

STUDY ON ADOPTION M PAYMNETS SYSTEM USING SMARTPLS

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This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Masters of Science in Computer Science and Engineering

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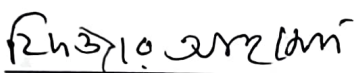
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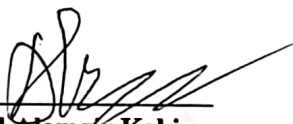
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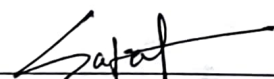
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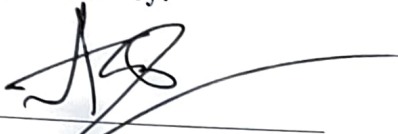
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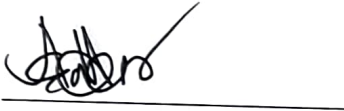
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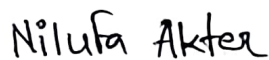
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ABSTRACT

The trend, known as mobile payment systems, is gradually replacing other forms of payment, which means cash, check, or credit/debit card all over the world both as individuals and businesses. However, in this study, there are a number of considerations with regards to mobile payment to try to come up with some recommendation that will enhance this technology. In this regard, the study merges three well-established models: the UTAUT model, the DOI model and the TTF model, which are widely used to extend to all the aspects of the user behavior. Out of the 400 responses collected from Bangladesh, only 250 actual responses could be used for the current study; data analysis utilized structural equation modeling (SEM). For EE, PBQ, PE, SI, TTF, and TEC, the outcomes of the confidential data analyses indicated direct and mediated relations with the mobile payment adoption and its use and recommendation. More over integration of perceived trust and perceived personal inventiveness as the moderation variables had a positive impact on raising the model's R² and the Q². The study aims at suggesting a definite model that elaborates and supports the behavioural contestation for the technology, mobile payment system adoption based on earlier adoptions aligned in literature subsequent to Bangladesh's Generation Z as a technology derived from fused UTAUT, DOI and TTF mobile payment models that are laying into the market.

Keywords: Mobile commerce, consumer behavior, consumer, trust, m-payment, smart phones; SmartPLS

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Chapter-1

Introduction

1.1 Introduction

M-payment, or mobile payment, as the name suggests payments through mobiles, is one of the relatively new forms of facility that has interpreted the financial transactions and the payment profile of consumers. A high uptake of mobile gadgets makes m-payment systems form an efficient and secure way of undertaking secure and electronic transactions safely. They also eliminate the bad money drives out good money in circulation and credit/debit cards here and there and enable a person to trade, exchange currency, or pay with mobile cell phones directly here. [1]

M-payment, also known as mobile payment since the term suggests payments done through mobile devices is relatively younger evolved form of facility that has redefined the financial transactions and payment behaviors of consumers. Mobile-payment solutions provide an efficient and safer way of conducting secure and electronic transactions due to the high use of gadgets. These techniques also eliminate the fickle currency and credit/debit cards here and there and enable a person to trade, exchange currency or payment with mobile cell phones directly here. [2]

Another fairly recent form of facility referred to as M-payment or mobile payments as the term suggests – payments initiated using mobile devices – has interpreted the financial transactions and payment pattern of consumers. M-payment systems therefore present an efficient and safe mode of undertaking secure and electronic transactions by virtue of a high mobile devices usage. These techniques hereby eliminate the non performing currency and credit/debit cards here and there and enable a person to engage in trading, currency exchange or payment by the mobile cell phones here. [3]

This includes matters like using NFC in executing transactions that are fast and secure and the use of the QR code and applications from mobile devices. Since safety is paramount in all these transactions, so developers employ several measures of protection as for example; Authentication and encryption to protect the user with their financial information. It also stated that securing things is still the number one priority. [4]

There are benefits for companies in terms of lower transaction costs of achieving the objectives, higher efficiency and broader customer base. By so doing, a probability of replicating the prior financial experiences minimizes while at the same time, the operation of the businesses improves with competitiveness in the continuously expanding financial arena. [5] Most of the benefits accrued by business entities include reduced cost of transactions and efficiency, in addition to market for end-users. By implementing this type of payment, organisations will definitely enhance their financial strategies and will find them to be in a position to have an adopted competitive aspect within the ever performing monetary world. [6] Due to their usability, openness, and reliability, such

systems are one of the components that should be implemented in the global digitalization of the financial environment.

In this context, I have utilized three different models, which I will discuss below:

The most frequently employed instrument for the research in the field of the acceptance of m-payment systems: an extended perspective of the UTAUT model. We also have other factors flagged in the present model which include including hedonic motivation, price/value, trust, perceived, risk, habit, social influence, effort expectancy, and perceived performance expectancy and many other enablers. [7]

Second is the Diffusion of Innovation (DOI) theory employed when dealing with the mobile payment system. It describes some of the characteristics of new products that lead to their adoption: ,the framework includes the following factors: triability, observability, complexity, compatibility, and perceived relative advantage.

Finally, this research can employ the Task-Technology Fit (TTF) model for the mobile payment system acceptance. It is rather on the degree of compatibility between characteristics of tasks and properties of technologies as well as roles of this compatibility in shaping acceptance and utilisation of technologies by users. [9]

1.2 Motivation

Mobile payment systems (M-payment) is therefore propelled by the development s particularly to the financial sector. The ubiquity of MO, especially smart, ones, and the evolving trends with the Mobile user's desiring to transact electronically all point to the need to understand factors influencing M-payment acceptance. An analysis of factors making mobile payment systems popular should also be done because they are more prompt and easy to make compared to other forms of payment, and the world is gradually embracing new technology. Third, security and trust as well as regulatory issues are a challenge that firms applying mobile payment face especially when it comes to end users. By analyzing these factors, one will not only contribute to previous research relating to consumer behavior preferences, but will also help developers, entrepreneurs, and policymakers who need to understand how to integrate and develop Mpayment systems in a quickly evolving digital society.

1.3 Study Rationale

Because of the size and consequences which refers to mobile payment systems (M-payment) start to give on the fabric of the global economy sector this area should be considered. Current and future mobility payments such as, smartphones coupled with the growth of the information economy call for analysis of the determinants underpinning M-payment systems. Therefore the technological advancement that many years could only be completed in the recent past has brought new challenges as well as new opportunities to the businessman, government and society not to mention the systems that the consumers of finance use while engaging in transactions.

One of the fore mentioned motives of using M-payment systems is that it creates a different way of paying for the products and services since the conventional ways can be substituted by the ability that is M-payment since efficiency and convenience cannot be disputed. What is driving mobile payments as consumers are also shopping as well as managing their finances, through mobile devices? This influences the uptake and can therefore generate important facts and knowledge to classify the users in as far as uptake of such systems is concerned. We also trace such topics as trust and security questions—two components that are still the foundation of any fintech. The kind of transactions that occur and the ones being received through M-payment make it necessary to consider the level of consumers' reliance on security tools within The two main concepts of the study are; m-payment systems and the effects of trust in increasing the usage of the system. The findings in this feasibility study could expand the further development of safer, mitigated mobile payment transaction systems with less complex interfaces to members.

Furthermore, there is a test of hypothesis concerning the relationship between the regulatory environment and mobile payment systems. This is either a positive or a negative way depending on the nature of these technologies, and understanding such impacts enlightens us as to how the law— this upcoming legislation in particular — allows for the distribution of financial technology. The other related factors that are also reviewed by the study includes the cost and benefit which might be associated with the system; and the effect of the M-payment system toward's monetary distribution.

Second more research should be conducted because the M-payment systems are a competitively driven element. To make even more sense of this sector one has to learn how the different service deliverers compete for market share, and how they maintain competency, status quo innovation, and differentiation. This type of knowledge is most

helpful for users who cannot make decision between many variant and for companies that wish to achieve maximum result from augmentation.

Recognition of what marketers have done to shape perspective in constructing digital finance— unmasking the antecedent variables that determine the use or otherwise of mobile payment solutions. Consistent with realization of the objective of the paper, this work seeks to establish the primary themes and opportunities at the frontier of the digital currency landscape to assist the various stakeholders to ask and answer the question what next, assist policymakers in making sound public policy and cultivate innovation in this fledging space. This is achieved through the analysis of the tendency of the users, the security factors, the guidelines influencing factors and the opposition characteristics in the Mininstallment area.

1.4 Research Inquiries

This study presents the following research questions:

1. Why is a mobile payment system said to be better or worse than the traditional payment systems?
2. Now, where does mobile payment fit in the equation?
3. What is the influence of mobile payments as a mode of payment on financial inclusion?
4. In what way can mobile payments be embedded into the global economy?

1.5 Expected Outcomes

Definition Bellwether Therefore, A system for mobile transactions can be defined as the financial transaction system in which customer wants to perform mobile transactions. This can be used to purchase virtually any Goods and service within the market today and is both safe and easy. the ability and the willingness of users to pay in mobile payment technology; therefore mobility is crucial in the mobile payment solutions. Therefore, the objective for the post-study shall be to get more people from Bangladesh spying into mobile money transfers. Besides, I would like to think Bangladesh build up a legacy rather than having a legacy of conventional traditional payments such as this one to help us to perform more sophisticated digital ones. However, at the current time it has not been very popular in Bangladeshi market while it has been introduced, on my belief when I complete the current research, then it will be adopted very soon. As for the choice between using mobile payment systems or not, as the majority supposes that people in case they have a choice, will avoid using such systems, the existing research proves, that

once given an option, people do prefer using mobile payment systems. Hence, it is a significant issue of what parts and services have to remain valuable for clients from the point of view of providers? For if the above needs are met the users are going to be willing to accept to use the system as is already implied. Thus, it is very important to deal with user preferences, or, in other words, fundamental for these payment systems. However, with the advancements of Bangladesh also other parts of the world, I do agree that the people, due to the increase in the population of the country and the change in living standard where they would like make smart digital payment So, going by the information, these options would be this one easier to meet the need of the customer In this connection, mobile payments one of the best and suitable for cash in transaction.

