# EXAMINING THE FACTORS INFLUENCING THE SUCCESS OF MOBILE MONEY IN AFGHANISTAN

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***ABSTRACT:*** *The advancement and rapid development of mobile money has created extraordinary opportunities for poor people in developing countries to help contribute in the development of the economy. Mobile money has formed an effective and efficient mechanism for the electronic transaction of money. Regardless of the remarkable improvement in the recent decades, the economy of Afghanistan still has not improved. Citizens of this country are some of the poorest in the world. Due to the system being undigitized and corruption, there is distrust among banks, bribery, graft of employee salaries by their supervisors and high costs of currency transport. There is very limited accessibility to basic financial services due to lack of e-transaction and banking services. The introduction of mobile money as an electronic transfer of money can be a partial solution to the problems being faced in Afghanistan. However, lack of system quality, information quality and service quality assurances is an essential problem to the success and usage of mobile money which need to be improved. This paper aims to determine the impact and influence of system, information, and service qualities on the use of mobile money. The study can help unbanked citizens to access basic financial services through mobile money. It can also help owners assess mobile money to improve the system, information, and service qualities. The DeLone and McLean IS Success Model has been adapted as theoretical method for this paper to evaluate the success of mobile money services based on four influencing factors as the main objectives of the paper. Based on a review of the literature, a quantitative paper method was applied for data collection through an online survey questionnaire. The data has been randomly collected from the users of mobile money in Afghanistan. The data has been analyzed through SPSS and PLS-SEM model. PLS-SEM analyses were performed for the result of the data analysis. Based on the analysis of the responses of the participant, system quality, information quality, service quality and customer value were seen to have significant and positive impact on the success of mobile money services in Afghanistan.*

***KEY WORDS:*** *Mobile Money, Influencing Factors, Afghanistan, Financial Services, Service Quality*

# 1. INTRODUCTION

The emergence of new technology, which can be seen everywhere from IT to banking to the use of robotics in industries, is making our lives better and the usage and access to mobile devices have also increased all over the world. It has approximately increased to 10% in 1999 and mobile access has dramatically risen roughly to 90% in 2014. Around 80% of innovations have been recorded in developing countries. This development has created many opportunities for residents of the developing nation in rural areas (Blumenstock, Callen, & Koepke, 2014). Also, the usage of mobile phone has increased in Afghanistan, there were around thousands of mobile devices in the year 2002 but this number reached up to 17 million in 2013 (Blumenstock et al., 2014).

Regardless of the remarkable improvement of technology in the previous decades, the economy of Afghanistan still has not improved. People of this country are the poorest in the world. The economy environment has not improved due to, the high level of poverty, corruption and undigitized system. Working and investing are very challenging for local and international organizations. These organizations are faced with several problems especially when transacting worker's monthly salary, as most of the organizations are paying the salary of employees in cash. This manual monetary method produced some substantial problems in the country. For example, weak banking system, lack of trust in the banking services, bribery and high currency exchange cost, as there is no reliable transportation and physical security is very bad (Blumenstock et al., 2014).

Approximately 2.5 billion users are unable to access financial services, while roughly one billion can acquire a mobile phone. This provides a primary way to pay, transfer and facilitate financial services to the poor population of the world. The outstanding success of Kenyan mobile money technology "M-PESA" is remarkable, which signifies 15% of the country's GDP. Also, the transactions of m-Pesa are more than Western Union (Blumenstock et al., 2014).

Mobile money generally refers to financial services essentially accessed through mobile devices. Through a SIM-card account, a user can have access to money transfer services. Tobbin (2011), stated that, mobile money transaction can take place between two persons by using mobile devices, excluding person-to-business and business-to-business. This transaction can be between two local or international remittance. Sending and receiving remittances with lower cost, expands the safety and security of cash, and makes payments more suitable.

In addition, the basic transaction opportunities have been given by mobile money to people who cannot have access to banking services. Through this system, they can check balance, withdrawals and transfer cash, and to shop online (Report, 2013). Besides economic development, this and technology can improve transparency, accountability, and efficiency of money transaction. Mobile money transaction method is one of the best methods suggested for solving cash based challenges and problems (Blumenstock et al., 2014). Moreover, Mobile Money is a money transmission technology through which individuals can have access to elementary banking services through mobile devices instead of a bank (Ntara, 2015).

Furthermore, this e-method of transaction is vital for low income and for far-away residents. According to Mustafa and Anderson (2019), services of mobile money are particularly beneficial and suitable in developing countries where the physical location of the bank branches are significantly far from most of the residents. Also, opening bank account requires vast amount of documents, literacy, high transaction price and their services are not suited for low-income sectors which is known as unstable earning (Mustafa & Anderson, 2019).

In addition, mobile money makes financial transaction process to be easy and comfortable for nations who are poor especially for citizens of developing countries across the globe. Afghanistan is one of those countries which is suffering from long war, conflict, and financial corruption. The manual or cash transfer system of money from person to person has created chance of taking bribes from officers, stealing money, or reducing the salary of the workers and taking salary for the employees who are not employed. For instance, the private banks‘ employees may ask bribes to approve loans for farmers or shopkeepers, personnel of the embassy could do the same to process visa requests and military staff or international organizations may demand bribes in return for special and better treatment. The rate of bribery to individual who are not employed in the public sector is higher in rural area which is about 29.4% more than in urban areas which is 27.4% (Republic, n.d.).

Additionally, internet and network services are very limited in most of the areas in Afghanistan. Vast majority of people have access to telephone for daily communication. Although mobile money is not based on internet so this means people can use a mobile phone for transactions and paying the bills and other services. Mobile money can save customer's time as manual system will take much time to transact or to pay bills. For example, it will take almost 2 to 4 hours to pay a bill of electricity at a bank. This monetary technology can improve the system which is based on cash and residents of Afghanistan can pay their bills on time. This new technology can prevent the agents of the third party from skimming and stealing as these agents deliver the cash to other staff and workers. Additionally, mobile money system is simple and easy to use like a bank. The money is stored in user's mobile phone, every user has a wallet which is sometimes referred to as s-wallet. This technology has agents in different parts of the cities as a distributed channel. Customers can withdraw and deposit money through those agents from financial institution (banks) (Martin, 2019).

