Financial Services (DFS).

In Malaysia, the DFS effort was triggered by the situation in Belaga, a small district in Sarawak. The population of the district was about 37,000 people and their main economic activity is logging. Accessibility to the nearest bank is about 100 km which is located in the nearest town of Bintulu. It took a 6-hour drive via gravel road or 5 hours by the river. Considering the cost factors, banking institutions introduce agent banking in replace of opening physical branches as a channel to deliver financial services to the locals. The startup cost for agent banking is estimated to be 80% lower than that of a normal physical branch and the transaction cost is also 60% lower (Agent Banking Seminar, 2014).

By the end of 2015, the number of agent banks in Malaysia increased to 6,902 from only 460 in 2011. Furthermore, under the DFS, mobile banking is also a part of the technology platform that focuses on catering the unbanked and under-banked in the rural areas. This can be seen from many studies on mobile banking such as m-banking (Ammar & Ahmed, 2016; Evans, Akram, & Weaver, 2015), branchless banking (Ivatury & Mas, 2008) and m-payments, m-transfers, and m-finance (Donner & Tellez, 2008).

As reported by the Group Speciale Mobile Association, GSMA (2014), more than 80 countries had launched the innovative DFS by involving the use of mobile phones as an access channel in reaching billions of poor customers. As a result of the significant advances in the accessibility and affordability provided by DFS, a lot of potentials can be expected in moving micro-entrepreneurs from exclusively cash-based transactions to formal financial services. In particular, it will reduce the risk faced by the micro-entrepreneurs in carrying huge amount of cash everywhere which supposedly can be handled more efficiently through digital methods.

In the developing countries, one of the greatest successes of the implementation DFS is in Sub-Saharan Africa. Innovation through mobile money has been shown to bring about drastic improvements in how individuals participate in financial transactions (Srivastava, 2015). Two thirds of all adults in Kenya or 12.2 million of their people are actively using mobile phone for payment services and money transfer which known as M-Pesa. Nevertheless, reported from

Lagos Business School's Sustainable DFS project (2016) has discovered that DFS's adoption among unbanked and under-banked population remains low. Some factors have been identified as in reaching the under-banked and unbanked. These includes complexity of financial products and services, unable to access to the financial service providers, unemployment and lack of awareness. It is also highlighted that the cost of financial services such as bank charges constitute a significant hindrance to financial inclusion, adding that the unbanked and under-banked have zero utility adoption of DFS.

Similarly, in Malaysia, the question arises on the extent of DFS adoption among the unbanked and under-banked especially the micro-entrepreneurs, even though the facilities have been provided and supported from the authority in order to reach people especially in the remote areas of the country. Based on the statistics reported from *Financial Stability and Payments Systems Report (2015)*, the number of mobile banking users increases from 1,560,000 in 2011 to 7,279,000 in 2015. The increases were supported by the lower cost of owning mobile phones and variety types of brands that are available in the market, which enable users to have more than one mobile phones. Unfortunately, by comparing with the total number of mobile phone users and the number of the mobile banking penetration account, it indicates that the percentage is still low, 16% out of 44,928,600 subscribers. This point gives a gap for the research in exploring the hindrance factors contribute to the usage of DFS. In addition, from the Statistical on Hand Phone Users Survey (2014), the distribution between urban and rural areas for handphone users slightly decrease by 2.2% from 39.9% in 2013. Hence, from the survey also give an overview that there is a difference between urban and rural areas in accepting the technology specifically DFS. According to Daud et al., (2011) on the adoption of mobile banking among customers of Malayan Banking Berhad in Malaysia found that the adoption rate is still low even though the system has been introduced for almost five years and Malaysian's penetration in mobile phone use is growing. From the results, researchers revealed that lack of awareness of the benefits using mobile banking and low information access to the services.

Furthermore, another barrier for engaging to mobile banking system is from behavior of Malaysia's customers itself who refuse to adopt the technology and preferring traditional method to go to physical bank outlets (Nazri et al, 2017). In addition, Daud et al., (2011) found that mobile banking customers were not interested in becoming leaders or pioneers, but preferred to be followers. Reported from Amanah Ikhtiar Malaysia News 2015, the participants (known as the *sahabat*) of the Amanah Ikhtiar Malaysia (AIM) which is the largest Islamic microfinance institution in the country, found that those who are in the rural area prefer to make repayment physically through their weekly meetings, where they directly pay to the staff of AIM rather than using mobile banking facility that was introduced, namely M-Ringggit or through agents. From the survey, the *sahabat* are not familiar with the usage of the digital channels. Similarly, Daud et al. (2011) found that users are reluctant to use mobile banking because of lack of awareness about the benefits of this new technology and this has been the obstacles towards adoption of the system.