1.6 Project Management in the Context of Finance

This is therefore an exercise that employs such financial models and project management planning when putting in place the above such a scheme. Life cycle elements include planning phase which involves defining the project, designing phase where the basic structure of the project is assembled, development phase where the content of the project is created; testing phase and implementation phase. In this phase, the responsibility of the project team is to define what is expected of the project: good results within a short time, duration of the scheme, and the amount of resources available to implement the project. Thus in this stage the map of the whole mobile payment systems together with the protection measures and the required space on the device is being formed. During this phase an infrastructure for the developed system is set up, and during the testing phase, the system is assessed to ascertain if the right system has been developed. Finally, the FLCT in the lowest level of the cycle is named as the mobile payment system in the implementation phase and is realised in the market.

The real people I have used are the ones who will have to be paid depending with the data collected as shown in the analysis above.

1.7 Structure of the Report

The report is organized with a chapter summary Here's a summary of each of the chapters:

To present the work in the first chapter of the study, its purpose and other related areas such as project management and the expected outcomes are described.

Chapter 2: Data and figures concerning the job, other relevant activities, problem formulation, and difficulties that exist in relation to the job.

Therefore, Chapter 3 is about how Crisp Ceres Sdn Bhd collected data and the method that will be implemented with view to capturing data of Calyx Interactive Sdn Bhd . It also details the process which I suggested and the requirements that must be in place for it to take place.

Chapter 4 contains description of experimental procedure, results, assessment of results and discussion.

In chapter five, you shall explain the following issues: The four areas of focus are social implication, environmental implication, ethics and sustainability plan.

Finally, the discussion section of Chapter 6 presents the conclusion of the study along with ideas for research that follows the present study.

Chapter 2

BACKGROUND

2.1 Introduction

It was estimated from the world mobile phone subscribers in 2023 the total people with mobile phones reached 5.7 billion of which 85.82 % use a smartphone 558,3000,000 are the users of smartphone in UK where they use it for payment through mobile payment, scheduling of their calendar, browsing the internet and also the other daily activities.

Mobile banking has been formed for years in Bangladesh, and it has been grown rapidly. This was based on the information gotten from the Bangladesh Bank otherwise called the central bank of Bangladesh. The country's mobile banking users were at 103.8 million in December 2020 when the figure was 70.9 million in December 2018. Mobile payments are among the most unique products that have been newly integrated in the contemporary markets. Today one is able to purchase virtually anything and at some point in life you did not care whether you left your wallet or credit card at home. But when and how does this technology appear? In this paper, we shall endeavour to look at how the world evolved, and how mobile phone payments came about. [10]

Everything was clear to them – this is what they knew: people have been paying with mobile not an idea of recent creation. In the 1990s, for example, it remained nothing more than theory, although by the end of that decade movement had begun towards making the vision real.

The customers could confirm a particular product through sending a text message to a single number (connected with the vending machine) and would be given the ordered drink. In this method, even though it was relatively old, mobile payment was done with frame work that had been put in place. One year later, Samsung developed his iteration of this technology, although applicable to only its customers in South Korea and the United States only and has since been in a battle to try and reclaim a bigger market share from Apple. Regarding the service of Samsung Pay, it went even further by endorsements both NFC and MST. Thus, owing to MST, users could complete payments at the terminals that lacked NFC options.

Google Pay, Google's digital wallet launched in several countries among which the United Kingdom is a part of, was originally released in 2016. The same GPS service the

following year enabled people to make payments by phone and smartwatches. By 2011, mobile payments are of many types, and can also be considered in many formats, while it remained quite structured at the same time. Mobile banking had also evolved by then though it was not at this point where all the applications you require are here.

Originating in the same year, it will be seen that Google Wallet is one of the first major enhancements of mobile payment. The availability of online and physical debit and credit card within the wallet also enabled the mobile payment based on NFC. After that, mobile payments developed and became more differentiated in Bangladesh. Started in 2011, BKash is one of the first organizations to introduce the mobile payment system in Bangladesh. The existing mobile financial services in Bangladesh are dominated by one innovation known as bKash which was born by Money in Motion LLC of United States and the second most popular private commercial bank in Bangladesh named BRAC Bank Limited.

Three years later, the company incorporated the same technology in the desired iPhone device. But in mobile payments Apple had it a notch higher by putting on an added security feature on its devices through biometric identification, which is a sensitive aspect that consumers have on their device. Ithaca is a type of pivot that was, for the initial stage, recognizable solely in the United States. Conclusion: Up till now, it can be claimed that the future of Bangladesh in respect of innovation and development of mobile payment is informative and bright. It shows the day when new comers like bKash begin its operations showing others and then subsequent competitions and entries make technological revolution and better consumer satisfaction are visible. mobile payment systems are expected to go even to the rural and remote areas, the rural, as well as the urban, provided government continues supporting cashless economy and the financial totalization. As such, due to integration, enhanced security with biometrics, and given the constant change of the world fintech, Bangladesh will give a proper and appropriate mobile payment technology for the population of Bangladesh with the needs they will have.

2.3 Related Works

A similar detailed discussion on the consumer/merchant partitioning of a smart card-based POS system is presented in [11]. Advice to the managers and organizations in the area of financial services that has adopted the smart card technology will be made in this discussion to reduce the perceived negative effects of the smart card technology. It expands the antecedents of e-payments and reconceptualises the [12] antecedents of e-payments acceptance in the literature. This research stemmed from the actual fairly ineffective payment by paper money to the other form of smart electronic payment. Therefore, it is the first paper that examined the control and management system with reference to the cloud solution that was implemented in the real smart housing complex in India. These two research gaps are the progress of cloud computing, system architecture of smart community services in India and the new trends of cloud computing ecosystems [14] The second area of research is the failure of smart card e-payment system and the change over to success. Four Hofstede validated cultural factors are appended: It was associated with four values: Self Individualism, Self masculinity, Long term orientation and fear of uncertainty. This makes it possible to break their outcome in a view of the resulting utilizations from the perceived usefulness behavior. For analysing the adoption behaviours of m-payment users, the proposed study formulated an m-payment research model that consisted of four characteristics of m-payment systems and three dimensions of consumers' attributes: For the current m-payment service providers in Vietnam, it is beneficial to comprehend trust in mobile payments, personal innovation, and knowledge of mobile payments so that right business models and service strategies could be chosen and more time, money and resources could not be wasted for management to set proper m-payment systems. Therefore, we concluded that S-curve trends of electronic money innovations in the current configuration of payment systems are as described in [17]. It traces the development of credit cards, debit cards, smart cards, ATM/cash cards, electronic fund transfer at the point of sale (EFTPOS), and the latest technology in electronic or so-called digital money: Bitcoin, the new money [18] To study this relationship, therefore, performance of the ERP system and efficiency of a payment gateway is stimulated by the size of the workforce in the SMEs. The credibility of study validates different IT adoption implementations connect to improved organisational performance supported by success factors of ERP or the use of payment gateways in SMEs. There are several advantages of integrated e-wallets to the other payment systems; however, some of the customers have the following concerns: [Ange 19] Therefore, this research work will establish various improper e-wallet usage behaviour among the consumers of Patan City. Thus for clear perspective of the objective of the study,

the main focus will be on examining the main reasons why customers in the developed countries shun e-wallet. Mamun et al. (2023), 602, the aim is to investigate the role of the use intention of wearable payment devices (WPD) itself in their adoption and to know Social influence (SI), perceived trust (TR), and perceived usefulness (PU) were examined as mediators, along with perceived ease of use (PE) and compatibility with the client's lifestyle (CM). Age and gender were also considered as covariates to analyze their impact on the varying levels of acceptance of WPD as a payment method. While there are numerous studies that could be relevant, the emphasis will be placed on paper [20].

2.4 Comparative Analysis and Summary

Mobile payment systems: The following considerations are elaborated by considering two cases of mobile payment services. These comprise security aspects as such issues are vital as many users rely on different types of fraud control, biometric identifying, and encryption mechanisms. About usability and graphical user interfaces: Complexity refers to about basic and advanced interfaces, and can encompass such as current modern technologies such as augmented reality.

One unobservable aspect of systems is the technological integration; systems with international and cross-national features will be differently appropriate for markets. It should be noted the advantages and disadvantages in the use of the P2P transfers, QR codes and NFC payment methods Information on software compatibility of the systems is also relevant because the systems work in different ways regarding the various regulations. It remains a force; however, several systems present the edge of touchless payment, voice transaction, and many side aspects of de-Fi. Another factor that must be reviewed is the increasing consciousness of the environment; which puts most programs on the alert when executing environmentally sensitive strategies.

However, it still rests with the stakeholders to assess these aspects of mobile payments—security, usability internationally, law and compliance, innovativeness or sustainability depending on the priorities given according to the commerce ecosystem of a specific business to select a mobile payments solution suitable for the particular business environment where it should be integrated according to the strategic plan of the business. Mobile payment services are shifting faster than other payment services mainly due to a rise in the usage of smart phones in the last couple of years.

Even today, very few countries have had broader access to mobile payments, although today there are over one and in the latest year, over two billion mobile users all over the world (the US, the UK, Bangladesh, South Korea, Japan, and Germany). However, this trend is quickly being eroded by other areas, and because of this, purpose of this paper is to establish what factors determine the acceptance of mobile payments both in the government and business realms. The theoretical foundation on which this research is anchored is the network effects and the broadband ecosystem propositions. Thus, it compares these countries and looks for the reasons where it has been possible to get required push to advance as mobile payment innovation than in such regions like the US or European countries. The major implication from all of these is that while the means for mobile payments is nearly perfected on the supply side and is already established on the demand side, demand for the service has to grow at the same rate. This has been due to the buyers' increased access to smart phones which has made the mobile payment of fare a popular mean of payment easily accessible to most buyers. The best solution can be on both supply side and demand side policies and regulations.