Currently, there are some private telecommunication companies providing mobile money services in several provinces. These companies are Roshan, Afghan-Wireless (AWCC), MTN Group and Etisalat. In 2006, Roshan developed its own Mobile money system with the name of M-Paisa; it is a leading mobile operator in the country. Roshan formed a partnership with Vodafone which is a British mobile money platform, and currently Roshan has around 3.5 million subscribers in Afghanistan. M-Paisa Platform of Roshan delivered the first mobile money services to afghan national police in 2009. Through this platform the central government was able to directly pay the salary of the police (Blumenstock et al., 2014).

Moreover, formal banking services and their branches are very limited, they are mostly available in the central part of the provinces. Most of the rural areas do not have any commercial bank branches. Only three percent of the residents are using bank account for their savings. Most of them rely on cash-based or Hawala system. Hawala system has very limited functionality for saving (J. Blumenstock & Callen, 2015).

## 2. LITERATURE REVIEW

About one half of the world's population is living out of reliable banking institutions. People suffer from stealing, killing, and bribery due to a lack of basic, reliable money transaction services. Money has been transported through informal agents or hawala brokers for centuries, and there is a need to switch from a manual money transfer system to a digitalized platform. For that purpose, mobile phones can provide opportunities for easy and safe money transactions and make life comfortable. The mobile money platforms can generate excitement for microfinance experts, development specialists, donors, technologists, interface designers, and the academic sector (Date, 2011).

The concept of mobile money transaction services was generated in 2007 by a British global service provider Vodafone with Safaricom, the Kenyan mobile network. Through the partnership of Vodafone, Safaricom launched its first mobile money platform in the name of M-PESA. M-PESA transfers money from one user to other users using a mobile device. It has many agents across the country that provides money transaction services. Through a mobile phone, a sender can send money with a text message and the receiver can collect the cash from one of the nearest agents of M-Pesa. For providing cash, M-Pesa has a contract bank and its agents are based on the existing bank branches. As of 2010, M-Pesa was one of the most successful money transaction technologies in Kenya with around 12 million subscribers. Most of the people are using this technology for their daily money transfer (Date, 2011).

Kenya was one of the first developing nations to introduce a mobile transferring services based on text messaging (Ntara, 2015). In 2007, Safaricom, the largest Kenyan mobile telecommunications company introduced M-Pesa to the market. In March 2013, the users of this platform had reached to 15.2 million out of 19 million subscribers of the company. The figure increased from 14.9 million the same time in the previous year. Moreover, a Kenyan survey showed a considerable rise in national transfers by M-Pesa. It has increased approximately 17% in 2006 but this percentage has risen up to 52 Percent in 2009, which indicates a very high increase in the e-transaction (Place & Kingdom, n.d.).

The service of mobile money has been launched in several countries outside Kenya including Tanzania, Afghanistan, Fiji, South Africa, the Democratic Republic of Congo and India. Additionally, the partnership and share of Safaricom with Western Union (WU) permits M-Pesa platform's customers to get money from around 45 nations, including the UK, USA, Italy and Canada (CISCO, 2013).

The Kenyan telecommunication company Safaricom is rising gradually to become a member of the top ten leading international money transfer agents in Kenya. It has become popular, about 40% of the adults of this country are using M-Pesa's services. This trend will see the company acquire a larger market share than the 34 commercial banks within a very short period of its entry into the international cash remittance business. Currently, the telecommunications firm receives over 4% of all cash remittances from foreign nations (Ntara, 2015).

### *2.1. Theoretical Framework*

This study adapts DeLone and Mclean Information System (IS) success models. DeLeon and McLean have proposed the very first IS model for the evaluation of IS success at the individual and organizational level. The model has been created based on organizational impact, use, individual impact, user satisfaction, system and information qualities. The model of IS system has been evaluated by system and information qualities. Information and system qualities can positively influence the use of the system and user satisfaction. Use of the system and satisfaction of the users of the system will have an effect on personal/single and finally on the organizational level (Khader & Almasri, 2016).

System can be measured by system quality, so it is a vital dimension of the IS model. System quality can identify whether the system is accessible, stable, flexible, easy, responsive and fast. Additionally, the value and quality of the information is observed by information quality of the system. The quality of the information should be on time, accurate and reliable. Moreover, the success of the system can be evaluated by information and system qualities (Khader & Almasri, 2016).

As DeLone and McLean IS model has been adopted for this paper, the researcher will preview some previous studies regarding this model's concept and usage. The first paper used the IS success model to evaluate electronic bank and user's readiness for a cashless economy. They conducted a survey with 240 questionnaires in Omoku town in Rivers state.

The respondents claimed that they are always using ATMs and other internet banking services along with mobile money. They pointed out that the use of mobile money is around 22.7%, which can be marked as the third highest percentage. Quantitative research methodology was used for this research paper. The population were customers of the bank, workers and anyone with an active account of the bank. The result of this paper indicated that electronic services of bank is still developing in Nigeria, and these services have to be improved, in terms of system, information and service qualities. That means if the system, information and service qualities are improved the user will more often used e-banking services. The participants pointed that the awareness about mobile money have to be improved (Okechi, 2013).

The study in the second paper examined mobile banking services based on information system using DeLone's and McLean's IS model. Data was collected through a survey and it was tested using PLS regression. The research finding showed that, customer's trust, and satisfaction is influenced by system and information qualities. These two factors can positively effect over contentment. Moreover, both system and information qualities can play a vital role in attracting and obtaining the customers' trust for electronic transactions (Chung, 2018).

The third research paper identified the factors that can impact the usage of m-banking in Indonesia. It used the IS model for the evaluation of the system. Through a survey questionnaire, primary data was collected from the residents of Surakarta, Indonesia. The participants were the users of mobile banking. The targeted sample was 200 participants, about 60 percent were male and 39 percent were female. They used SEM model for data analysis. The results indicated that IQ positively impacted the usage of m-banking but not on system quality. Also, system quality and information quality can impact user satisfaction. However, user satisfaction, use and net benefit (NB) has no influence towards Use. In contrast, user satisfaction had effect on NB, but NB had no impact on user satisfaction (Budiwati & Kurniasih, 2014).

