Determinants of Fintech Products and Services Adoption in Kingdom of Saudi Arabia (KSA)

Alamoodi, Mohammed AbdulKhaleq AbdulRahman, Zarehan Selamat

Faculty of Management, Multimedia University, Cyberjaya, Selangor, Malaysia

Corresponding Email address: zarehan.selamat@mmu.edu.my

Abstract – **This research focuses on the factors that influence Fintech products and services adoption among bank customers in the Kingdom of Saudi Arabia. The extended technology acceptance model (TAM) was employed to determine attributes affecting the adoption of Fintech in Saudi Arabia perspective. The online survey was conducted to collect information on demographic factors and their intentions to adopt FinTech products and services. 300 responses were gathered and their intention to adopt FinTech products are measured by using five Likert Scale to which respondents were required to indicate their agreement or disagreement on perceived ease of use (PEoU), perceived usefulness (PU), social influence (SI), and security concern (SC). The result shows that PU and SI significantly influenced the adoption of FinTech. The findings of this research would be valuable to policy-makers in Saudi Arabia by helping them to determine the variables that have a significant effect on the process of adoption and establish some future potential guidelines for FinTech firms to boost their intention to embrace FinTech in the Kingdom of Saudi Arabia.**

Keywords - *Adoption, Attitude, FinTech, Saudi Arabia, Technology Acceptance Model (TAM).*

I.   Introduction

FinTech is a combination of "finance" and "technology" that encompasses a broad category of technologies such as online banking, e-wallet, mobile wallet, digital money, cryptocurrency and blockchain. The main objectives of FinTech are to increase productivity and to make financial services more efficient by transforming the way consumers and businesses access their finances and compete with traditional financial services. Fintech has obtained a lot of attention for its extraordinary potential in creating new products or services that bring benefits to customers and economies.

In Saudi Arabia, the main motivation for innovators in the FinTech space is the government's efforts to move toward a cashless economy and to ensure a diversified economy. In fact, through its Vision 2030 initiative, the government's aim is to overhaul its economy by transforming the Saudi economy away from its reliance on oil to a more technology-driven modern economy and target achieving 70% non-cash transactions by 2030.

However, FinTech is quite new in Saudi Arabia and the adoption of FinTech products such as mobile money wallets and digital payments is still low with only around 20 percent of the country's total transactions. This means that the country's Fintech industry is still young and to succeed the bank and other organisations need to define a clear FinTech strategy that aligns with the government Vision 2030 initiative. The insufficient level of acceptance of technology appears to be an implementation barrier to successful technology adoption and the decision to accept a certain technology depends on various factors. According to Bhatti (1970), research conducted on customer acceptance has provided valuable insights into the success or failure of an individual's acceptance of new products or services, it revealed that the acceptance of technology by individuals has expectations and behaviours would influence the acceptance of the consumer.

In this regard, this research aims to investigate the factors influencing customer adoption of FinTech products in the Kingdom of Saudi Arabia. This research employed the Technology Acceptance Model (TAM) to determine attributes affecting the adoption of Fintech in Saudi Arabia perspective. TAM is chosen to be used in this study because it has been the most widely researched theoretical framework used to evaluate and explain the individual adoption of the information system. The result of the study could be used by IT vendors and policymakers to determine the variables that have a significant relationship with FinTech adoption and to improve the system. The study will also provide an understanding of FinTech adoption and usage in Saudi Arabia and the reason for non-acceptance.

II. Literature Review

FinTech encompasses technology innovation with the seeks of competing with traditional financial approaches in delivering and use of financial services. According to Alt & Puschmann, (2012) FinTech is the incremental or drastic change in processes, methods, services or business models in the financial sector which is demonstrated by new solutions. Baabdullah, et al. (2019) mentioned that the FinTech industry progresses at an incredible rate, hence identifying the factors which influence the usage of the technology has become a primary objective of changing the characteristics of a specific technical service in favour to make its adoption more desirable. These services and applications have to be protected to increase the acceptance and accessibility to customers. A previous study by Venkatesh & Davis (2003) revealed a positive correlation between an individual's intention and an attitude. The intentions of potential users were stabilized on subjective norms while existing users were observed to rely on both actions and attitudes. Lately, a lot of studies have investigated the primary factors that may anticipate customers intentions, perceptions and behaviour towards FinTech (Ooi Chee Keong et al. 2020 and Ryu, 2020).