2.5 Scope of the Problem

Mobile payment methods as a problem is relatively vast place and amorphous, and it can changing position from one context to another. Below are several challenges associated with mobile payment systems:

Security issues: Mobile payment systems that have been mentioned include applications that are invaded by security flaws and payments that are not secure if the handset is misplaced.

Financial inclusion: The same holds for other financial services delivered through electronic mobile money;- it can be useful for underbanked customers, however, such issues as the absence of the necessary infrastructure, low financial literacy, and stringent regulation affect the system's usage of the mobile payment system.

Interoperability: Interference occasionally occurs with the payment on the different platforms since there is competition in the mobile payment services.

As a result, I highlighted several key issues arising from the lack of advancements in this type of mobile payment system.

2.5 Challenges

The effects of mobile payments have a number of conceptual challenges in the related research.

Here are a few of them:

Challenge of User Behavior: There is nothing prepaid, easy and predictable about mobile payment user behaviour and this point is highly worrisome. Attitude toward use, technology acceptance, perceived

usefulness and customer's class are some of the factors that determine how users handle such systems. These behaviors are complex and sometimes irrational; thus, their comprehension cannot be made through specific methods and research instruments.

Security problems: Mobile payment services users are also faced with security issues in risky applications, inability to safeguard the payments in case they are lost, lure of a new debit card fraud, or an unauthorized transaction.

User experience: Another factor that was considered to be negative for the development of the rates of mobile payment adoption is the so called PUE or poor user experience, it is when users try to have some issues with the systems under consideration.

Interoperability: The future of mobile payments can be limited because if the two mobile payment systems are incomprehensible, mobile users cannot transact between the two different payment systems.

Financial Inclusion: Regarding the advantages of mobile payments it is possible to state that the main concern is the availability of their ability to deliver finances for people who are excluded from the formal financial sector, whereas the issues which can be mentioned are: limited economic literacy within the population, infrastructural and legal frameworks. The following is just but a tip of the iceberg of the questions that come up while analyzing mobile payment solution adoption.

Chapter 3

Research Methodology

3.1 Introduction

Section 13 This chapter includes information on the research method. Research methodology, the model of research, theoretical frameworks and some parts of the procedures of this study are included in 5 sections of the study. Population and especially the sample, sampling strategies, respondent identification, source and type of data, data collection methods from participants, types of housing and estimation of sample sizes form part of the subjects that have been accorded Part F of the guidelines. In section seven, surveys and questionnaires are included such as the pretest, Likert scale, instrument adaptation and time. In the eighth segment, they talk about data preparation variables including common method variance, outliers, and missing data. internal item validity, internal item reliability, coefficient of determination, effect size are presented in section 9 together with the explanation that they all indicate statistical analysis of data. The 10th section offers you information on the data analysis tools which includes SmartPLS and many others. The eleventh section of this paper presents the results of the pilot test. At the end of the chapter we conclude the short explanations of the methodological tools used throughout the chapter and the content of the chapter.

3.2 Research Participants and Instruments

Research Topic: It can be used also to analyze the phenomenon of mobile payments, the attitudes towards it, the impact of these capabilities or these safety technologies or the satisfaction of the users regarding several mobile payment applications. Further, related research can ask the following questions on how to meet the needs of various demographics, as follows: the opportunities, the risks for m-payment systems and the drivers of mobile payment systems adoption.

It could be the different kinds of goods to the consumers or even the kind of services that a firm conforms to depending on the detailed concentration of the research. If the data to be collected is indicators concerning the user's feelings, preferences and perceptive then questionnaires and surveys are valuable. The use frequency and behaviors including mobile payment apps are also collected

to calculate travelling participation rate. Usability testing is one of the important ways of knowing how well, fast and happily the users of the interface of a mobile payment system are. Though assessment and assurance may mitigate the extent to which users have perceptiveness of the security laid out to meet the payment system. Even transaction detail and client servicing dialogues may provide us with a peek into how a system is working and where the issues may be.

3.2.1 Research Process

From the discussion of Kothari (2004), research work as a series of activities including defining the problem, reviewing the literature, developing hypothesis, choosing the method of the research, sampling technique, data collection, data analysis to testing hypothesis and result interpretation, report writing. The Regulation of the study [8]- The general process described in Figure 3.1 was followed in accordance with this framework:

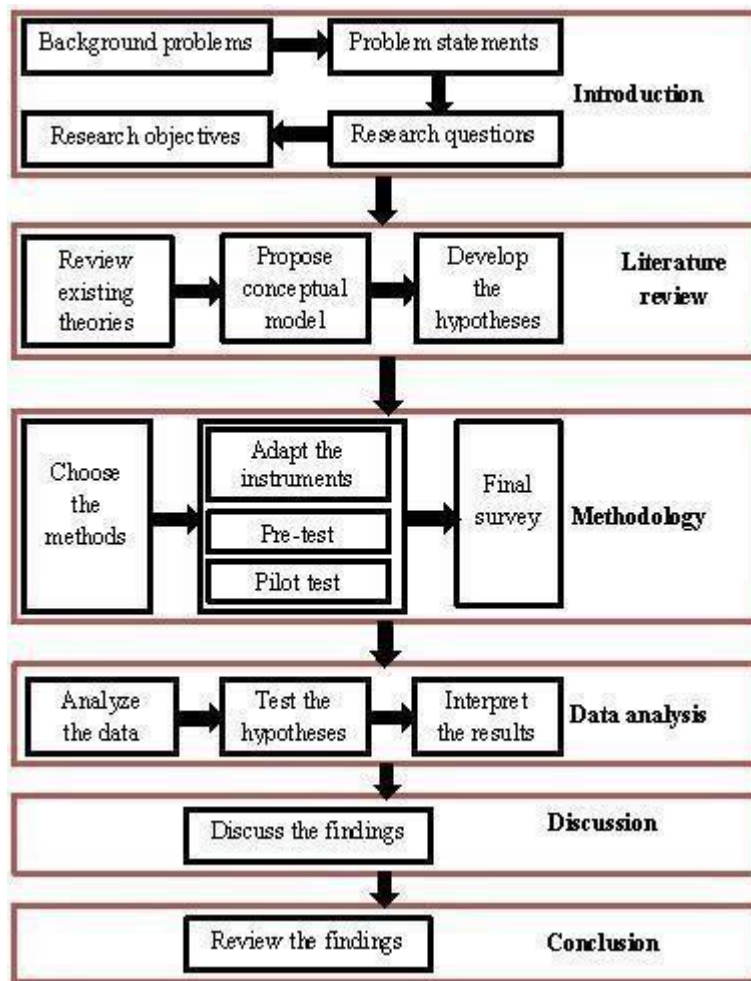


Figure 3.1 Research Methodology

3.2.2 Research Paradigm

Bryman’s words support this by saying that Thus, a paradigm spells out what is to be measured, how it is to be measured and how the findings are to be disseminating in a given environment. This is ontological and epistemological paradigm [21] In the former, the researcher lives their lives to come to understand what they already know about life [22]. Still, as the present researchers adopted many methods, there were some answers and interviews, as it has been described above [23]. The latter is especially epistemology—the branch of philosophy that concerns the definition of the information and ways to prove it. It also allows the researchers to respond to questions that can be linked with several subjects such as the prospects of generalisability, causation, subjectivity and measurability together with practicality. A study paradigm must be either positivist, critical theory, or interpretivist [24]. First, positivism can be justified in quantitative methods because positivists analyse the acts of persons and the character of conducting research [25]. In addition, concerning

positivist researchers, they are already preprogrammed with the questions with to ask the respondents, after offering clear datasets with the help of both the deductive and statistical research METHODOLOGY [25]. The collectedism and interpretation terms also are said to come under the qualitative research methodologies. In its use, the analysis is mainly used to reveal the participants' perception of reality and other people's response to reality [24]. Last, analysis through critique provides illumination of race gender, class plus economy [26]. With these in mind, the paradigm that has been chosen in this study is positivism as explained in the earlier parts of this paper.

3.2.3 Research Methodology

Based on [22], there are two types of the main research methods: qualitative and quantitative. Interpretations, objects, words, signs symbols and metaphors can be categorized as qualitative instruments of analysis of phenomenon. From the questionnaires with open-ended questions that proposed questions that have no limited responding options, interview and observations it gathers information qualitatively. While quantitative researchers perceive social systems as fixed whereas they inevitably only get involved with populations not samples. However, qualitative researchers don't normally extrapolate the results to the entire population. By contrast, quantitative research involves computation, counting, variables, numerical data, and Measurement [27]. This research assumes the quantitative research paradigm because the two main strategies of the quantitative approach are surveys and experiments. In view of the above-stated models the hypothesis formulated from the objectives and plans of the present research has been tested quantitatively on the following lines [28]. The pattern of relationship between the various variables is examined deductively and by means of confirmatory analysis each time after the last survey conducted. In addition, as pointed out by this study in the second chapter, a major of the available research aligns with this research theme is quantitative in nature, which is suitable for M-payment researches. The other advantage of the quantitative method is that any statistical data to make use of that are available, if need be, will not call for so much energy and resources. Finally, if statistical method is used in data collection and data analysis, it is usually more generalizable [27].