The next paper evaluated the banking system of Oman by using the DeLone and McLean theoretical model. It examined the relationship between the variables of the model in order to test their impact on the banking sector of Oman. Managers and assistant managers of the bank participated in the survey; the data was analyzed based on correlation analysis. Result showed that most of the variables of the research were supported. System, information, and service qualities impacted user satisfaction positively. The relationships were significantly positive between the three qualities and satisfaction of the users. There was a significant relationship between the qualities and the satisfaction of the users. Individual influence of the model was impacted by the user's satisfaction. The IS success model has been supported by findings and this suggests the model's applicability. Also, user satisfaction had significant positive relationship with individual impact. The result indicated that system quality and service quality had notable relationship with information quality. All of those variables (Qualities) showed positive effect on user satisfaction. (Manchanda, 2014).

Additionally, a study applied IS Success Model for mobile and internet banking services. The model was used to assess the success factors of the system. This paper's theoretical model was constructed from service, system, and information qualities, which are the main dimensions of the IS model. The impact of those qualities has been analyzed and correlated to the users and satisfaction of the users. Study was conducted via Google survey tool and face to face interviews. The data was collected through a survey of 126 voluntary participants of the bank. Based on the survey, the information quality (variable) did not impact the research model. However, three other independent variables had positive impact and contribution to IS (Kutlu & Alkaya, 2015).

Moreover, DeLone and McLean IS model was used in another paper for theoretic purpose. This research paper created its own model based on the IS success model to test and identify Use for mobile banking. Also, the researcher evaluated the relationships among variables and intent to use. Net benefits is the contribution for nation, industry, individual, and organization. This model identified the previous gaps and the necessity of the M-banking. They proposed to improve and get the intention of use for the customers. Users will use the system if it is built based on their intention (Al-ghazali, Rasli, Yusoff, & Mutahar, 2015).

Furthermore, this paper investigated the impact of user's trust on mobile banking based on system and information qualities. Also, to identify the relationships among those qualities and the user satisfaction on NB. One of the primary objectives of this paper was the adoption of the IS success model. In addition, this research indicated that a good design can positively have an impact on user satisfaction. A survey questionnaire was conducted for data collection and it was analyzed through the (PLS) software. The research finding revealed that satisfaction of the customers can be affected by information and system qualities. However, there was no impact of presentation of the information on the satisfaction of the users. Additionally, the result showed that trust of the customer is vital and it can be a moderating role for customer satisfaction and IQ and SQ (Chung & Kwon, 2009).

Based on the TAM, and the DeLone and McLean model, another study tested and predicted the key factors that impact consumers to adopt mobile banking system. The empirical method was used to examine the theoretical method. The data sample was collected from a famous Chinese bank. The respondents were from the customers of industrial and commercial bank of China. The survey was administered to people who were mobile banking users. They randomly chose mobile banking users from the database. The results showed that PU and PEOU are key aspects influencing consumer adoption intention toward mobile banking, and information, system and service qualities had indirect impact on adoption intention through PU and PEOU. This paper offers insights on mobile banking success based on the findings of our work. The researcher created a theoretical model to explain and predict consumer intention to use mobile banking systems by using the constructs of PU, PEOU and information, system and service qualities based on TAM and D&M models.

In regard to the previous studies of IS, one study recommended a research model for the examination of the usage of mobile money. This model was created in reference to three independent and one dependent variables. Information, service and system qualities are the independent variables and the main constructs that can impact the usage of mobile money in Afghanistan. The quality of the system can be assessed by stability, availability and EOU. The indicators of information quality are applicability, accuracy, and timeliness of the system. Secrecy of the service, reliability of the service and quickness of the service can be the indicators of service quality. Customer value is a dependent variable which depends on the other three independent variables. In this paper, they investigated those three qualities (independent variables) that can impact the use and success of mobile money (Kim, Oh, Shin, & Chae, 2009).

System is evaluated based on its accessibility, stability and use. As compared to the cash transfer system, mobile money (MM) system is easier and more comfortable to be used. Mobile money can save time and secure money transaction processes. Changing manual money transaction system to electronic system will take time as it is normal, but it will improve the lives of people financially. The electronic money platform can reduce extra cost, workload, and it will help users to have a stable and accessible system for their daily transaction and other services. On the other hand, there are some notable client assumption barriers which exist such as client literacy, no ID and weak networks at the areas which are far away from the cities (Yunus, Khan, Tasnuba, Husain, & Misiti, 2016).

The second variable of the model is information quality; it is the quality and key value of the system's output. The information should be updated, current, concise, accessible and meaningful. The quality and the value produced by the system is called information quality (DeLone & McLean, 1992). According to Martin (2019), "Mobile money has the potential to become a catalytic platform whereby the cash-based financial sector could be fundamentally realigned from being mediated by expensive retail infrastructure to greater use of electronic payments through mobile phones".

Additionally**,** M-PESA provides a variety of transaction services including transferring, withdrawing, and depositing. Also, customers can do shopping over the MM platform. For example, M-SHWARI was one of M-Pesa paperless bank services account that can be used for interest and loan providing. It is a saving account and customers of M-Pesa are actively using it (Hove, 2019). This account of M-Pesa, provides saving and loan opportunities for customers. Through the loan of M-Shwari, youths can invest, achieve their personal goal and they can enhance their welfare. It is an alternative platform to access the financial services in the country (Agola, 2017).

Mobile money can play a vital role for the economics of the poor nation in developing countries as transaction price of M-Pesa is lower for both small and big business owners. Both categories can improve at the same time. Financial weakness will decrease when there is a rise in total remittance of the receivers. It was shown that remittances of M-Pesa essentially enhance resistance to revenue shocks (Hove, 2019).

In addition, service quality is the quality of the services based on the characteristics of reliability, speediness, and confidentiality. Balancing customer, technology and process is one of the characteristics of service quality. High service quality can be the result of the best management of service quality (Thilakarathne, Lanka, Abeysekera, & Lanka, 2016). Higher levels of customer satisfaction are closely related to the higher levels of service quality that lead to increased patronage intensions and increased sales. Customer satisfaction closely related to the quality of the service, if the quality is good the customers will be happy (Prakash & Mohanty, 2015).