Technology Adoption Model (TAM)

In the last century and the light of technological developments, the need to understand and realize the level of the individual's ability to accept new technology has increased. Therefore, several models have been induced in favour of understanding how people can embrace and use these new technologies. When users are introduced to new technology, many factors can influence their choices about how and when they will use it (Fishbein & Ajzen, 1975). The TAM model has been developed by Davis (1989); it is the adaptation of TRA, which is the theory of reasoned action that aims to explain the correlation between attitudes and behaviours within human actions. The purpose of TAM is to provide a general overview of the determinants of machine acceptance that can clarify consumer behaviour across such a wide variety of end-user computing technologies and user populations. Over time, the TAM model has been implemented in a variety of ways, beyond simply accepting computers at work. As a result, TAM has become well-known as a stable, effective and parsimonious model for predicting user acceptance.

Davis (1989) suggested that theoretical information system models had been overused and embraced in an attempt to elucidate user acceptance, and he called it Technology Acceptance Theory. The model explained the two most important factors that affect users' acceptance level, which is perceived ease of use and perceived usefulness. Perceived usefulness is defined as the level that individuals believe a certain system will increase their efficiency, meaning whether the technology will be useful or not. In the meanwhile, perceived ease of use is defined as the extent to which an individual believes that using a certain system would be effortless. TAM is widely known for its high predictive model in terms of the adoption of technology and information systems (Venkatesh & Bala, 2008). Moreover, it is a well-designed model for the special merits of FinTech that enables us to better understand and predict market adoption of FinTech products or services. As TAM was widely used to understand the scale of customer acceptance of a particular system, this theory was therefore adopted for this

study. To extend the analysis, social influence (SI) and Security Concern (SC) are added to predict the adoption of FinTech.

Perceived Ease of Use (PEoU)

Perceived ease of use is a significant determinant in the TAM model, it refers to the individual effort level involved when it's used. In this research, perceived ease of use is defined as the degree to which the consumer will be relaxed and make an effort in the favour to learn how to use FinTech service. Riquelme et al. (2010) reveal that perceived usefulness greatly influences the level of attitudes and ability to accept Fintech when users use complicated systems to perform financial transactions through mobile devices. If consumers believe that Fintech services are convenient, easier to use and friendly, they are more likely to be approved by users.

FinTech will provide a better service and customer experience which will make up for the bank's business weakens to satisfy the personalized needs of customers, therefore, the FinTech ease of use is the essential component that determines the user's adoption, meaning that the consumers are more likely to use the technology as long as it simple and not complicated. Taylor & Todd (1995) compared TAM, TPB (Theory of Planned Behavior) and DTPB (Decomposed Theory of Planned Behavior) models when using a computer resource center and found that perceived ease of use had positive significant impacts on perceived usefulness. Thus, the importance of perceived ease of use in the adoption process of FinTech led to the following hypothesis:

H1: Perceived Ease of Use positively impact the consumer's intention to adopt FinTech in Saudi Arabia

Perceived Usefulness (PU)

The perceived usefulness refers to an individual assessment of how the use of the new technology and information system would improve their efficiency. It is a frequently used factor in the process of adopting an information system in the Technology Acceptance Model. In this study, perceived usefulness implies that users intend to accept FinTech if they believe that the service or the product will have an affirmative effect (Ryu, H, 2020). FinTech products and services will be adopted by people due to the efficacy of the system in reinforcing banking activities such as transactions. To put in another word, it refers to productivity, reducing the time spent, convenience, ease to use and will enhance the job performance.