3.4 Data Collection Methods and Utilized Datasets

In generating this projection, I have restricting data from the generation of Z users who are also mobile payment users. The following outlines the data collection process:

3.4.1 Selection of Respondents

They include age of respondent, gender of the mobile payment user, and age in between 15 and 26 years. This population was deemed suitable for this study due to the fact that members of generation Z are fully baptized with technology and can really put tools to use in all aspects of life. Unlike the previous generation, it is slightly different and when amalgamated with the study participants, the subjects are mobile payment users. Besides, as for participants, the least 14% of the respondents should be the part of Generation Z to perform the research. Each of the male and the female representatives is voice and is provided with the opportunity to express opinions. As for understanding the technology adoption, Generation Z has been of interest; therefore, other generations are excluded in the present study.

- Must be a Bangladeshi national
- Must be a member of Generation Z, aged between 15 and 26
- Must be over 14 years old to be considered a prospective user of the M Payments app

3.4.2 Data Source Identification

The source related to data collection methods and processes is differentiated into two categories: It has been collected from first and secondary data [23]. Primary data collection happens, if, the researcher himself/she is directly responsible for handling on the research question Embedded on the main facts with the respondents of the research. However, by other authors, secondary data is described as information which is gathered for one or several different purposes other than the research being conducted. This research uses both primary and secondary data collection methods in its data collections process.

3.4.3 Data Collection from Participants

Usual to what has been said before, let restate that Snowball sampling was used to gather data from the respondents, and the target population is the M Payment system users, the people aged between 15-26 years. First of all, the mentioned questionnaires are offered to those participants, which are described in section 3.6.4. The above participants are also expected to locate other better respondents, who could complete these questionnaires among the aforementioned individuals. The data will be collected in google forms which is an average review tool and data collection should be in two months from 25th of October 2023 to the latest by 20th of December 2023. Why are the Google

Forms created in English? Besides, I am very determinative for Lee's data completion; I have to complete the online (Google Forms) survey within data tot collection time period. This link to the survey is then forwarded through some sort of online notification, such as an application of WhatsApp, Telegram, Messenger or even email.

The users of mobile payments are outlined at the start of the questionnaire: it is presented only in their data by the users who have commented out and the comments which users who do not pay in the system, do not contain. As for this, the information is provided in the questionnaire so that all the respondents have understanding similar to the one of the researcher about the definition and sample of M payments and how to use M payment application. Screening questions are also employed, as a validity check, to ascertain to the respondents about such tools as used in the current research. With this, the four reasons for the gathered data to be valid in our collected questionnaire are stated. The first procedure implemented was the data transformation procedure where the identified articles at Scopus were changed to items of the questionnaire, face and content validity and reliability of the scales. They are then followed by a pre-test to ensure that the format of the questionnaires is quit right in responding to the objectives of the study. Third, the measurement data already cross checked after first three surveys so that the result is highly accurate when the pilot test was conducted before final survey. Lastly, there are three main classifications of the processes of data evaluation in this study: The rationale for the quantitative research approach is to map the structural equation modeling and testing, measurement modeling and to clean and transform data if Outliers and Missing Data concerning Common Method Variance is noticed.

3.4.4 Pre-implementation Test of the Survey Instrument

This feedback from the pre-test can then be used to ensure that the original items prove the above by (Lewis et al., 2005). It also makes the researcher negatives or rule out the possibility that the instruction complied to the participants was clear and appropriate. Nevertheless, when using the sample strictly for the about purpose, the sample size should hover around 5-15 persons. The pre-test of this treatment was done on eight participants between 15th April, 2020 and 28th April, 2020. Among them, five are Z-generation individuals who have never used cashless payments via the M payments system. One of them is a faculty and the other is a faculty and one of them is M payments specialist. These participants had to criterion format, word count, and pertinence of at least some items in the survey and report on changes of the constructs. Some of them were slightly changed concerning their suggestions made, but there was no incorporation of new information as was noticed. Regarding pre-tests and the changes made in the later part of the survey questionnaires, more information is presented at table 3.2.

Table 3.2 Revised Survey Questionnaire Items

Effort Expectancy	EE1	I find it easy to learn how to use mobile payments.
	EE2	My interaction with mpayment
	EE3	is clear and understandable
	EE4	I find m-payment easy to use.
Social influence	SI1	I find it rather straightforward for me to master the use of mpayment
	SI2	According to Premium Tax Reports and people close to me, I ought to work with mpayment.

	SI3	My Behavior Bacon believes that everyone around me expects me to use M-payment.	
Task characteristics	TC1	Some of my friends who believe that by minimizing the use of	
		cash I am cheap prefer that I use mpayment.	
	TC2	I can have actual control in my accounts that will go on directly.	
	TC3	It allows me perform account operations at any time and anywhereI calculate whenever and wherever easy for me.	
	TC4	My interaction with mpayment	
Technology characteristics	TC1	Is straightforward and easy to comprehend.	
	TC2	I consider mobile payments to be user-friendly.	

	TC3	m-payment provides secure services	
Perceived compatibility	PC1	I have examined how both the m-payment options are flexible enough to fit into my lifestyle.	
	PC2	It aligns very well with how I got out and come home each day in the course of my work.	
	PC3	absolutely match to what I am doing at the momentth my current situation	

	PC4	That is why digital m-payments are well suited to my requirements: They allow for a precise optimization of all necessary costs and no more.
Perceived relative advantage (PRA1	Mobile payments offer greater convenience compared to traditional payment systems.

	PRA2	A basic comparison of the aspects of m-payment shows these benefits are superior to the traditional payment system..
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	PRA3	In contrast to the conventional payment system, m-payment is more effective in delivering sixteen benefits than the conventional payment system.
	PRA3	
Personal innovativeness	PI1	In the case whenever I heard about m-payment, the thought that crossed my mind was how to try out the product.is usually the first to test out the mpaymenttraditional payment system
	PI2	
	PI3	If I came across m-payment, my quest would be to

		find a way to use m-payment.	
	PI4	Amongst my peers, I am	
		often found myself using first while experimenting with payment	
Trust	T1	Altogether, I am not afraid of experimenting on m-payment I like to do novelties in a conventional payment system	
	T2		
	T3	If ever I came across with m-payment, I would find a ways on how to try it out.	
	T4	Among my colleagues, I am	
Perceived ubiquity	PU1	often the first to experiment with mpaymentnt	
	PU2	All in all I can state that I am not shy to experiment with m-payment	
	PU3	In the case of m-payment, it can transact with online or physical merchant.	

PU4	Moreover, payment services when paying using m-payment are easily accessible within the retailers where I make my purchases.
PU5	This is an aspect of the use of m-payment, because in those vendors where I make purchases, there is always payment services.

3.5 Statistical Analysis

In the current research on the adoption of mobile payments systems, the study used both quantitative data and statistical information. In this connection, with stickiness of Bu Caul and factor loading of Amp;N is make it possible to determine all the open Sesame assessment of the whole potential structural factors to changed scale of the variables with data upto oct, 2023. The Linear Regression Analysis Techniques used to determine the existence of the multicollinearity problem and how to avoid it. However, discriminant validity assumes these various forms are different, while convergent validity does so rightly as to note that, as for measures, they are related. This means that our data is linear and that there is no Second, in other words, heteroscedasticity is translated as excess in relation to variance. In other words, as concerning the aim of determining the usefulness of this model, cross-validated redundancy analysis is applied to evaluate sensitivity of this model. Therefore, what is more, the presence, as well as the magnitude and nature of direct causal relationships, is reflected in the path coefficients, yet the measures of effect size could be used by the observers to assess the importance of the obtained impacts. This is especially important because it offers conclusions from our study as well as underscores the nature of the forces that are likely to shape mobile payment system adoption.

3.5.1 Data Preparation

Two groups of test statistics are presented: used in descriptive statistics and missing values, common method variance, and outliers are tackled in this section.

3.5.2 Missing Data and Outliers

Because over 300 responses out of 250 survey questions were obtained from the online survey, the use of missing value analysis is not applicable in this study. Once the user sends in his answers, the program checks whether the user has filled in all the required information and whether some of the fields that should have been filled in at all, were left unfilled.

3.5.3 Data Analysis

In this study, the research model developed is examined both for measurement model and for structural model. Measurement model: mediator variables, analysis of covariance and dependence, standardized solutions as estimator of path coefficients, cross-validation redundancy coefficients, coefficient of determination, assessing the hypothesis of the structural model.

3.5.4 Factor Loading

That is, the factor loading or what is referred to “indicator loading” measures the relationship between the construct and its corresponding measurement indicator. Some of this estimates the extent to which indicator variability is accounted for by the underlying latent variable. Therefore, to insist on adequate factor loadings, apparently, the norm that is expected is a loading greater than 0.70 is added. These apply especially to those variables that may assume negative scores and should the initial parameters reloaded be below 0.5. Due to the findings that composite reliability and AVE values rise as deletions are performed, Domínguez-84 also posited that items with a value of 0.4 ~ 0.7 can be deleted to attain the results.

3.5.5 Multicollinearity

That can be posited as a relation of that model to a regression analysis of two or more exterior variables. Maybe one should pay special attention to the fact, for example, that

while we were admitting that multicollinearity is quite small, the picture that the mere fact of its existence draws for the conclusions of the study is rather imposing. Consequently, wherever there is multicollinearity in our data, we talk of any type of noise that cannot be dismissed especially in the light of the use of VIF values. If VIF equals to 1, then the situation is described by a complete independence of the variables, whereas the high degree of the variables interdependence is pointed if VIF is greater or equal to 15. A situation is characterized by a complete independence of variables if $VIF = 1$, while the high degree of their interdependence is noted if $VIF \geq 15$. As to this, it is greater than 5, the square of the multiple correlation coefficient and hence does not deserve consideration. On the one hand, the reader will recall that, in the context of the regression analysis, when the VIF threshold number is 10, multicollinearity is where two or more independent variables are highly correlated as well as most formally defined by.