Additionally, around 1.9 Billion people now have access to mobile money services with 270 live services. This technology changed manual and local money transaction system to electronic system in Sub-Saharan Africa, which can improve the effectiveness of global transfers. Mobile money services are the most acceptable innovations for financial services in the world of developing countries. It has millions of registered users in many countries. For example, its services are accessible in 45 countries (Correia, Ngare, Sindiga, & Otwoma, 2017).

Moreover, more than 40% of the participants said that they are using MM accounts to save. In contrast, around 27% used it for money transactions in 2010, that means most of them used their accounts for saving compared to transferring (Hove, 2019). In addition, services of MM are stable and accessible most of the time. According to Cook & Mckay, (2015) M-Shwari a mobile money platform by M-Pesa is accessible 24 hour for the customers everywhere, where the banking services are most probably not available.

Lastly, customer value had significant relationship with the satisfaction of customers. It is the value obtained from the improvement of customer relationship. Outcome and process components are indicated as part of customer value, which can significantly contribute to the loyalty and satisfaction of the customers. Process components can be internal or external like Customer Relationship Management (CRM) and Supply Chain Management (SCM), to create value (Kim et al., 2009). Based of the literature review, there are strong relationships between system, information and service qualities and customer value with the use and success of mobile money.

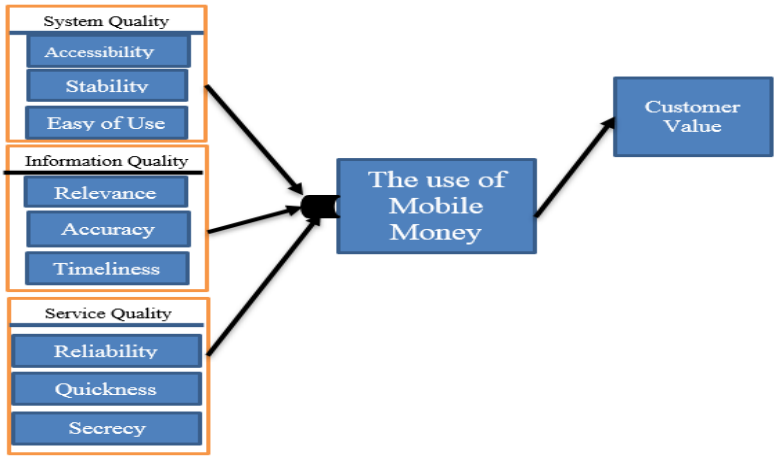


Figure 1 : The Use Of Mobile Money

## 3. METHODOLOGY

Research methodology is a general technique or method used to identify a systematic way and solution for the research problems. That means it can explain and provide the methods to proceed with the research. In contrast, research method is used to conduct questionnaire, test, experiments and survey (Goundar, 2019). This paper adapted the quantitative research method. Quantitative method is a type of research method which refers to the data by using predetermined instruments such as questionnaires, survey and experiments. It is characterized through the fact that this data is being subjected to statistical analyses instead of subjective meanings. It is collecting numerical data to identify relationship between variables (Boeren, 2018).

According to Apuke (2017), in a quantitative research, the variables can be quantified and analyzed in order to obtain the result of the data. It is analysing the numerical data through particular statistical methods.

Furthermore, Williams (2011) pointed that quantitative method can start with a problem statement, creating hypothesis, revising previous studies and analyzing data quantitatively. Likewise, Creswell (2003) and Williams (2011) argued that quantitative method of research can use inquiry strategies like survey, experiments and predetermined instruments for collection of data statistically. Social interactions can be understood and interpreted by qualitative research method while quantitative method can be used for hypothesis testing, considering cause and impact, and creating prediction; this is one of the main differences between them (Al-hussaini et al, 2019; Apuke, 2017)

For collecting the information about usage and success of mobile money in Afghanistan, a survey has been conducted. According to (Creswell 2014), survey provides numeric explanation of opinions and attitudes from a specific population of the research; it is a quantitative research method. Researchers can simplify and assume the population from the results of the chosen sample of the study. Through a survey method, the researcher can collect the opinion, behavior and knowledge of the targeted groups and people (p.201). The researcher conducted a longitudinal survey in which the data was collected over time. Also, this study used the instrument adapted from previous studies. The first hand (primary) data was collected via questionnaires from the citizens of Afghanistan. The data was collected via Google form document.

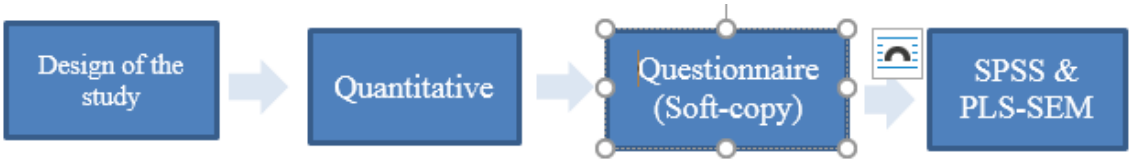


Figure 2 : Research Design

### *3.1 Research Design*

As each of the studies has a targeted population and sample for data collection, this paper also targeted its sample and population. Population can be identified as a set of individuals, things and objects; sample can be taken from population as a subset to measure it. In other words, from a targeted population, a researcher can take a specific sample for their research thesis (Amitav & Suprakash 2010). Creswell (2014) argued that "population is a main set of participants and sample is a smaller number chosen from that main set".

Based on our model, we developed a five-point Likert survey questionnaire (Saleh et al., 2020). The population is citizens of Afghanistan who are using mobile money technology. A random sample was used as part of distributed questionnaires. Creswell (2014) pointed that each individual has equal possibility in random sampling to be selected in the population of the study. Randomized sample can generalize the population of the study. The sample size of this research consisted of about 222 questionnaires, designed for citizens of Afghanistan who are using mobile money technology. The targeted sample for this research is all users of mobile money in Afghanistan.