From the above situation, it is important to address customers' concerns with regard to adoption the digital channels since failure to convince the customers will lead them to ignore the innovations and it will give disadvantages to the bank and wasted the investment by the

bank for the system (Daud et al., 2011; Daud & Salwani, 2010). Based on previous studies, there is a bulk of research pertaining to adoption the DFS specifically in mobile banking areas, either in advanced countries or developing countries but thorough literature survey shows that gaps of knowledge exist in few aspects as follows: absence of an interactive, comprehensive and multi-dimensional theoretical model to evaluate factors determining DFS's adoption.

In addition, when measuring micro-entrepreneur's intention to adopt the digital channels offered, Information Technology (IT) researchers tend to overlook certain aspects such as human behavior, while social science researchers are too focused on traditional methods which are not really linked to the technological issues. Thus, this conceptual paper intends to propose a refined conceptual analysis of the factors affecting micro-entrepreneur's acceptance towards DFS provided by the MFIs particularly Islamic MFIs in Malaysia. The framework developed for this study will consider both aspects including technological and traditional methods. This is essential to fill the knowledge gaps in assessing micro-entrepreneur's intention to adopt DFS offered by selected IMFIs in Malaysia

Review of Literature

Digital Financial Services

Many studies have been using various terms to refer to DFS as a digital channel for delivering financial services. This includes m-banking (Ammar & Ahmed, 2016; Evans et al., 2015), branchless banking (Ivatury & Mas, 2008), and m-payments, m-transfers and m-finance (Donner & Tellez, 2008). These terms were included in latest basic terminology by Alliance for Financial Inclusion (AFI), (2016) on DFS. Based on this definition, it is also including banking services employing agents and networks of other third party in improving accessibility and lower the overall service delivery cost (Figure 1).

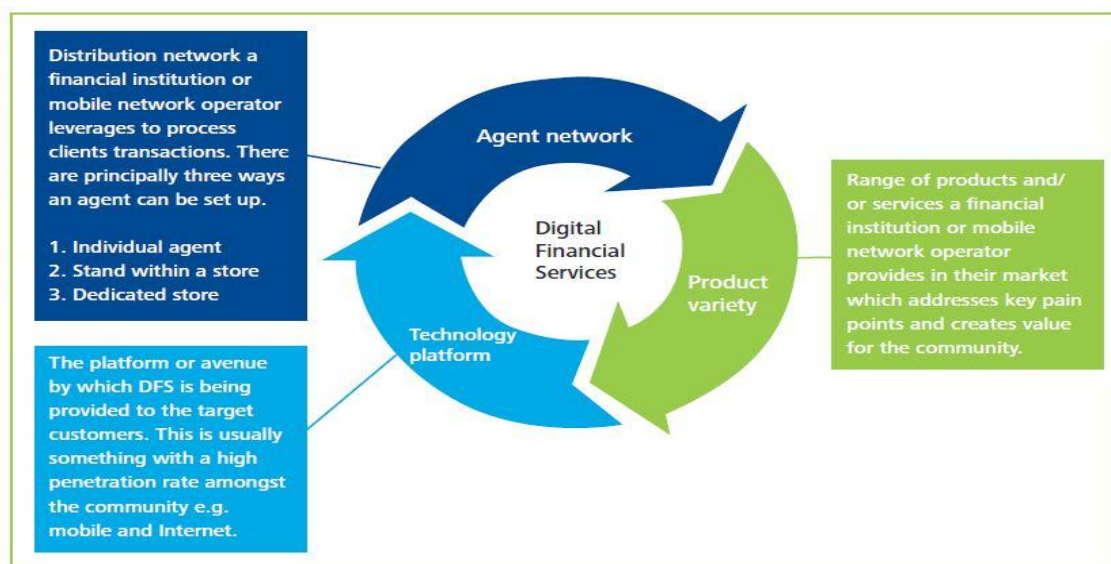


Figure 1: Digital Financial Services Model

The model above illustrates three key elements as the vital pillars of DFS including product variety, technology platform and agent network in reaching unbanked customers mainly in emerging markets. From the model, it has been implemented by developing countries such

as in Kenya, Brazil and India which resulted significant expansion of the DFS sector and GDP output of these emerging market economies. Similarly, in Malaysia in order to cater the unbanked people by leveraging the technology with using appropriate channel particularly in digital channels (IMFN, 2015). Hence the model that successfully been implemented by emerging countries can be duplicate in Malaysia in more precisely.