A significant number of studies on information technology adoption in recent years have shown that perceived usefulness have significantly positively correlated with the level of consumer's intentions and usage (Putit, Abdullah, Ahmad, Nor Fazlina, Asnawi & Suki, 2021; Mohd Zain et al., 2020, Ng & Kwok, 2017 and Selamat et al, 2009). Hence, this study investigated whether perceived usefulness would affect the individual's intention to adopt FinTech. Based on that, the following hypotheses are suggested:

H2: Perceived Usefulness positively impacts the consumer's intention to adopt FinTech in Saudi Arabia.

Social Influence (SI)

According to Venkatesh et al. (2003, p. 451), social influence is "the extent to which a person perceives that important others believe he or she should apply the new system". In this research, social influence is interpreted as the effect of an individual's social environment on the intention to adopt FinTech services . Individuals' attitudes towards new technological innovation can be influenced by family, relatives and friends. In other words, the awareness and behaviour of consumers towards technology could be greatly affected by the information and encouragement of individuals surrounding him or her (Alalwan et al, 2017). Besides, Saudi Jahya, (2004), found that users could turn their use of non-socially acceptable technology into socially acceptable technology in order to achieve higher levels of social integration and interaction. As for Saudi Arabia, research on the role of social influence was discovered to have a positive relationship with mobile banking usage (Al-Husein and Sadi 2015).

Therefore, social influence is essential for the adoption process of FinTech. The following hypothesis is proposed:

H3: Social Influence positively impacts the consumer's intention to adopt FinTech in Saudi Arabia.

Security concerns (SC)

According to (Taherdoost, 2017), security concern is described as consumers' preparation and their ability to preserve private financial data during transmission and processing against security breaches. Security risk is described as the possible misfortune caused by blackmail or cybercrimes on the financial transaction security system of the companies. According to Haque et al, (2009) security is one of the most important factors in trust-building in multiple online transactions. Security means that consumers have faith in a website and feel confident when sharing their private information (Zeithaml et al., 2000). Ryu (2018) claims that the use of FinTech is typically followed by higher possible misfortunes, such as privacy, personal information and trading, it also contributes to the formation of the perceived risk of use of FinTech. As a consequence, the security concerned is believed to have a significant effect on FinTech use intention. Gupta et al (2010) and Mohd Yusuf at al. (2018) found that security issues have had a positive influence on the effects of consumer acceptance and regulation. Security problems were often recognized as significant determinants in accepting FinTech (Taherdoost, 2018). Therefore, security concerns in this research will be evaluated based on the degree of consumer acceptance towards FinTech services. This reasoning leads to the following hypothesis:

H4: Security Concerns positively impact the consumer's intention to adopt FinTech in Saudi Arabia

Based on the abovementioned literature, the proposed research framework has been constructed and outlined in figure 1. This study suggests a research framework on perceived ease of use, perceived usefulness, social influence and security concern towards consumers' intention to adopt FinTech products and services.
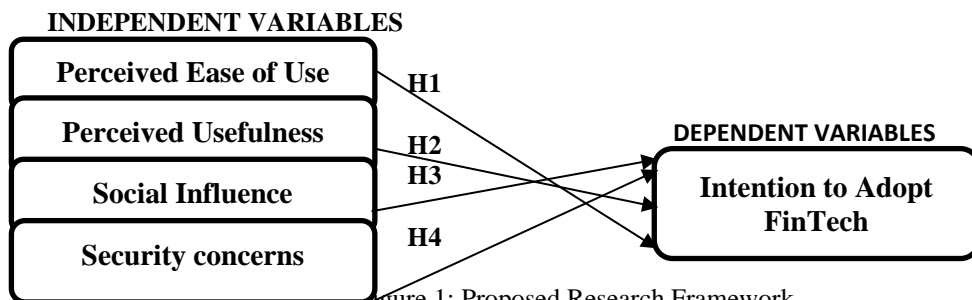

Figure 1: Proposed Research Framework

III. Methodology

In this study, the targeted respondents were bank customers in the Kingdom of Saudi Arabia. Using the convenience sampling method, the online survey was conducted using a set of questionnaires that consists of respondents' profiles and all the variables in the model. The survey collected data on the respondents' demographic factors including gender, age, academic achievement, monthly income and the use of FinTech products and services. Intentions to adopt FinTech were measured using five Likert scales to indicate their agreement with the statement on perceived ease of use (PEoU), perceived usefulness (PU), social influence (SI), and security concern (SC). The collected data were entered into SPSS, for various statistical and hypothesis testing such as descriptive, reliability and regression analysis.