A survey questionnaire instrument was designed to gather information based on the research questions that will achieve the objectives and address this paper's problem (Saleh et al., 2020). Questionnaire is simply a series of questions responses for people to give their opinion and it is used for collecting quantitative primary data. Through questionnaire, the researcher can collect standardized type of data which is internally logical and consistent for analysis. It is also used when the resources are limited as a questionnaire can be quite affordable to design and administer (Roopa, 2012).

In addition, the questionnaire for this research was adopted from the previous research paper. This questions from 6 to 7 are not modified and the rest of the questions are modified through content validity (Kim, Oh, Shin, & Chae, 2009). The questions of this research were designed to determine the four variables of the model and the scale of measurement was used to collect data from 222 Afghan residents. This survey questionnaire was categorized into two sections namely demographic information and the usage of mobile money (research variables) as we adapted the DeLone and McLean IS success model for this research. This paper used the same research model with the adapted concept of IS success model. Our model was developed based on four dimensions (variables), each of the variable can be a success factor for our research.

In addition, the main variables or constructs of the model include system, information, and service qualities with customer value. Each of the main variables has sub-variables which are accessibility, stability and ease of use (system quality), relevance, accuracy and timeliness (information quality) and reliability, quickness and secrecy (service quality) and customer value. Each of the variables contains five to six questions (Kim et al., 2009).

The prepared questionnaire was distributed using Google form to the targeted population. The questionnaire was designed by arranging the questions from general to specific questions; the general questions are regarding demographic information and the specific questions concern the impact of system, information and service quality on mobile money usage and success in Afghanistan. In addition, continuous scales (e.g., absolutely,

likely, neutral, unlikely, impossible always) were used for the measurement of the items. The researcher adopted some questions from previous research. The below table contains the full details of the questions for this research.

# 4. DATA ANALYSIS AND RESULT

The research paper analysis method and the result of the data are discussed in this section. The data was analyzed and elaborated to derive the findings of the research. The data was collected for the success and useful usage of mobile in Afghanistan. We used PLS-SEM measurement and structural models for hypothesis test and data analysis.

## *4.2.* MEASUREMENT MODEL ESTIMATES

Social science researchers broadly used first-generation techniques for many decades. Nevertheless, several researchers gradually started to use second generation method to address the weaknesses of first-generation in the previous two decades. One of them is Structural Equation Modeling (SEM). It can identify relationships between constructs or variables (Hair, Black, Babin, & Anderson, 2010).

In addition, PLS-SEM is mostly used to create and predict theories and can test those theories for confirmation. SEM include CFA, EFA, path analysis, factor and regression analyses (Hair, Black, Babin, & Anderson, 2010). PLS-SEM includes two stages, firstly measurement model and secondly structural model. Measurement model (outer model) can be used to measure latent variables, it defines the relationship between items (indicators) and latent variables. However, structural model (inner model), can determine relationship among unobserved and observed variables. Measurement model is assessed by Internal Consistency (IC), Indicator Reliability (IR), AVE (Average Variance Extracted ) and DV (Discriminant Validity) (Hair et al. 2017, Ramayah et all.2018).

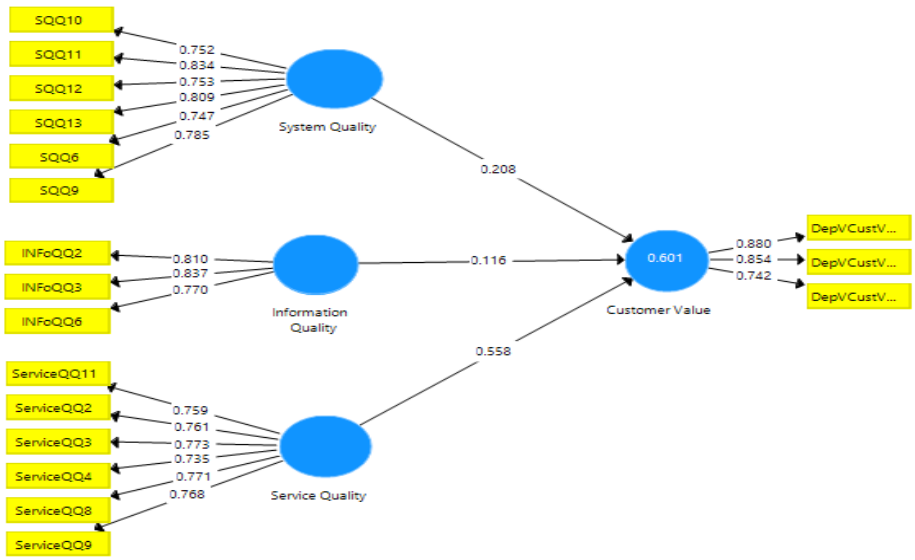


Figure 3: Research Measurement Model

### *4.2.1 Internal consistency reliability*

Internal consistency can be analyzed and evaluated by Composite Reliability (CR) and Cronbach's Alpha. Values of composite reliability must be greater than 0.70 (Hair et al. 2017). For this paper, the values of CR are higher than 0.70. As the values of this study as shown in Table 1 variables are, 0.866 (customer value), 0.848 (information quality), 0.892

(service quality) and 0.903 (system quality), it can be indicated that constructs (variables) are reliable based on the values internal consistency.

Table 1: Composite reliability and Cronbach's alpha

| Constructs | CR[c] | Cronbach's Alpha |
|---|---|---|
| System Quality | 0.903 | 0.872 |
| Information Quality | 0.847 | 0.730 |
| Service Quality | 0.892 | 0.855 |
| Customer Value | 0.866 | 0.769 |

### *4.2.2 Convergent validity*

AVE value can be used for the measurement of convergent validity. It can help to obtain CV value for the model and dataset. AVE value must be greater than 0.5 (Hair et al., 2017). Based on his requirement, all variables of this research have AVE values greater than 0.5. The AVE values for customer value are 0.685, InfoQual 0.650, serviceQ 0.579 and system quality 0.610. Hence, convergent validity has been achieved by AVE values for this model and the model is validated as mentioned in Table 2 .