The implementation of DFS has many advantages for the microfinance institutions (MFIs). Kumar, McKay, & Rotman (2010) found that the monthly interest rate in Philippines reduced from 2.5 to 2% due to increasing usage of mobile banking. Moreover, through mobile banking, the travel costs for clients reduce by at least 2.2 cents. Meanwhile, in the study by Sabharwal (2015) from Pakistani' experience found that mobile financial services specifically m-banking will reduce financial exclusion by 5 to 20% in year 2020 and increase GDP by up to 5%. Consequently, it creates additional jobs and benefits for government of additional tax revenues from businesses.

Other than mobile banking as a channel of DFS, agent banking as well plays an important role in the success of delivering financial services. Agent banking refers to the third party who assist in access to financial services and perform minimal financial transactions in the retails store (Ngendakuriyo, 2014). These include supermarkets, grocery stores, pharmacies, post offices and etc. Agent banking has become the backbone of mobile banking in the sense that they are performing transactions most often with a mobile phone or point-of-sale terminals. The success story of mobile banking and agents network was referred to M-Pesa which was launched by one of the leading company in Kenya, which is Safaricom Ltd, a mobile network operator (MNO) since March 2007. M-Pesa has grown rapidly and currently serves over 17 million users in Kenya over 65,000 agents. The advantages of this channel are reducing the transaction cost and easy access to use for those in rural area. Not only that, currently, mobile money platforms offer various financial services to customers beyond sending and receiving money, namely customers can deposit and withdraw money, save money, buy goods, buy airtime, receive salary, pay salary, open virtual account, borrow and repay loans, make cash-in and cash-out operations and etc (Gasore, 2014; Ngendakuriyo, 2014). In Malaysia, agent banking also shows tremendous development and no of the agent also increasing from 460 agents in 2011 to 6,902 in 2015. Out of 6,902, 79% supported from retail agents, 13% from structured agents, 6% from post offices and 2% from cooperatives However, involving a third party, it requires an element of trust and according to the studied by Siau & Shen (2003); Tobbin & Kuwornu (2011), trust in mobile commerce can be classified into two categories; trust in mobile technology and trust in mobile vendors. Up to now, trust becomes barrier for adopting the technology, especially involving with money. This motivates that necessary to have an element of trust when dealing with digital channels.

Theoretical Background

Technology Acceptance Model

In this study, researcher extended the model of technology acceptance model (TAM) as mainly to investigate the individual's acceptance and adoption of technology. TAM shown the most accepted model and has received praise on its contribution towards the understanding of consumer behavior. Lu et al. (2005, p. 207) state that: "Throughout the years, TAM has received extensive empirical support through validations, applications and replications for its power to predict use of information systems". Also, Legris et al. (2003) conclude that, "TAM

has proven to be a useful theoretical model in helping understand and explain user behavior in information system implementation". Furthermore, decisions by the unbanked and the poor in adopting DFS is a likely collaborative or collective. Therefore, the potential impact of social influence in accepting such new technology by the unbanked cannot be overemphasized.

According to Davis (1986), the TAM is aimed at providing "An explanation of the determinants of technology acceptance that is generally capable of explaining user behavior across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified". It is further elaborated that computer usage has been influencing that user's decision on when and how to use new software and system been influenced by numerous factors. This model also highlighted the main attribute to the users' decision, such as perceived ease of use and perceived usefulness. However, with the advent of technology, researcher adopting this pioneer model by adding and testing with external variables which, considering, other factors that may influence the users' decision in accepting the technology. In this study, six external constructs added to TAM model namely technology awareness, perceived trust, perceived low costs, perceived satisfaction, perceived easy accessibility and perceived security.