3.5.6 Convergent Validity

The example of convergent validity will illustrate in what way several indices that were used to capture one and the same variable are interrelated to some extent. In general, there are four ways of assessing the convergent validity, one of which is, the Average Variance Extracted (AVE) technique which rank order the squared factor loadings of a group of items associated with a variable. And as per the research of this paper, the most appropriate AVE value needs to be 0.5 or above.

3.5.7 Discriminating Validity

Discriminant validity is, in fact, the extent of the measure of various variables and how unrelated they are. Following the advice given by Hair and his co-authors, 2014, discriminant validity was checked using the test formulated by Fornell and Larcker, 1981. In this view, the parts of a latent variable should account for higher variance in its measures than in other measures. AVE of each of these variables should be higher than the square of the maximum r between each variable with other variable(s). The validity criteria used to test the measurement model have been provided below in the table 3.3 below.

Table 3.3 Overview of Validity Criteria for the Measurement Model

Validity and Reliability	Criteria	Threshold Value and Guideline
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Indicator reliability	Factor loadings (FL)	FL \geq 0.5
Indicator validity	Variance inflation factor (VIF)	VIF \leq 5 or, VIF \leq 10
The Internal Consistency Reliability means the extent or level of homogeneity in a set of measurement instruments.	Composite reliability (CR)	CR \geq 0.7
Convergent validity	Average variance extracted (AVE)	AVE \geq 0.5
Distinctiveness Validity	The Fornell and Larcker (1981) Test	The Average Variance Extracted (AVE) for each variable must exceed the highest squared correlation with any other variable.

3.5.8 Determination Coefficient

The R^2 stands for the proportion of variance of the latent variable by the total variance of the latent variable. Chin (1998) however agrees that the explanatory power is low, moderate and high when having values of approximately 0.19, 0.333 and 0.67 respectively. However, Hair et al. (2015 & 2016) group 0.25, 0.5 and 0.75 as having low, medium and strong explanatory extent correspondingly.

3.5.9 Cross Validated Redundancy

On the basis of cross-validated redundancy, Q^2 method assessed the predictive relevance of inner model. Such a indicator is based in reference to sample reuse method, according to which a certain component of the data matrix is removed from the whole, the parameters of the model are estimated, and the estimates obtained are used to forecast the remaining segment. The recommended threshold is $Q^2 > 0$ which is normally recognized by analysts studying higher education institutions.

3.5.10 Path Coefficient

The path coefficient proves causal relationships between the elements; can be the weighed beta or the standardized beta coefficient. Hair et al, explain that it often takes the form of a coefficient and can take any value in the area between positive one and negative one and more to the point could be statistically significant for the two extremes. (2014).

More importantly, the least acceptable of path coefficient should be at least 0.1.

3.5.11 Effect Size

Urbach and Ahlemann (2010) emphasized that the effect size ensures the independent variable influences the dependent variable. The evaluation of resource pathways in the structural equation model is facilitated by Cohen's f^2 calculation of effect magnitude. According to Hair et al., there are three classes of impact size; these are; a little effect size ($f^2 \leq 0.02$), moderate effect size ($0.15 \leq f^2 < 0.35$) and high effect size ($f^2 \geq 0.35$). Generally, Sawilowwsky (2009) classified effect size of any value of f^2 of $0.01 \leq f^2 < .02$ as quite tiny. Table 3.4 is the table 3 presenting the summary of validity criteria for structural model evaluation

Table 3.4 Summary of Structural Model Validity Standards

Validity	Criteria	Threshold Value and Guideline
	Path Weight (β)	$\beta > 0.1$ or $\beta > 0.2$
The validity of the model	This is followed by the numeric measure of the explained variation or Coefficient of determination (R^2)	High 23%, medium 12%, low 7%, or
	Cross	Strong support 75%, moderate support 50%, mild 25%
	redundancy (Q^2)	$Q^2 > 0$

3.5.12 Pilot Test Process

However, pre-testing the items is one way of revising it and one of the methods of testing the items is via pilot test. Levin and Currie (2014) note that if and when proceeding to item validity and reliability it is crucial to first carry out a pilot test. This is supported by those who consumed the pilot tested adapted items. Most of the time, pilot or pilot test is conducted with a small number of student subjects and is a trial before the actual survey. Hence, Lewis et al. add that the subjects of the pilot test should meet the same requirements and have similar characteristics as the actual sample.

- **Pilot Test Respondents**

Pilot test data is only collected from Bangladeshi citizens within the age of 15 to 26 years with M payments system capability.

Sample Size for Preliminary Testing

The sample used in the pilot testing is different with other researchers and the following section highlights the varieties. For example Mooney & Duval (1993) suggest at least 10-15 respondents while Hill suggested the same. On the other hand, (1993) suggest that a sample of a small size between 30-50 should be targeted and gathered. In addition Browne (1995) suggests at least thirty respondents. In response to this need, the researcher recruited 35 respondents for this study. Data was obtained from a survey administered online through Google Forms, between September 10, 2023 and September 25, 2023.

Demographic Overview of Participants

Out of the responses from 35 participants 24 are males while 11 are females. Also, 82.85% of the respondents are previously unmarried individuals and most of the respondents are aged between 20 and 26 years. All participants are aware of the M payments system and close to 83% of them have been using the system for more than 4 years.

- **Pilot Test Results**

Consequently, the pilot test is conducted to assess the validity and reliability of the items intended for the final survey. A pilot test is conducted to assess the internal consistency,

convergent validity, discriminant validity, indicator reliability, and indicator validity of the proposed model. This study presents the model and conducts a partial least squares (PLS) analysis using two statistical software programs: SPSS 23 and SmartPLS 3.3.3.

Evaluate the data acquired during the pilot procedure. Based on the pilot test, the validity and reliability of the assessment appear to be satisfactory. Consequently, the validation analysis of the final survey indicates that the results are appropriate for gathering accurate data.

3.6 Proposed Methodology/Applied Mechanism

This should not be construed as a thesis but as showing how such an approach could be built to investigate the adoption of a mobile payment system. An example of how you might approach this, with some wiggle room for whatever the goals of your research might be:

Research Objectives: Be sure to define the objectives of your study well and specifically. What is your goal? Have you been more focused on understanding factors that will hinder the adoption, quantifying the perceived satisfaction, or the factors that will enable the adoption of the technology?

Literature Review: This paper offers an empirical analysis in established literature on Mobile Payment System Adoption. Describe important models and important theories that are relevant to your study as well as related empirical literature.

Theoretical Framework: Use the findings of the literature review in order to develop a theoretical frame work. This is why you should use the presented framework in order to orient yourself on what variables should deem significant, and how they are or might be interconnected.

Research Design: Choosing an Appropriate research design in relation to your goals Depending on the type of study, the broadly of this kind of studies is to watch a certain behavioral pattern, most often: Experiment, Longitudinal study, Cross-sectional survey.

Sample and Population: Determine its sampling method and its sampling frame (users of smart phones, certain demography etc.) If your target group has some characteristics then using purposive, stratified and random sampling may be more beneficial.

Data Collection: Match appropriate data collection techniques with your research design that you intend to use in your study. Approximately half or more of scholarship studies

have used surveys, individual or focus group interviewing and/or observation. Depending on which data collection method you are going to use, you will need to facilitate codification of the process with a structured interview, or a list of questions.

Variables and Measurement: Identify variables of interest user characteristic, perceived benefits and risks, perceived ease of use, intended use etc, Use standardized instruments or indexes where possible to collect data on these variables.

Pilot Study: From this point of view, it is recommended to pretest the interview guide or questionnaire to prevent possible difficulties connected with the clarity, readability or understanding of the interview guide or questionnaire.

Data Analysis: In connection with your research design and purpose, define correct procedures for statistical or qualitative analysis. The techniques could include models estimating relationship such as regression analysis, analysis of dimensionality such as factor analysis, text analysis such as content analysis, and analysis for themes such as thematic coding.

3.7 Implementation Specifications

The two broad categories of SEM strategies are PLS-SEM and CB-SEM as proposed by Mohamad et al. (2019). Unlike other works, the current study conducts statistical tests using SmartPLS version 3.9 and SPSS version 23.

3.7.1 Structural Equation Modeling

SEM: The most appropriate multiple regression analytical method known as structural equation modeling (SEM) can be reasonably powerful and helpful. It enables the researcher to analyze the extent of the relationship between the independent variables known as measured or hypothetical constructs or the composed hypothesis and the dependent or measured variables which are the hypothesis (35). In line with the assumption of Urbach and Ahlemann (2010) we find that the PLS-SEM is much appreciated by the researcher and is used even more than the CB-SEM. Additionally, Gallivan noted that the ubiquitous characteristic of IT leads to the idea that IT is a deceptive remedy, as well as the universally successful enabler (O cited by Goodhue et al. (2006). Therefore, this present study have relied on the Partial Least Square Structural Equation Modeling (PLSSEM). The main advantage we can mention regarding PLS-SEM is the fact that it is based on six different tool sets – beginning with R and moving through GUI, WarpPLS, SmartPLS, VisualPLS, and PLS-Graph

3.7.2 SPSS (Statistical Software for Social Sciences)

Mathematical questionnaires and primary data were conducted on Statistical Package for the Social Science (SPSS) Tool version 23. Besides, the data is tested for Common Method Variance (CMV), which has also been tested through SPSS and Harman's single factor test.

3.7.3 SmartPLS

SmartPLS is a software that can perform the second generation of Partial Least Squares Path Modeling predominantly applied in information system and management contexts. On the bright side because of its wide applicability, it is possibly one of the most commonly applied SEM tools in the market. However, to this purpose, there are other similar SEM softwares that have a great drawback. For instance, while LVPLS is useful, it is not adequate to use LVPLS in run the model; it requires a level of programming higher than LVPLS; it also has restrictions on the allowance of as compared with the corresponding options in Visual-PLS or PLS-GUI interfaces in addressing multicollinearity and issues related to missing values. The indicated development goes on in other PLS-SEM tools (32). That is why this study chooses SmartPLS as its software: this latter phase is the time when it becomes available to the academia..