Table 2: Average Variance Extracted (AVE)

| Variables | AVE[b] |
|---|---|
| System Quality | 0.609 |
| Information Quality | 0.650 |
| Service Quality | 0.579 |
| Customer Value | 0.685 |

### *4.2.3 Discriminant Validity (Dv) Of Measurement Model*

Discriminant validity is evaluated for the constructs which are unique and not simply presented by other constructs. That means the construct should be distinct compared to other constructs. DV can be established when all the items have higher outer loading for their subsequent constructs than its cross loading. DV can be assessed by Fornell and Lacker's Criterion (FLC), cross loading and Heterotrait-Monotrail ratio of correlation (HTMT) (Hair et al., 2017, Ramayah et al. 2018).

Firstly, discriminant validity is assessed by cross loadings, all items given to latent variable must be higher from other latent variables' loadings. As for this research paper all the requirements of cross loading have been fulfilled. The details are shown in Table 4. The second assessment of DV is Fornell and Larcker Criterion, for this assessment the "on diagonal" values must be higher than the "off-diagonal". As the "on diagonal" value came from the AVE's square root but the value of "off-diagonal" belong to the correlation of latent variables. It is shown in Table 3. The third assessment for discriminant validity is HTMT which is very reliable assessment compare to cross loading and FLC. The correlation of HTMT is run by bootstrapping with the 0.10 level of confidence. If confidence interval value

is (1) it can indicate a lack of discriminant validity, so the value should not be 1 (Hair et al., 2017, Ramayah et al. 2018). Table 5 below represents the result of HTMT. It shown that discriminant validity for this research paper is established between two reflective variables.

Table 3: DV by Fornell and Larcker's Criterion

| Variable | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Customer Value | **0.828** | | | |
| Information Quality | 0.453 | **0.806** | | |
| Service Quality | 0.743 | 0.400 | **0.761** | |
| System Quality | 0.643 | 0.546 | 0663 | **0.781** |

Table 4: Cross Loadings

| Variables | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| CustomerV1 | **0.879** | 0.409 | 0.664 | 0.598 |
| CustomerV2 | **0.854** | 0.400 | 0.646 | 0.577 |
| CustomerV3 | **0.742** | 0.303 | 0.522 | 0.395 |
| INFoQQ3 | 0.391 | **0.836** | 0.280 | 0.466 |
| INFoQQ2 | 0.359 | **0.810** | 0.328 | 0.484 |
| INFoQQ6 | 0.342 | **0.770** | 0.366 | 0.366 |
| ServiceQQ11 | 0.616 | 0.316 | **0.758** | 0.550 |
| ServiceQQ9 | 0.600 | 0.328 | **0.767** | 0.484 |
| ServiceQQ4 | 0.552 | 0.378 | **0.734** | 0.532 |
| ServiceQQ3 | 0.537 | 0.224 | **0.773** | 0.435 |
| ServiceQQ8 | 0.571 | 0.310 | **0.770** | 0.528 |
| ServiceQQ2 | 0.500 | 0.259 | **0.761** | 0.491 |
| SQQ10 | 0.426 | 0.399 | 0.466 | **0.752** |
| SQQ11 | 0.587 | 0.451 | 0.558 | **0.834** |
| SQQ12 | 0.451 | 0.337 | 0.521 | **0.753** |
| SQQ13 | 0.505 | 0.467 | 0.550 | **0.809** |

| | | | | |
|---|---|---|---|---|
| SQQ9 | 0.568 | 0.503 | 0.515 | **0.784** |
| SQQ6 | 0.430 | 0.374 | 0.488 | **0.746** |

Table 5: Heterotrait-Monotrail ratio of correlation (HTMT)

| Variables | Acceptance |
|---|---|
| Customer Value | 0.597 |
| Information Quality | 0.906 |
| Service Quality | 0.49 |
| System Quality | 0.762 |

## *4.3. Analysis And Result Of Structure Model (PLS Algorithm)*

This is the second part of the PLS-SEM model. This section presents and discusses the evaluation and result of structural model. All measurements of structural model are elaborated. According to Hair et al. (2017), structural model can be used to evaluate the effects of linear regression between endogenous variables. It can predict the relationship between all those variables. Path coefficients, $R^2$, $F^2$ effect size, and $q^2$ effect size are the main assessments for structural model in PLS-SEM (Hair et al., 2017; Ramayah et al. 2018).

### *4.3.1 Assessment of Collinearity*

Firstly, the collinearity has checked. This section has two subcategories such as inner VIF and outer VIF values. The inner VIF is considered for this research paper. The value of VIF "1/Tolerance" should be lower than 5 and greater than 0.2 to avoid collinearity problem (Wong, 2013). According to this standard, the value or level of VIF is greater than 0.2 and lower than 5 for all of the variables. For example, 1.4304 (information quality), 1.7927 (service quality) and 2.1456 (system quality) respectively. The result is shown in Table 6 below. So, it can be seen that there is no problem of collinearity. Through VIF, researchers can indicate the acceptance level of their research. In short, there is no collinearity problem in this research.

Table 6: Assessment of Collinearity

| Variables | Acceptance |
|---|---|
| Customer Value | 1.512 |
| Information Quality | 1.430 |
| Service Quality | 1.792 |
| System Quality | 2.145 |

### *4.3.2 Assessment of Path Coefficients for Structural Model*

Secondly, the path coefficient has been assessed. Path coefficients and t-values can be used for the hypothesized relationships between the constructs. Its values are nearly between –1 and +1 but the value can be smaller and larger in this range. If path coefficients are near to (+1), it indicates strong and positive connection otherwise it may show weaker relationship (near to zero or negative values). Strong relationships are mostly significant and weak relationships are not significant (Hair et al., 2016, pp. 206). The t-value is greater than the critical value which would result in significant path coefficient. P-value is significant in 0.05 level (Hair et al., 2017). Based on the above requirement, all p-values and t-values are significant for this research paper and the hypothesis are supported. The result is shown in Table 7 below with all detail values.