Perceived Ease of Use

One of the main constructs for TAM that developed by Davis (1986) is perceived ease of use. It can be defined as "the degree to which a person believes that using a particular system would free of effort" (Davis, 1986). Past studies provide an evidence that perceived ease of use had significantly affect on intention to use of technology including m-banking Chakiso (2019), internet banking Guriting and Ndubuisi (2006) and other devices such as point of sales (POS) (Mohamed, 2017). Chakiso (2019) studied on the adoption of mobile banking for users and non-users in turkey and found positive and significant impact of perceived of use on both customers. In the study of 931 potential users on mobile banking services in Greece, Giovanis et al (2019) identified that perceived ease of use is the main driver as compared to other attributes such as perceived usefulness, perceived risk and compatibility. This is also supported by Guriting and Ndubisi (2006) that clients would certainly accept the technology when the system is easy to use. However, Boateng, Adam, Okoe, and Dorson (2016) in their survey indicated that insignificant effect of perceived ease of use on internet banking's adoption. This would be due to cultural gaps in the implementation of modern advanced technologies.

Perceived Usefulness

Another key element of determining technological behavior is perceived usefulness (Davis, 1989; Igbaria et al., 1996). In TAM, perceived usefulness has significant influence the attitude of technology usage as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989). Most empirical application of the TAM try to predict or explain the user's intention on technology. For example, Tella and Olasina (2014) investigate the TAM on e-payment system. From the result of 250 academic and non-academic staff at the University of Ilorin, Nigeria, perceived usefulness has positive and significant relationship on attitude. This is also supported by Daud et al (2011), adoption of mobile banking among Malaysians were mainly influenced by perceived usefulness. The relationship of perceived usefulness on attitude has been validated in many studies including

(Thaker, Pitchay, Thaker, & Amin, 2019; Suhartanto, Dean, & Tuan Ismail, Sundari, 2019; Susanto, Chang, & Ha, 2016).

Technology Awareness

In order to expand the usage of technology, awareness is essential to spread the knowledge and benefits of technology (Mofleh, Wanous & Strachan, 2008). Previous studies found that technology awareness among micro entrepreneurs has significant influence the adoption of technology particularly mobile banking (Amran & Mara, 2013; Shaikh & Karjaluto, 2014), online banking (Tarhini, 2015; Zafar, Zaheer, & Ur Rehman, 2011), and electronic payment system (Faruq & Hartini, 2013; Rehman, Esichaikul & Kamal, 2012; Charbagi & Mikdashi, 2003). Studied by Daud et al., (2011) revealed that in early stages of adoption of mobile banking services should incorporate of awareness of the services. As client aware of the services provided, they will give some trial and thus influence the adoption of technology which beneficial to the banking sector in reduce the cost of banking operation (Daud et al., 2011). Meanwhile, effort taken by provider, Safaricom of M-Pesa as money mobile transfer service in Kenya by creating awareness on benefits of the services enhance the usage among unbanked people (Kingiri & Fu, 2020). This is also benefits clients that have no longer to go the bank and able to send and receive money in their convenient places (Masrek et al., 2015). Hence, the factor of technology awareness should not be ignored if providers are intended to enhance the adoption of DFS.

Perceived Trust

Trust is one of the important factors for the exchange of relationship between two partners to active noble results such as loyalty (Morgan and Hunt, 1994; Chakiso, 2015). Past studies had extended TAM model with construct of perceived trust (Makongoro, 2014; Masrek, Mohamed, Norzaidi, & Omar, 2015). In the study of Chawla and Joshi (2017), the trust levels vary for various types of technological innovations. From the finding of the study shows that trust predicted the acceptance of mobile banking by 68 percent of clients. Likewise, Farah et al. (2018) in their empirical study found that trust significantly affect the intention of mobile banking. Meanwhile, Gao and Waechter (2015) found that in development stages, built trust at initial stage is important of exchange relations with other partners. However, studied by Chakiso (2019), ANOVA result shown that adoption of mobile banking varied between users and non-users with regards to trust. This is pointed out by Shifera Bekele (2011), the development of trust in real business activities is seen as a crucial outcome of the establishment of long-term successful partnership between all parties involved.