Chapter 4

Experimental Results and Discussion

4.1 Experimental Design

While gathering our data on the level of mobile payments we were doing that in the most scrupulous way possible. To achieve the aim of this study, which was to highlight areas that could affect the adaptation of the mobile payment system, emphasis was placed on these and subsequent examinations of the relevant components. The relationships under study were moderated by participant age; therefore, it was crucial to recruit participants of different age and from diverse backgrounds to achieve a cross-sectional design. Mobile payment was explored in its context of experience, usage, and behavioural inclination separately for users and potential application through questionnaires with real usability scenarios and features. To assess the effects of these mediating factors, possibilities of the system reliability, security perception of the system, educational promotional incentives among others were varied. In line with this, the research aimed at providing a new perspective of the different dynamics at play leading to the adaptation of mobile payments systems. The knowledge obtained in the course of this project will be useful for the further elaboration of theoretical and practical approaches to the still emerging concept of digital methods of managing and providing financial services.

4.2 Data Processing

In this study, the DATA collection method includes the snowball sampling method to obtain data from the generation Z of Bangladesh aged 15 to 26years who probably use mobile payment systems. Non-probability samples of approximately 500 respondents completed the online Google Form, of which approximately 300 respondents filled the form in English. From the received responses, the authors selected 250 for further analysis. However, 50 responses omitted from the overall analysis for other reasons were identified. Based on above-mentioned factors various query sections proven in Table 3 were constructed and the first section was used as a filter for getting suitable answers in terms of the mentioned indicators in section 4. Some of the responses did not fit the selection criteria and contingently some inconsistent questions were excluded on the basis of odd cases. The survey was conducted using the aforementioned 12 variables, and the study was structured according to the results obtained.

4.2.1 Missing Data Analysis

Therefore, for this research, there is no need to perform a missing value analysis as most of the data was recorded from an online survey where 300 participants completed 250 survey questions. It also self-reports on any imperfect responses appearances which guarantees that all the submissions done are perfect and contain the needed input.

4.3 Experimental Results & Analysis

This has in turn has brought to our notice the growing occurrence in the mobile payment system adoption and usage behaviour as concluded in this research work providing understanding and focus on analysis and experimentation of mobile payment system. Thus, the results from analyzing surveys conducted amongst the participants anonymously together with the use data of actual participants reveal that there is growth in the use of mobile payments systems. The consumers always have the concerns with the convenience, security and to have more than one choice for paying the amounts they spend in placing the orders online. However in writing this paper, we found out that there are some potential drivers that may cause the usage of mobile payment systems to rise and they are; enhancements of the graphical user interface and enhanced security features. Here are the complete results:

4.4 Demographic Statistics

To make these conclusions, table 4.1 shows the demographic characteristics of using mobile payment within the age range of 15-26 years. From the total of 250 respondents, 31 respondents are married, 47 are single, while the rest 172 are unmarried, while 219 are males. Also, most of the participants are aged 23 to 26, preferring the age range out of 321 respondents with 123. Most of the pupils appear to be educated, 5.6% are SSC, 0.18% are HSC, 4.8% Diploma, 56.4% First to Fourth year Undergraduate, 9.6% Graduation and 4.8% Masters. For instance, data from the first and second years postgraduate students was in the lowest percentage (0). The works produced were a little less enthusiastic (8% to 20%) than Year 4 undergraduate students who comprised the majority of the reaction.

Table 4.1 Demographic Information

Variables	Category	Frequency	Percentage
Q.1	M do you use the payment system? Yes Or No	250(Yes)	100
Q.2	Do you fall within the age bracket of fifteen and twenty six years? True or False	250(True)	100
Gender	Male	218	87.4
	Female	32	12.6
Age	15 years	0	0
	16 years	7	3.8
	17 years	2	1.1
	18 years	13	7.1
	19 years	12	6.6
	20 years	32	17.6
	21 years	20	11
	22 years	38	20.8
	23-26 years	126	32
Highest Academic Qualification	SSC or equivalent	14	5.6
	HSC or equivalent	45	18
	Diploma or equivalent	12	4.8
	Undergraduate 1st year	24	9.6
	Undergraduate 2nd year	26	10.4
	Undergraduate 3rd year	41	16.4
	Undergraduate 4th year	50	20
	Honors or equivalent	24	9.6
	Postgraduate 1st year	2	.8
	Postgraduate 2nd year	2	.8
	Masters or equivalent	10	4
	Others	0	0.00
Marital Status	Single	200	81.3
	Married	50	18.7

4.4.1 Indicator Reliability

According to the nature of the proposed model, both the convergence validity and internal consistency are assessed based on the item loadings. They also commented that even if the obtained loading is 0.661, this item stays in the model whereas the AVE of this item and the other factors appear to be satisfactory.

However, as presented in Table 4.2, the factor loadings of all the remaining items are quite reasonable, and could be positive indications that the items have a high converged validity with their respective factors.

Table 4.2 Reliability of Indicators

	AB	EE	PBQ	PE	SI	TAC	TEC
AB1	0.764						
AB2	0.753						
AB3	0.750						
EE1		0.755					
EE2		0.673					
EE3		0.777					
EE4		0.710					
PBQ1			0.736				
PBQ2			0.768				
PBQ3			0.681				
PE1				0.826			
PE2				0.717			
PE4				0.661			
SI1					0.865		
SI2					0.785		
SI3					0.673		
TAC1						0.764	
TAC3						0.696	
TAC4						0.781	
TEC1							0.802
TEC2							0.737
TEC4							0.659

4.4.2 Internal Consistency Reliability

Based on the dependability as well as the internal consistency of measurement model, the composite reliability (CR) is used. From the literature review, it was ascertained that reliability for a CR should be 0.70 and above. As shown in Table 4.3, the CRs of all the constructs range from .773 to .820, indicating a relatively satisfactory reliability of the internal structure of the proposed model.

Table 4.3 Reliability of Internal Consistency

Variables	Composite Reliability
AB	0.800
EE	0.820
PBQ	0.773
PE	0.780
SI	0.820
TAC	0.792
TEC	0.778

4.4.3 Convergent Validity

The measurement model reliability convergent validity criterion is tested using the average variance extracted AVE value. As shown in table 4.4 below, all the AVE of the variables range from 0.532 to 0.606. What these findings signify is that the identified model has a reasonable degree of convergent validity because all the obtained coefficients higher than 0.5.

Table 4.4 Convergent Validity

Variables	Average Variance Extracted (AVE)
AB	0.571
EE	0.533
PBQ	0.532
PE	0.544
SI	0.606
TAC	0.560
TEC	0.540

4.4.4 Discriminant Validity

The discriminant validity of the measurement model is evaluated in relation to the procedure outlined by Fornell and Larcker (1981). Therefore, the squared correlations represent the residual values and the diagonal represent the square root of AVE. It has already been said before with reference to Table 4.6 that every diagonal value is greater than the t off-diagonal This implies that the model is discriminant. However, the analysis of the structural equation model which was developed from using the SmartPLS tool is illustrated below in the figure 4.1 below.

Table 4.5 Discriminant Validity

FornellLarcker Criterion							
	AB	EE	PBQ	PE	SI	TAC	TEC
AB	0.756						
EE	0.608	0.730					
PBQ	0.617	0.522	0.729				
PE	0.545	0.482	0.483	0.738			
SI	0.527	0.532	0.406	0.486	0.778		
TAC	0.600	0.616	0.473	0.513	0.527	0.748	
TEC	0.579	0.467	0.540	0.428	0.460	0.385	0.735