Table 7: Hypotheses testing with path coefficients, t-statistics, and significance levels.

| Tested Path | Hypothesis | Path Coefficient | STD | T Value | P Value | $R^2$ | $f^2$ | Decision |
|---|---|---|---|---|---|---|---|---|
| H1 | Information Quality ->Customer Value | 0.119 | 0.050 | 2.413** | 0.021 | 0.050 | 0.003 | Supported |
| H2 | Service Quality ->Customer Value | 0.558 | 0.067 | 8.349** | 0.000 | 0.023 | 0.193 | Supported |
| H3 | System Quality ->Customer Value | 0.209 | 0.074 | 2.819 | 0.003 | 0.436 | 0.170 | Supported |

Hypothesis one (H1) is supported, as H1 has tested the path coefficient of information quality to customer value with 0.119 of path coefficient value through the procedure of bootstrapping. If the information quality increased by one unit, the customer value will rise to (0.119) or 11.9%. It can be seen that the information quality path coefficient to customer value is significant. The p-value is significant, and the t-value is accepted at the level of 2.413 as the p-value is 0.021. Also, upper and lower bound has been obtained for the confidence interval of H1 with 0.024 and 0.214, respectively. In short, there is a significant relationship between information quality and customer value.

Besides, the relationship between service quality and customer value is significant, and the path coefficient is 0.558. When the value of customer value is enhanced by one, the service quality will be increased up to 55.8%, which is a very good number. Also, the t-value is 8.349, which is greater than the critical value. Also, the p-value is significant at the level of 0.000. The confidence interval value for H2 gotten 0.424 with a lower bound value and 0.689 level of upper bound. The hypothesis H2 is supported. It can be indicated that H2 is significant, and it is supported. Thus, relationship among service quality and customer value is significant.

Moreover, system quality has a significant path coefficient relationship with customer value; the coefficient value of H3 is 0.209 that indicates if the customer value increased by one unit, the system quality will be increased to 20.9%. This is a good type of relationship between dependent and independent variables. The t-value for this variable is greater than the critical value (2.819). The p-value is significant at 0.005. The confidence interval values for the upper bound and lower bound are 0.344 and 0.058, respectively. The result showed a significant correlation and connection between system quality and customer value. In short, for this variable, the value of H3 is supported.

### *4.3.3 Coefficient of Determination ($R^2$)*

Thirdly, the coefficient of determination ($R^2$) has been analyzed. It has three sub-sections such as matrix, RSquare and RS adjusted. RS matrix shows the percentage of prediction or covariance. Generally, R-square has three types on its value-based, including

small, medium, and substantial. R-square with a value of 0.25 is counted as weak, 0.50 as moderate, and a value of 0.75 is substantial. R-square can evaluate predictive accuracy for the model, higher R2 value can establish the model's explanatory power. It shows the regression goodness driven by the dataset (Hair et al., 2017, pp. 216). The result is shown in Table 8 that the $R^2$ is 0.60 or 60 percent, which is above the moderate level. This is a good percentage of the data for the predictive accuracy of the model.

Table 8: $R^2$ square values

| Constructor | $R^2$ | Power |
|---|---|---|
| Customer Value (Success of Mobile money) | 601 | Large |

### *4.3.4 Effect size Assessment ($f^2$)*

Finally, the Effect size Assessment ($F^2$) is determined. This section has two sub-sections such as matrix and f square. F square section shows the relationship of the variables in a chart—matrix displaying the relationship in a table. $F^2$ measures the contribution of independent variables to dependent variables of R2 value change. It can clarify any change in $R^2$ after the inclusion or exclusion of latent variables from the model. It has three levels, small with a value of (0.02), medium with a value of (0.15), and large with a value of (0.35) (Hair et al., 2017, pp. 216). This paper service quality contributed to a large level, and two other variables, information and system quality, showed a small level to customer value. Hence, all supported hypotheses showed a medium effect for productive accuracy of R-square to customer value.

## 5. PRINCIPLE FINDING AND DISCUSSION

The summary of the findings is discussed in this section to obtain the research objectives. This study aimed to investigate and examine mobile money's success and use in Afghanistan based on system, information and service qualities, and customer value. The data was analyzed through PLS-SEM. PLS-SEM measurement model was used for evaluating the reliability and validity of the items. PLS-SEM's structural model was used to validate path coefficients, test the research hypotheses, and find mediation factors assessment.

Based on PLS-SEM analysis, the significant factor in the use of mobile money is service quality, system quality, and information quality. It can be concluded that this research achieved all objectives. In addition, based on SEM multivariate analysis result, all research variables are significant, and they had shown a positive impact on the use and success of mobile money. These influential factors can help mobile money transactions method be accepted and useful for Afghanistan citizens. They can access basic financial and banking services through the platforms of mobile money. In the coming section, the objectives of the research are elaborated in detail.

The result revealed that system quality had a significant impact on mobile money in Afghanistan. The first objective is the impact of system quality on mobile money. According to the resulting hypothesis, system quality is associated with customer value. Based on the PLS-SEM analysis coefficient's value, it is closely related to the customer value. That means system quality can influence mobile money and its success in the country. The objectives of the research have been achieved through PLS-SEM. The result was supported by some previous studies, including Yunus, Khan, Tasnuba, Husain, and Misiti (2016) and Martin (2019); they said that system and its accurate output can play an important role for the success of the system. System quality can impact the use/intention of the users and user satisfaction.

Moreover, based on the result of PLS-SEM's measurement and structural model, system quality had a positive relationship with the customer value, and it showed significant impact on the usage of mobile money (β = 0.208, t-value = 2.819, p-value = 0.003). The related hypothesis was supported, and the p-value was obtained. That means based on this model, the objective was achieved. It is indicated that mobile money's system should be considered as one of the success factors for its usage and success. In short, our result showed that system quality can impact and influence the use and success of mobile money.

Additionally, the result showed that Information Quality had significant impact on Mobile money in Afghanistan. The impact of information quality upon mobile money is the second objective of this paper. The result of our analysis indicated that information quality have significant impact on mobile money, it can be an influencing factor. Therefore, related hypothesis of information qaulity was supported. This indicated that information quality had significant impact on mobile money.

Additionally, the result of PLS-SEM showed that information quality has significant relationship with customer (β = 0.119, t-value = 2.413, p-value = 0.023). The coefficient among them were strong and effective. It showed that an increase in customer value will improve the information quality, which will impact mobile money. The p-value was significant, and the t-value obtained for its significance and effectiveness. The result showed that the related hypothesis h1 is supported. It can be seen that we achieved the second objective of the research based on the first hypothesis and other required values. In short, the second objective of the study was obtained.