Perceived Low Costs

Cost is one of the reasons that technology resistance among users especially in rural areas (Mishra & Bisht, 2013). However, with innovation in DFS, lower cost may benefit among the "un-bankable" segment of the society (Owusu, Bekoe, Addo-Yobo, & Otieku, 2020). This can be seen in the development of M-Pesa in Kenya as mobile payment company is the lower cost as compared to other money transfer companies and banks (Omwansa, 2009). Studies by Angoitia and Ramirez (2009) found that perceived low costs have direct effect on user adoption on mobile banking services.

Perceived Satisfaction

Prior studies have shown that perceived satisfaction significantly influences existing users on usage of information system (D'Ambra, Wilson, & Akter, 2013; Sreejesh, Anusree, & Amarnath, 2016). According to Pagani (2004), user with high satisfaction of mobile banking usage due to usability and usefulness were more likely to repeat the services and recommended it to others which increase the number of mobile payment users in Africa. This is also supported by the Safaricom's annual report for the year 2018/2019 indicates that the number of registered M-Pesa customers were increased to 10.59 million with bundle users. From the report, this has presenting the growth of 26.26 percent as compared to last year (Annual Report Safaricom 2018/2019). Meanwhile, studied by Barati & Mohammadi, (2009) found that the user's perceived satisfaction towards the adoption of mobile banking was affected by demographic factors such as age, gender, education and experience. Hence, in order to enhance of the adoption of DFS, providers should consider perceived satisfaction as personal experience of the customer to repeat the services.

Perceived Easy Accessibility

Many past studies have criticized that external factors have not integrated in TAM model which also important to influence intention of users on technology. In the case of entrepreneur to adopt DFS, accessibility is one of the essential factors that motivate them to use especially among the "un-bankable" segment of the society (Pagani, 2004). Unlike financial services in urban areas, mostly facilities have been ready for users and easy to access.

Perceived Security

Perceived security refers to the subjective likelihood with which customers think that their personal information such as personal and monetary will not be viewed, stored and manipulated during transit and storage by inappropriate parties in a manner consistent with their confident expectation (Guinalu, 2006). Zhang et al. (2018) added that the safety concerns on adopting mobile banking services influence users to attached on technology. This is essential as technology expose to various security threats and insecure feeling to customers thus lead to lower adoption. Hence, integrate perceived security as one of the constructs in TAM model will indicate the level of confidence for customers towards adoption of DFS.

Conceptual Framework

Based on the above critical review of the literature on factors affecting adoption of DFS, the following conceptual model is built to represent factors influencing micro-entrepreneur's' adoption of DFS offered by microfinance institutions.