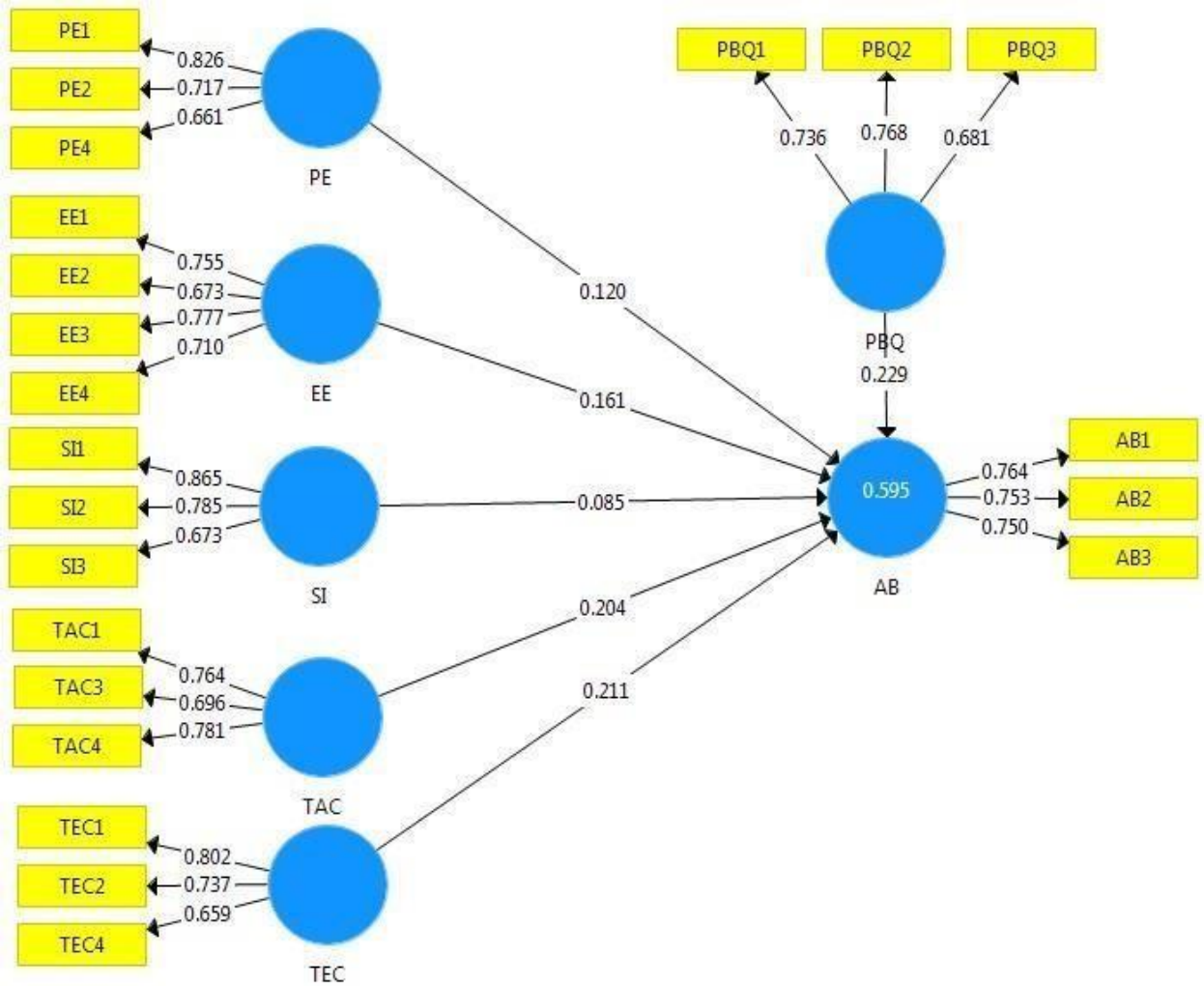


Figure 4.1 SmartPLS Results for the Research Measurement Model

4.4.5 Coefficient of Determination

The R^2 values used in this research have been computed with SmartPLS for efficiency. As indicated in table 4.6 above, the model accounts for 59.5% of variance.

Table 4.6 Coefficient of Determination

	R^2	R Square Adjusted
AB	0.595	0.585

4.4.6 Cross Validated Redundancy

In Table 4.7, the value of Q2 for AI is 29.5%, which is more than 0; thus, it proved that the applied model has a favourable ability to predict.

Table 4.7 Predictive Relevance

Dependent variable	SSO	SSE	Q² (=1-SSE/SSO)
AB	747.000	526.935	0.295
EE	996.000	996.000	
PBQ	747.000	747.000	
PE	747.000	747.000	
SI	747.000	747.000	
TAC	747.000	747.000	
TEC	747.000	747.000	

4.4.7 Path Coefficient

Tests for the significance level are computed to obtain t-statistics on each relation. Table 4.8 collects analysis of path coefficient, sample mean, SD, t values, p values. Moreover, in dataset, any correlation with p-value more than 0.05 is colored as red.

Table 4.8 Path Coefficient

Relationships	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ((O/STDEV))	P Values
EE -> AB	0.161	0.163	0.065	2.500	0.013
PBQ -> AB	0.229	0.223	0.054	4.214	0.000
PE -> AB	0.120	0.114	0.055	2.168	0.031
SI -> AB	0.085	0.088	0.054	1.563	0.119
TAC -> AB	0.204	0.203	0.055	3.724	0.000
TEC -> AB	0.211	0.212	0.050	4.205	0.000

4.4.8 Hypotheses Testing

Therefore, by so doing, the analysis done in this study using the SmartPLS tool enabled the author to conclude that all the hypotheses formulated in this study are indeed valid. Concerning the H2 where intention is the dependent variable, only Technological Acceptance and Use Context research construct has a positive and significant effect on intention $O = 0.204$ $p <$

0. This is in line with the following technology based formant hypotheses: Hypothesis 01, Technology Interaction and Suitability; sig.= 0.211, $p < 0.01$; and Perceived Behavioral Quality; sig. = 0.229, $p < 0.003$. Similarly, response cost has an inverse relationship with the adoption intention, but has a direct relationship with effort expectancy, perceived behavioral excellence, anticipated performance, technology adoption, technology involvement, and alignment. From the forwarded p-values it is clear that technology acceptance and use context, perceived behavioural quality, technology engagement and compatibility and effort expectation have impacted.

Nevertheless, social influence as one of the predictors contributes the least towards that intention ($O = 0.085 > 0.05$). Finally and furthermore, analysis of the matched-pair T-test established the positive linear relationship between social influence attitude and intention to use the innovation and reverse negative relationship between perceived self-efficacy and the intention to use the innovation. Therefore, while comparing the results presented at the Table 4.9, it is possible to assert that the H4 hypothesis has been refuted, whereas

the ideas formulated under the aegis of the H1, H2, H3, and H5 & H6 hypotheses are valid. The unsupported hypotheses are in red.

Table 4.9 Hypotheses Testing Results

No	Hypotheses	Results
H1	The study pointed out that, effort expectancy significantly influences the attitude toward using mobile payment systems in Bangladesh in a positive way.	Supported
H2	From the perspective of the research being undertaken on the influence of perception on the use of M payments system in Bangladesh, perceived behavioural quality was found to have a positive influence on the intention to use the M payments system in the country.	Supported
H3	They also revealed that performance expectancy positively influences the usage intention for Bangladesh's M payments system.	Supported
H4	The findings derived from this work assert that social influence is significantly correlated with the Intention to use mobile payment systems in Bangladesh.	Not supported
H5	of Technology The extent of use and the extent of the future use of the M	Supported
H6	But the payment system is not context-free in Bangladesh.	Supported

4.4.9 Effect Sizes

Accordingly, one relationship did not have an impact, two relationships were slightly, and four relationships bear small impacts (Table 4.10). Moreover, we also include Figures 4.2, Structural model results obtained from SmartPLS tool and Figure 4.3 shows the hypotheses testing results.

Table 4.10 Effect Sizes

Relationships	f2 value	Remarks
EE -> AB	0.032	Small effect
PBQ -> AB	0.074	Small effect
PE -> AB	0.022	Small effect
SI -> AB	0.011	Very small effect
TAC -> AB	0.054	Small effect
TEC -> AB	0.068	Small effect

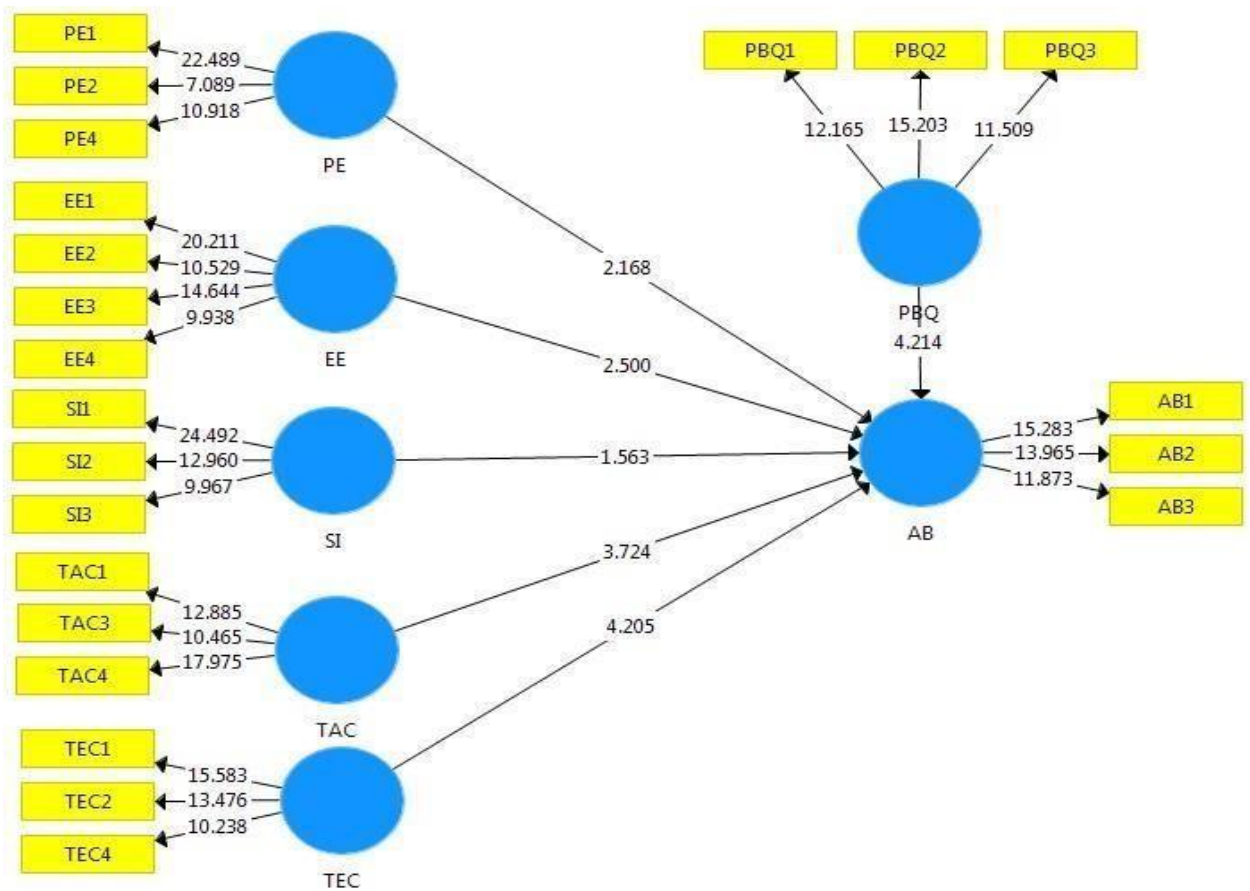


Figure 4.2 Structural Model Results from SmartPLS Tool

4.5 Discussion

Since the study model is about the consumers' risk taking behaviour, the PLS technique is used about the effectiveness. Other hypotheses and the constructs within the measurement models are further investigated with the use of the SmartPLS tool for structures. In light of the measurement model, the analysis has established the following measurements: The indicator

In terms of validity the type of validity is convergent validity and discriminant validity with regard to reliability are internal consistency reliability and overall reliability. The applied indices of the structural model are path coefficients (c), effect size (f^2), hypotheses, coefficient of determination (R^2), and cross-validated redundancy (Q^2).