An overall 300 respondents are involved in this research. Among the 300 respondents, the majority are male 74.3%, aged between 18 – 25 (44%), bachelor's degree holders (60.7%), monthly income more than SAR 6000 (33.3%) and multiple times a day use Fintech Services (39%). The reliability analysis was tested using the Cronbach Alpha Model. The result overall value is 0.715, which is higher than 0.6 indicates an acceptable level of reliability used in this study (Sekaran 2000).

IV. Results and Discussion

Table 1 summarized the overall mean and standard deviation for each independent variable with the overall mean scores for all variables are above 4 (based on a 5-point Likert scale). This indicates that the respondents agreed to all the statements. Perceived Usefulness has the greatest influence on the consumer intention with a

mean of 4.28 whereas perceived ease of use scored the lowest mean (3.8747) which is the least impactful factor on the consumer intention among the independent variables.

Table 1: Overall Mean and standard deviation for Variables

Variables	Mean	Std. Deviation
Perceived Ease of Use	3.8747	0.77332
Perceived Usefulness	4.2887	0.73789
Social Influence	4.0653	0.77434
Security concerns	4.1987	0.85559

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.524ᵃ	.274	.264	.93044

a. Predictors: (Constant), SC, PEU, PU, SI

Table 3: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.747	.352		2.119	.035
PEoU	.136	.092	.097	1.475	.141
PU	.279	.100	.190	2.806	.005
SI	.312	.104	.223	2.998	.003
SC	.149	.081	.117	1.827	.069

a. Dependent Variable: CI

Table 2 shows the coefficient of determination (R^2) value of the model is 0.274. This implies that the models explain 27.4% of the variance in the adoption of FinTech. The multiple regression analysis results in Table 3 discovered that only two out of four independent variables illustrate a significant impact on consumer intention to adopt FinTech with the significant value, ρ less than 0.05. Meanwhile, the remaining three independent variables were not significant with a significant value, ρ more than 0.05. SI and PU were discovered to have a significant positive relationship on FinTech product and services adoption, with significant value 0.005 and 0.003 respectively. Meanwhile, PEoU (ρ= 0.141) and SC (ρ= 0.069) are not significant with the intention to adopt and use FinTech. Therefore, the following hypotheses are confirmed:

Table 4: Hypotheses Results

Hypotheses Statements	*P*- value	Results
H1: Perceived Ease of Use positively impact the consumer's intention to adopt FinTech in Saudi Arabia	.141	Not Supported
H2: Perceived Usefulness positively impact the consumer's intention to adopt FinTech in Saudi Arabia	.005	Supported
H3: Social Influence positively impact the consumer's intention to adopt FinTech in Saudi Arabia	.003	Supported
H4: Security Concerns positively impact the consumer's intention to adopt FinTech in Saudi Arabia.	.069	Not Supported

V. Discussions

The research explores the factors that affect customer adoption of financial technology products in the Kingdom of Saudi Arabia by using TAM. The results revealed that hypothesis 1 (H1) was rejected in which perceived ease of use (PEoU) does not have a significant influence on the adoption of FinTech in Saudi Arabia. The result is consistent with Baabdullah et al., (2019) who discovered that acceptance of m-banking is not significantly influenced by PEoU. As long as customers highly value the usefulness of the technologies they will be interested and willing to use that technology. Furthermore, PEoU may not have a significant influence on adoption behaviour because FinTech is still at an introductory stage in Saudi Arabia, thus not many customers are familiar with the new technology or have no opportunity to use it.