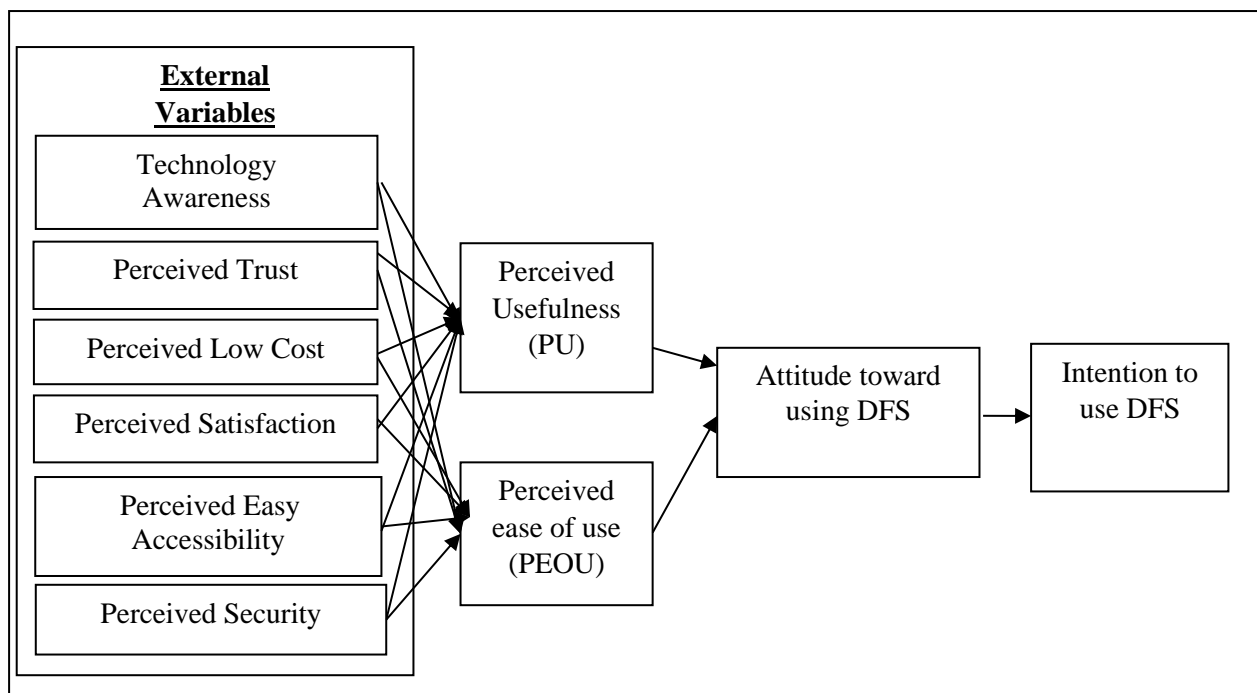


Figure 2. Conceptual Model of Micro-Entrepreneur's Adoption of Digital Financial Services offered by Microfinance Institutions

Conclusion

From the above discussion, the success factors in reaching the poor in delivering formal financial services through DFS by understanding their needs especially in micro-entrepreneur's perspective. In addition, the implementations of DFS give many benefits to microfinance institutions particularly IMFIs. The main reason is due to lower cost as compared to physical banking. In fact, DFS helps IMFIs better serve existing customers and meet new customers (Ammar & Ahmed, 2016).

Contribution and Limitation of the Study

After reviewing the issues and factors of adoption DFS by micro-entrepreneur, this study lies on several significance contributions which firstly to the theoretical contributions. This study extends and modified the TAM model with the extended of six additional variables; namely technology awareness, perceived trust, perceived low costs, perceived satisfaction, perceived easy accessibility and perceived security towards adoption to DFS. In addition, the framework developed for this study had considered both aspects including technological and traditional methods. This is essential to fill the knowledge gaps in assessing micro-entrepreneur's intention to adopt DFS offered by selected IMFIs in Malaysia.

Secondly, to the policy contribution which this study explores the ground research with intends to identify the factors influencing micro-entrepreneurs to adopt DFS specifically in rural areas. This motivates from statistical data of Malaysia's financial inclusion that indicates as almost to 1%, but in factual situation more than 60% are not having formal financial services particularly in the remote areas. Therefore, from the results later, this study will expect to give a real situation to the authority in order to deeply focus on their needs in financial services.

Thirdly, the contributions to the players such as microfinance providers especially Islamic MFIs and micro entrepreneurs. This is in line with their aims to reach the poor people in rural areas. By understanding the micro entrepreneur's needs, MFIs will actually can optimize their resources to deliver the financial services to those in rural areas with minimal cost rather than develop so many systems but not been accept by consumers. For micro entrepreneurs, it will expect to give benefits to clients in determining their obstacles pertaining to adopting DFS. As per discussed above, authority has put high efforts and support to ensure these low-income groups are equally being served and delivering the financial services. Therefore, this study will expect to become platform for them on financial inclusion. Moreover, the scope in this study will focuses on the micro-entrepreneurs in rural areas as compared to previous study are less been explored especially in the context of Malaysia

However, some limitations found in this study. The consideration of limitations in this study is useful for improvement in the future research. For this study, it only focuses on the perspective of micro-entrepreneurs or consumers who adopt the DFS. In fact, it is collected from selected MFIs in Malaysia which the results may not be generalized and inapplicable to other nationalities. Therefore, in future research, this study suggested to have several points of view from various stakeholders such as Islamic microfinance institutions, mobile network operators as well as authority. By having variations of stand point of views, this will give some input and the issues pertaining inclusively financial services in formal term to unbanked and under-banked will be addressed. In fact, the comparison analysis also has been significant for the research as this will overview the gap between those who are in urban and rural areas. From there, it will identify the most significant variables that explain the factors influencing to the adoptions of DFS. In addition, due to the adoption and use of DFS differs greatly across countries with different levels and expectations of adoption, more research on multi-nationalities can be performed for future research through the expansion of geographical areas to achieve better generalizations.