Of these, five direct relations are important, which is evident from the research carried out in this paper.

Furthermore, the moderated mediator relationship between PT and individual inventiveness is reexamined with variations by employing f^2 , R^2 , Q^2 , β test, and Hypothesis testing. All the derived results with reference to the involved variables affirm the level of significance. Therefore is this truth the assertion that discriminant validity can best be described as entirely justifiable?

attained, essentially, since all the AVE values are higher than the inter-variable correlations. It is discernible that the path coefficients are ranging.

have gone up from 0.1 to 0.2, and so the results are moderate and highly significant. Nevertheless, there are no effects, that is, non-significant effects, and small and large significant effects in numerous analyses so that every hypothesis provides some signal.

Chapter 5

Impact on Society, Environment and Sustainability

5.1 Introduction

Mobile payment systems have impacts on sustainability, the environment, and society in the following ways: From the social perspective, MP is a provider of the FSs and it contributes, at least, to the ending of financial opportunities for those people who earlier had no or little chance to interact with the structured financial services. It also generate employment opportunities in regard to the framework of the further specialization of the concerned country's economy and also enhances the overall satisfaction of the end-users. Thirdly, there is also thinking about the impacts on the environmental and, having no doubt, that mobile payments free from the use of cash and, thus, have the fewer level of the Global CO₂ emissions connected to production of cash and supporting the traditional banking system. Since the impacts discussed here as related with transport and disposal of cash are also negatives, they must also be disposed of as society proceed to the next step where usage of this physical cash is no longer recognized.

From a business sustainability point of view, the ethical design activities to be utilised on the mobile payment systems could have the following rationale and fairness in utilising financial resources. However, the mobile payments also raise some issues, primarily securities, low acceptance and regulations. Such possibilities and shortcomings considered, the researchers themselves can get even a fuller picture of risks of the users and usage of the M-Payments systems and, thus, to outline potential for its improvement for the subsequent developments of cheap and available financial services for everyone.

5.1 Impact on Society

When it comes to the culture social experiment, mobile payment may be considered as a revolutionary in that it changes the nature through which people deals with payment. On the broader social impacts, they include enhanced access to conventional banking for mobile payments can be made to offer the abject population with a formal financial system whereby; the infrastructure for implementation of the same is sometimes absent or the population's credit worthiness is low. Mobile payments therefore deliver resources to the typically financially excluded and effectively lowers the psychological threshold to banking at various tiers in society.

Besides, as the interfaces are capable of paying for the necessary goods and services, it also increases the share of digitalization of financial transactions of the economy. Because mobile money relies on mobile devices, it reduces the likelihood that cash will be stolen and counterfeited. Therefore it shifts the consumption practice, let the consumers to enjoy the better and safer way to save and pay through the cash and it place its self in the process to build the cashless society.

It also has specific social consequences for consumers, businesses, as well as for their expectations connected with mobile payments. The more consumers employ their portable tools for transaction-making, the beginning of revolution of how many aspects of life are operationalized, such as purchasing, commuting, or procuring needs.

Nevertheless, there are still challenges that make it difficult to integrate something like mpayments these include; ability, trustworthy environment, fair provision and use of technology. Thus, such barriers can preserve large-scale development of such types of innovations as the mobile payment systems and other types of technologies which can improve people's financial literacy and can contribute to the formation of new forms of the modern economy.

5.2 Impact on Environment

Mobile payment systems have the following benefits for the natural environment: Therefore the following of green lists, and in the wider sense, main banking lists and actual money, has to be reduced. However, it is extremely important to realize that application of e-commerce results in the reduced circulation of physical notes; in other words, there will be no need in natural resources to produce green gas notes. The IFRS digital statements help in the protection of trees and hence we are able to minimize on the effects that we have on the environment by using the IFRS receipts as well. They can also report in their attempt to reduce greenhouse gases and deforestation given the scrapping on paper credential.

As in the mobile payment systems, usage of the sustainable concept was also identified to be optimal to the energy utilization compared to the flow chart in banking sector for the property of being cheap. But, for a more holistic view on environmental preservation in the given mobile payment space, several problems have to be solved: They are for example addressing issues to do with electronic waste and data energy.

5.3 Ethical Aspects

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5.4 Sustainability Plan

According to prior literature on mobile payment systems adoptions, a sustainability plan identifies controls and controls implications that include consideration of the technology on people, resulting nature, wallets, and the subsequent action known as sustainability analysis. For instance, one may put effort into data method to look for ways of lowering the quantity of energy used and encourage the use of green energy.

They also should identify how the shortcoming can be minimized so that anybody in the society can use the mobile payment by making those devices explainable to anybody. Ways of tackling and handling situations of research should also be guided by principles of integrity when the research principles are over. They include procedures such as obtaining participants 'informed consent, no identification of the participant, and ensuring that members from all diversity dimensions in groups participate. In addition, the mobile payments

researchers have to determine what types of support the payments should involve to enable enhancement of more effective and obvious kinds of the financial transactions for the improvement of sustainable production and consumption.

In this way, the researchers will be able to understand the aforementioned measures to increase the utilization of mobile payments as well as the manner that mobile payment system could be improved in

order to advance the interest of sustainable development and financial inclusion. For the treatment of subjects, methods, data, and outputs, the sustainability plan means the proper treatment, as required to make sound social and physical change.

Chapter 6

Summary, Conclusion, Recommendation and Implication for Future Research

6.1 Summary of the Study

The study on the adoption of mobile payment systems explores the factors influencing users' acceptance and use of these platforms. It delves into aspects that relate to the users' preferences as well as characteristics of the technology being used to discover the determinants of the adoption process. In order to verify the changes of trend of and the paths of development of social influence, perceived usefulness and perceived security risks of MSPS are discussed. Such knowledge is useful for businesses, especially Hi-tech, that seek to popularise mobile payment and prospective world where 'cash is king' won't dominate current digital landscape.

6.2 Conclusions

Mobile payment is quickly turning into the more commonly used method of making payment instead of cash, checks, and credit cards. Hence, the problem analyzed in this paper suggests that it needs a more complex approach to encourage the adoption of the mobile payment solutions in Bangladesh. The first and foremost attitude that has to be admitted is that the public awareness is an important consideration as people learn about the possibilities to perform payments with their portable devices. Furthermore, these problems have to be addressed when it comes to security and they have to be fixed with help of modern encryption as well as to cope with the trust in these systems. The communications which will be established between the interacted financial institutions and the mobile operators as well as the government agencies will thus also have an extraordinary role in generating the required confidence and providing the m-banking services. The continuation of compatible development of various kinds of mobile payment solutions and the further enlargement of the range of merchants accepting mobile payment would remain as important sources of development for the system. Perhaps, in the final analysis, one can pinpoint the following evidence that necessitate further cooperation with the related bodies, increasing awareness among the selected population groups, and

enhancing the security of those payment systems to apply mobile payment more widely in Bangladesh.

6.3 Implication for Further Study

In conclusion, the results of the current studies done in the context of mobile payment solutions provide account for the following contributions: First, the causes reported above to provided an impulse to user adoption and security concerns offer perfect opportunities to continue research. In particular, it can be useful to investigate more thoroughly the characteristics that the users prefer in mobile payment and the shifts in security paradigms, in the context of building up those applications.

Additionally, the opportunities of integrating mobile payments with such cutting-edge technologies as blockchain and artificial intelligence represent the direction for further analysis. Academic research could extend to the question of how these technologies influence the efficacy of the transactions and optimise security and accessibility on the site. Furthermore, it is possible to investigate the feasibility of using mobile payments in the context of the IoT.

The question of cross-border usage of mobile payments is yet again another subject that can bring more benefits in the future. They could look at matters touching on cross border payments, laws on cross border money transfer, cross border money transfer and how stable coins and cryptocurrencies can be used in the future of international trade.

Mobile payment systems and merchant acceptance can also be categorized as a convenient research area. Further research may examine into factors that can compel merchants into acceptance and the impact of mobile payment systems integration on strategies of businesses, the case of incentive systems.

On the last level, there is a need to assess the general external impact that accompanies the essence of mobile payments. It is recommended that an analysis could be made on the effects that financial development has played or is related to financial access and utilisation particularly the growth of the economy towards the more standard banking industries and cash orientated economy.

On this basis, it can be concluded that the reliability of the regulatory approaches to enhance mobile payment systems security and integrity depends primarily on their constant reassessment because of the specific nature of the existing and further development of the regulatory environment. Further research should be conducted specifically targeting the regulations; applying a sandbox to their usage raises the Degree of innovation volumes, preserving the clients' protection concerning technological advancements.

Similarly, future studies are also needed on the satisfaction of using the payment apps because mobile payment users may switch their interface preferences from one payment app to another. Mitigating the mobile payment experience will require identification of the factors that influence acceptance, usage & experience of the technology based on design parameters.

Finally, given that MPOS is still a developing industry, future research can compare the characteristics and development of the alliances, various market dynamics in the industry, and how such market influences the innovation process of the industry.

In conclusion, the research evidence suggests that MS is far from the simple entity as has been traditionally postulated. Future research based on these implications could also be very valuable to further improving and fine tuning of using mobile payments in light of the present and the future state outlined as consumers' digital dependency.

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