Consistent with previous studies, the finding indicates that Hypothesis 2 (H2) is supported in which perceived usefulness is found to significantly influence the intention to adopt FinTech. It was established on the assumption that the better understanding of the technology; the more likely they will be using the significance (Selamat et al, 2009). This result indicates that Saudi customers believed that FinTech is more useful, productive and will have an affirmative effect. Thus by knowing the consumers more accurately, it will allow the policymakers to focus on developing the FinTech product that is usable and convenient to use. `

This study indicates that social influence was found to be one of the determinants that contribute to the adoption of FinTech. Thus, Hypothesis 3 (H3) is supported. This result refers to the fact that social influence has significantly influenced the level of FinTech adoption in Saudi Arabia because an individual is easily influenced by people around them, especially towards the new or unfamiliar technology. In the absence of their own experience, people will seek the opinion from others about the characteristics and the advantages of the technology (Shubhangi Singh et al, 2020). The findings of this study confirmed the past result that social influence from friends and family members are the variables that affect the level of technological adoption (Jianli Xie & et al, (2021), Ikhsan & Sunaryo, 2020, Al-Husein & Sadi, 2015 and Venkatesh et al., 2003).

The final independent variable in this study, security concern has no significant relationship influence the adoption of FinTech in Saudi Arabia. Hence, hypothesis 4 (H4) was rejected. This result had not been expected and somewhat contradictory with the previous evidence, where security concerns significantly influenced the technology adoption level (Taherdoost, 2018, Ryu, 2020 and Gupta et al.,2010).

VI. Conclusion

To conclude, the finding of the research has confirmed that social influence and perceived usefulness are the factors that affect customer intention to adopt FinTech in the Kingdom of Saudi Arabia. Thus, this research has suggested both practitioners and decision-makers focus more on the usefulness and the benefit in designing the new financial technologies products during the development phase. Besides, FinTech services providers and financial institutions should be offering their technology with greater interaction among peers. This can help inform their peers about the services and lead to an increase in the number of users. As such, understanding the financial services needed by customers will provide valuable information to policymakers to determine the motivation for the adoption of FinTech and establish some future potential guidelines for FinTech firms to boost their intention to embrace FinTech in KSA.

This study, however, has its limitations that future studies can address. First, the study had not included the moderation effects of demographic factors thus there is a lack of a more concrete understanding of the potential relation between different demographic factors. Second, there might be other variables that are suitable to measure the intention to use in this context. It has thus recommended that future research expands the model by exploring the potential roles of moderating variables and other independent variables in information technology so that a more comprehensive understanding and effective assessment of the FinTech adoption in the Kingdom of Saudi Arabia can be acquired.

References

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.

Alt, R., & Puschmann, T. (2012). The rise of customer-oriented banking - electronic markets are paving the way for change in the financial industry. Electronic Markets, 22(4), 203-2015.

Al-Husein, M., & Sadi, M. A. (2015). Preference on the perception of mobile banking: A Saudi Arabian Perspective. European Online Journal of Natural and Social Sciences, Vol.4, No.1 pp. 161-172.

Baabdullah, A.M., Alalwan, A.A., Rana, N.P., and Patil, P. (2019). An integrated model for m-banking adoption in Saudi Arabia. International Journal of Bank Marketing Vol. 37(2), 452-478.

Bhatti, T. (1970). Exploring factors influencing the adoption of mobile commerce. Journal of Internet Banking and Commerce, 12(3), 1-13.

Davis, F.D. (1989), Perceived usefulness, perceived ease of use and user acceptance of information technology", MIS Quarterly, Vol. 13 No. 3, pp. 319-339.

Ikhsan, K., & Sunaryo, D. (2020). Technology Acceptance Model, Social Influence and Perceived Risk in Using Mobile Applications: Empirical Evidence in Online Transportation in Indonesia. Jurnal Dinamika Manajemen, 11(2), 127-138

Fishbein, M. and Ajzen, I. (1975), Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research, Addison-Wesley, Reading, MA.

Gupta, S., & Xu, H. (2010). Examining the relative influence of risk and control on intention to adopt risky technologies. Journal of Technology Management and Innovation, 5(4), 22-37.

Haque, A. K. M. Ahasanul and Ismail, Ahmad Zaki and Daraz, Abu Hayat (2009). Issues of E-Banking Transaction: An Empirical Investigation on Malaysian Customers Perception. Journal of Applied Sciences 9(10).