Moreover, the result showed that Service Quality had a significant and positive impact on Mobile Money in Afghanistan. The third objective of the study is the impact of service quality on MM. To accomplish third objective, the collected data was analyzed on mobile money which means improving service quality will impact mobile money's success. It has shown positive relationship with customer value. The hypothesis was supported.

Additionally, this objective was obtained through PLS-SEM analysis as well. That means service quality was impacted significantly and positively on mobile money (β = 0.558, t-value = 8.349, p-value = 0.000). There was a positive relationship between customer value and service quality. It showed that, if customer value increases by one unit, the service quality will rise to (0.559) or 55.9%, which is a significant impact of service quality over mobile money. The t-value was higher than critical value and the p-value was positive. Thus, service quality is an influential factor on mobile money, which can positively and significantly impact the usage and success of mobile money. In short, service quality positively impacts the success factor of mobile money in Afghanistan. This indicates that if the service quality of mobile money improves, most of the people will use and trust this technology. It is a vital and significant factor for the success of mobile money; it showed positive impact on mobile money.

The result of the analysis revealed that Customer Value had a significant impact on mobile money in Afghanistan. The fourth objective for study is the impact of customer value of mobile money. Based on the statistic and PLS-SEM analyses, the customer value is positively significant and it has impact on mobile money. Customer value had significant relationship with all variables. This value showed a positive impact on mobile money based on PLS analyses. The hypothesis number four has been supported, which stated that "Customer value can show a significant and positive impact on the use of mobile money in Afghanistan". In short, the fourth objective of the research has been achieved.

### *5.1 Implication Of The Study*

The study's main purpose is to examine the impact of system, information, and service qualities on mobile money in Afghanistan. This study will help assess the mobile money firms in Afghanistan to identify the success factors and their impact on mobile money. The

mobile money companies might be able to take the notes and focus on mobile money's positive sides. Mobile money companies will be able to identify their weakness and to improve their services across the country. Although a number of studies have been done about mobile money implementation and usage in other countries, based on this study researcher's information, there is no prior empirical research done about the success factors of mobile money in Afghanistan.

This study will help the government and private companies understand the intention and trust of the users who want to use mobile money in Afghanistan as the government is using mobile money for national police and school's teachers. Based on that, the government and especially the telecommunication firms and bank owners can act to constantly improve the system and services of mobile money by launching awareness and informational programs and workshops. Additionally, this research can help money service providers know the influential factors such as system, information, and service qualities, which have a significant effect on mobile money usage and success. Furthermore, this research will help Afghan citizens to have access to financial services through mobile money services.

Finally, this study may encourage the authorities to improve the service and system of this technology. Through social media and other platforms, they can make people aware of this technology. As of now, most of the citizens are not aware of mobile money services.

The study's result discovered the most influential factors for the citizens to have willingness on mobile money about concrete proof. This research's practical contribution for the factors can be summarized as follows: The study revealed that service quality is the influential factor for the citizens to use mobile money services, as this factor was measured on the impact of it on mobile money. The study also found that *system and information qualities* had an impact on the use of mobile service money.

### *5.2 Recommendation*

The result of the findings shows that the success of mobile money is above average in Afghanistan. It recommends a few feasible solutions to the banks and inventory owners to further enhance their system and services to avoid unnecessary concern. Firstly, it is recommended that the authorities offer informational courses, seminars, and daily advertisements. This will help individuals have fundamental knowledge about the advantages of using mobile money and other electronic money transfer methods. Also, for them to trust and use the system properly.

Additionally, it is suggested that telecommunication companies enhance the level of electronic money knowledge, financial skills, and financial attitude to get the trust of the users and to make them familiar to the system. Thirdly, it is advised that the Ministry of Communications and Information Technology of Afghanistan to develop electronic money in Afghanistan to reduce poverty and reduce the rate of unemployment in the country.

Moreover, the operators of mobile money should improve system, information, and service quality of the services to make the customers satisfy and to implement this technology in the whole country as service quality was one of the most influencing factors for the success of mobile money. The services provided by mobile money should be reliable, quick and safe in protecting the privacy of the customer. Finally, for the implementation of the above qualities, the owners and operators of mobile money should increase their agents as distributing channels as much as possible.

### *5.3 Limitation and Suggestion for the Feature Research*

As each of the research has some limitations, this paper also contains a number of limitations which should be emphasized. Study sample size is one of the limitations for this study work, which is 222 participants. There were two reasons for the sample of the study, constraint of time and the limited access of participants to the internet. As big sample size

is vital for accurate and more reliable result of the data. However, the current sample size for this study has obtained the objectives of the research.

Second limitation is related to the number of independent variables for the determination of the success factors of mobile money. There were some questions asked from the participants to verify their knowledge of mobile money, but it is still required to ask further demographic question which can help to examine the use and success of mobile money. Those factors includes education level, race, workplace, and nature of work. Hence, for better accuracy of the findings, additional demographic and other influential questions and factors could be able to evaluate the success of mobile money.

### *6. Conclusion*

Generally, a quantitative method has been used for accomplishing the objectives of the research. The impact of system, information and service qualities on mobile money was the core purpose of this research paper. Those three factors were indicated as the vital and influential factors for the success of mobile money in Afghanistan. The objective of the research based on those three qualities had been achieved. Those factors showed a significant impact on mobile money. Also, the hypothesis of the research has been supported. Currently mobile money can play an important role in the financial and banking sectors especially for unbanked citizens. Poverty is a real threat in Afghanistan as it is one of the poorest countries in the world. Nevertheless, mobile money is an effective technology which can vastly contribute to the electronic transaction and reduction of poverty in the country. This study was conducted to find out the impact of the success factors of mobile money to improve the access of the citizen to banking money transfer services.

This research found out the significant impact of service, information, and system qualities on mobile money. Also, there was a significant impact of information quality on mobile money, but it was not positive. In short, the research hypotheses have been supported, and the objectives have been achieved.

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