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References

- Abd Kadir, K. (2014). *The Agent Banking Revolution : Extending Banking Reach Malaysia ' s Experience*.
- Ammar, A., & Ahmed, E. M. (2016). Factors influencing Sudanese microfinance intention to adopt mobile banking. *Cogent Business & Management*, 5(1), 1–20. <https://doi.org/10.1080/23311975.2016.1154257>
- Amran, A. M., Abdul Rahman, R., & Mohamed, I. S. (2013). The Feasibility of Implementing Mobile Banking among M alaysia ' s Islamic. *Journal of Applied Sciences Research*, 9(9), 5468–5477.
- Amran, A. M., & Mara, U. T. (2013). The Feasibility of Implementing Mobile Banking among M alaysia ' s Islamic, 9(9), 5468–5477.
- Barati, S., & Mohammadi, S. (2009). An Efficient Model to Improve Customer Acceptance of Mobile Banking, II.
- Bekele, S. (2011). *The impact of relationship marketing on customer loyalty in Banking Industry, The case of Bank of Abyssina*. Addis Ababa University.
- Boateng, H., Adam, D. R., Okoe, A. F., & Anning-Dorson, T. (2016). Assessing the determinants of internet banking adoption intentions: A social cognitive theory perspective. *Computers in Human Behavior*, 65, 468–478. <https://doi.org/10.1016/j.chb.2016.09.017>
- Chakiso, C. B. (2019). Factors affecting Attitudes towards Adoption of Mobile Banking: Users and Non-Users Perspectives. *Emerging Markets Journal*, 9(1), 54–62. <https://doi.org/10.5195/emaj.2019.167>
- Chawla, D., & Joshi, H. (2017). Consumer perspectives about mobile banking adoption in India – a cluster analysis. *International Journal of Bank Marketing*, 35(4), 616–636. <https://doi.org/10.1108/IJBM-03-2016-0037>
- D'Amra, J., Wilson, C. S., & Akter, S. (2013). Application of the task-technology fit model to structure and evaluate the adoption of E-books by academics. *Journal of the American Society for Information Science and Technology*, 64(1), 48–64. <https://doi.org/10.1002/asi.22757>
- Daud, N. M., Ezalin, N., Kassim, M., Seri, W., Wan, R., Said, M., & Noor, M. M. (2011). Determining Critical Success Factors of Mobile Banking Adoption in Malaysia. *Australian Journal of Basic and Applied Sciences*, 5(9), 252–265.
- Evans, N., Akram, A., & Weaver, T. C. (2015). Supporting Digital Financial Services in Myanmar, (December).
- Gasore, B. (2014). Tigo launches mobile money transfer service between Rwanda and Tanzania. *The New Times, Rwanda*.
- Giovanis, A., Athanasopoulou, P., Assimakopoulos, C., & Sarmaniotis, C. (2019). Adoption of mobile banking services: A comparative analysis of four competing theoretical models. *International Journal of Bank Marketing*, 37(5), 1165–1189. <https://doi.org/10.1108/IJBM-08-2018-0200>
- Hossain, M. R. (2015). Islamic microfinance needs to embrace technology to move forward.
- Ivatury, G., & Mas, I. (2008). The Early Experience with Branchless Banking. *CGAP Focus Note*, (40), 1–16.
- Kingiri, A. N., & Fu, X. (2020). Understanding the diffusion and adoption of digital finance innovation in emerging economies: M-Pesa money mobile transfer service in Kenya. *Innovation and Development*, 10(1), 67–87. <https://doi.org/10.1080/2157930x.2019.1570695>
- Kumar, K., McKay, C., & Rotman, S. (2010). Microfinance and Mobile Banking: The Story So