Jianli Xie, Liying Ye, Wei Huang and Min Ye. (2021). Understanding Fin Tech Platform Adoption: Impacts of Perceived Value and Perceived Risk. Journal of Theoretical and Applied Electronic Commerce Research, Vol(16), 1893-1911.

Mohd Yusof, N., Che Mohd Hariri, M.S, Mohamed Taheer, A.S, Syed Omar, S.A. (2018). The Adoption of Electronic Payment System Among Small Medium Enterprises (SMEs) in Malaysia. Journal of International Business, Economics and Entrepreneurship, Vol (3), 36-43.

Mohd Zain, Z, Jusoh, A.A, Munir, R.I.S, L. Putit, (2020). Drivers of E-Commerce Adoption amongst Small & Medium Sized Enterprises (SMEs) in the Business Service Sector. Journal of International Business, Economics and Entrepreneurship, Vol. 5, (1).

Ng, A.W.; Kwok, B.K.B. (2017). Emergence of Fintech and Cybersecurity in a Global Financial Centre: Strategic Approach by a Regulator. Journal of Financial Regulation and Compliance, 25(4), 422–434.

Ooi Chee Keong, Tang Kin Leong, Chong Jia Bao (2020), Perceived Risk Factors Affect Intention to Use FinTech. Journal of Accounting and Finance in Emerging Economies, Vol No 2.

Putit, L., Abdullah, M.F.,Ahmad, N., Nor Fazalina, S.,Asmawi, N.H.; Suki, A. (2021). Gravitating towards Consumers' Use of Contactless Payment: A COVID 19 Perspective. *IBIMA Business Review, 2021, 2021. ID: covid who-1395183*

Taherdoost, H. (2017). Understanding of e-service security dimensions and its effect on quality and intention to use. Information and Computer Security, 25(5), 535- 559.

Taherdoost, H. (2018). Development of an adoption model to assess user acceptance of e-service technology: e-service technology acceptance model. Behaviour and Information. Behaviour & Information Technology 37 (2), 173-197.

Saudi Jahya, N. B. "Factors That Influence Muslim Consumers Preference Towards Islamic Banking Products or Facilities: Theory of Reasoned Action." Unpublished Dissertation (2004).

Sekaran, U. (2000). Research Methods for Business: A Skill-Building Approach. New York: John Wiley & Sons.

Selamat, Z, Jaffar, N and Ong, H.B (2009). Technology Acceptance in Malaysian Banking Industry. European Journal of Economics, Finance and Administrative Sciences, Vol. 17,143-155.

Shubhangi, S, Marshal, M.S, Raj, K.K (2020). What drives FinTech Adoption? A Multi-Method Evaluation Using an Adapted Technology Acceptance Model. Management Decision 58(8),1675-1697.

Riquelme, H.E.; Rios, R.E. (2010). The Moderating Effect of Gender in the Adoption of Mobile Banking. International Journal Bank Marketing, 28, 328–341.

Ryu, H.-S. (2018). What makes users willing or hesitant to use Fintech? the moderating effect of user type, Industrial Management & Data Systems, Vol. 118 No. 3, 541-569.

Ryu, H.-S. (2020). Understanding Benefit and Risk Framework of Fintech Adoption: Comparison of Early Adopters and Late Adopters. Proceedings of the 51st Hawaii International Conference on System Sciences.

Taylor, S and Todd.P. (1995). Assessing IT Usage: The Role of Prior Experience. MIS Quarterly, Vol. 19(4), pp. 561-570.

Venkatesh, V. & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. Decision Sciences, 39(2), 273-315.

Venkatesh., V., Morris, M.G., Davis, G.B., Davis, F.D. (2003). User Acceptance of Information Technology: Toward a Unified View. MIS Quarterly, 2003, 27(3), 425-478.

Zeithaml, V.A., Parasuraman, A. & Malhotra, A. (2000). E-service quality: definition, dimensions and conceptual model. Working Paper. Marketing Science Institute, Cambridge, M.A.