- Far. *Focus Note*, 62(October 2009), 1–16.
- M.D, N., & Salwani, M. I. (2010). Evaluating the Intranet Acceptance with the Extended Task-Technology Fit Model: Empirical Evidence in Malaysian Maritime Industry. *International Journal of Arts and Sciences*, 3(2): 294-306.
- Makongoro, G. (2014). Factors Influencing Customer Adoption of Mobile Banking Services in Tanzania. *Malaysia SDG Summit 2019*. (2021) (Vol. 2019).
- Masrek, M. N., Mohamed, I. S., Norzaidi, M. D., & Omar, N. (2015). Technology Trust and Mobile Banking Satisfaction: A Case of Malaysian Consumers, (May). <https://doi.org/10.1016/j.sbspro.2014.03.647>
- Mishra, V., & Bisht, S. S. (2013). Mobile banking in a developing economy : A customer-centric model for policy formulation. *Telecommunications Policy*, 37(6–7), 503–514. <https://doi.org/10.1016/j.telpol.2012.10.004>
- Mohamad, S. A., & Kassim, S. (2017). an Overview of E-Payment Adoption Among Muslim Micro-Entrepreneurs in Malaysia. *Issues*, (2), 49–59.
- Mohamad, S. A., & Kassim, S. (2019). Examining the Relationship between UTAUT Construct, Technology Awareness, Financial Cost and E-Payment Adoption among Microfinance Clients in Malaysia, (February). <https://doi.org/10.2991/agc-18.2019.56>
- Nadzri, F. A. A., Omar, N., & Rahman, R. A. (2018). Enterprise governance of micro entrepreneurs in Malaysia: Comparison between the Amanah Ikhtiar Malaysia and Asnaf's economic development program. *Global Journal Al-Thaqafah*, 2018(January), 25–40. <https://doi.org/10.7187/gjatsi2018-02>
- Ngendakuriyo, F. (2014a). Mobile and Agency Banking in the EAC Countries : A Diagnostic Analysis, 1–32.
- Ngendakuriyo, F. (2014b). *OBILE AND AGENCY BANKING IN THE EAST AFRICAN COMMUNITY COUNTRIES: A DIAGNOSTIC ANALYSIS*.
- Owusu, G. M. Y., Bekoe, R. A., Addo-Yobo, A. A., & Otioku, J. (2020). Mobile Banking Adoption among the Ghanaian Youth. *Journal of African Business*, 00(00), 1–22. <https://doi.org/10.1080/15228916.2020.1753003>
- Reeves, M., & Sabharwal, N. (2013). Microfinance and mobile banking for the bottom of the pyramid. *Journal of Enterprising Communities: People and Places in the Global Economy*, 7(2), 155–166. <https://doi.org/10.1108/17506201311325805>
- Shaikh, A. A., & Karjaluo, H. (2014). Mobile banking adoption: A literature review. *Telematics and Informatics*, (May). <https://doi.org/http://dx.doi.org/10.1016/j.tele.2014.05.003>
- Siau, K., & Shen, Z. (2003). Mobile Communications and Mobile Services. *International Journal of Mobile Communications*, 1(1-2), 3–14.
- Sreejesh, S., Anusree, M., & Amarnath, M. (2016). Effect of information content and form on customers' attitude and transaction intention in mobile banking. *International Journal of Bank Marketing*, 34(7), 1092–1113. <https://doi.org/10.1108/IJBM-07-2015-0107>
- Susanto, A., Chang, Y., & Ha, Y. (2016). Determinants of continuance intention to use the smartphone banking services. *Industrial Management & Data Systems*, 116(3), 508–525. <https://doi.org/10.1108/IMDS-05-2015-0195>
- Tarhini, A. (2015). User Adoption of Online Banking in Nigeria : A Qualitative Study User Adoption of Online Banking in Nigeria : A Qualitative Study, 20(November). <https://doi.org/10.4172/1204-5357.1000132>
- Tella, A., & Olasina, G. (2014). Predicting Users' Continuance Intention Toward E-payment System: An extension of thge Technology Acceptance Model. *International Journal of*

Information Systems and Social Change, 5(1), 47–67.
<https://doi.org/10.4018/ijissc.2014010104>

Tobbin, P., & Kuwornu, J. K. (2011). Adoption of Mobile Money Transfer Technology : Structural Equation Modeling Approach Adoption of Mobile Money Transfer Technology : Structural, (September), 58–78.

Zafar, M., Zaheer, A., & Ur Rehman, K. (2011). Impact of online service quality on customer satisfaction in banking sector of Pakistan. *African Journal of Business Management*, 5(30), 11786–11793. <https://doi.org/10.5897/AJBM10.379>

Zhang, X., Zhou, X., Lin, M., & Sun, J. (2018). ShuffleNet: An Extremely Efficient Convolutional Neural Network for Mobile Devices. In *2018 IEEE/CVF Conference on Computer Vision and Pattern Recognition ShuffleNet: (pp. 6848–6856)*. IEEE. <https://doi.org/10.1109/CVPR.2018.00716>