YANGON UNIVERSITY OF ECONOMICS
MASTER OF PUBLIC ADMINISTRATION PROGRAMME

A STUDY ON DIGITALTRANSFORMATION OF PAYMENT SYSTEM STRATEGY IN MYANMAR

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EMPA – 79 (16th BATCH)

DECEMBER, 2019

YANGON UNIVERSITY OF ECONOMICS

MASTER OF PUBLIC ADMINISTRATION PROGRAMME

A STUDY ON DIGITAL TRANSFORMATION OF PAYMENT SYSTEM STRATEGY IN MYANMAR

This thesis submitted in partial fulfillment towards the requirements for the Master of Public Administration (MPA)Degree

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This is to certify that this thesis entitled "**A STUDY ON DIGITAL TRANSFORMATION OF PAYMENT SYSTEM STRATEGY IN MYANMAR**" submitted as a partial fulfilment towards the requirements for the degree of Master of Public Administration (MPA) has been accepted by the Board of Examiners.

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ABSTRACT

This study observes the current digital payment services in Myanmar, and analyzed the barriers and constraints to develop the digital payment system development strategy in Myanmar. In the analysis on the current barriers and constraints at transforming digital payment system, samples of 30 key persons from selected financial institutions, which are successfully undertaking mobile payment services in Myanmar, are interviewed. Descriptive method and key personal interviewing on the basis of SWOT analysis can be concluded that there will be the growing number of digital payment system for its digital financial service providers benefit from lower costs as agent networks, which is cheaper to set up then opening new physical branches.

ACKNOWLEDGEMENTS

First and foremost, I would like to acknowledge Professor Dr. Tin Win, Rector of the Yangon University of Economics, Professor Dr. Ni Lar Myint Htoo, Pro-Rector the Yangon University of Economics, for their permission for my selection of the thesis title as a partial fulfillment towards the Degree of Master of Public Administration. I would also like to express my gratitude to Professor Dr. Phyu Phyu Ei, Programme Director and my thesis supervisor of Master of Public Administration Programme and Professor and Head, Department of Applied Economics. I would like to express my deepest gratitude for her excellent guidance, caring, patience and providing me with an excellent atmosphere for doing research. I wish to thank to all my teachers who have lectured in many subjects. I have also strong appreciation to the authorities of the financial institutions who are helping me with survey response and required data to fulfill my thesis, timely.

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LIST OF ABBREVIATIONS

A Bank	Ayeyarwady Farmer Development
AGD	Asia Green Development Bank
AGM	Assistant General Manager
API	Application Programming Interfaces
ASEAN	Association of Southeast Asian Nations
ATM	Automated Teller Machines
AYA	Ayeyarwady Bank
CB	Co-operative Bank
CBM	Central Bank of Myanmar
CBS	Core Banking System
DEDC	Digital Economy Development Committee
DEMI	Dedicated E-money Issuer
DFS	Digital Financial Services
E-cash	Electronic Cash
EFT	Electronic Fund Transfer
E-money	Electronic Money
FinTech	Financial Technology
FPB	First Private Bank
FRD	Financial Regulatory Department
GDP	Gross Domestic Product
ICT	Information and Communication Technology
ILS	Intraday Liquidity Support
ID	Personal Identity
IP	Internet Protocol
JCB	Japan Credit Bureau
KBZ	Kanbawza Bank
KII	Key Informal Interview
KYC	Know Your Customer
LDC	Least Developed Category
MAB	Myanmar Apex Bank
MAP	Making Access Possible
MCB	Myanmar Citizen Bank
MFI	Microfinance Institution
MNOs	Mobile Network Operators

MPSDC	Myanmar Payment System Development Committee
MPT	Myanmar Post s and Telecommunications
MPU	Myanmar Payment Union
NGO	Non-Government Organization
NPS	National Payments System
OECD	Organization for Economic Cooperation and Development
OS	Operating System
PCI	Payment Card Industry
PEST	Political, Economic, Social, Technological
PIN	Personal Identification Number
POS	Point-Of-Sale
PSP	Payment Service Provider
PSS	Payment and Settlement System
SME	Small and Medium Enterprise
SMS	Short Message Service
SWOT	Strengths-Weaknesses-Opportunities-Threats
SAP	Systems Applications and Products in Data Processing
TV	Television
UN	United Nations
UNCDF	United Nations Capital Development Fund
UNFPA	United Nations Population Fund
UPI	Union Pay International
WB	World Bank

CHAPTER 1
INTRODUCTION

The new-age customer expects quick, seamless and personalized transactions. The e-commerce's simplification and ease has changed consumer behaviour, and this has also spread rapidly to the payment industry. As a result, in the past few years, the segment has experienced drastic changes. The potential of big data, analytics and the cloud t has been steadily capitalized by payment companies. It is being developed as a new marketplace, taking the payments market into a new era. Nonetheless, due to a complex core infrastructure and lack of mobility in their operations, financial institutions have been slow to catch up. As a result, new-age rivals ' digital service offerings — FinTechs and challenger banks — now threaten conventional players ' survival.

A core component of the wider financial system is the National Payment System (NPS). This is the system that offers regular pathways for the economy to process payments through institutions, individuals and businesses. Well-designed processes of payment and settlement can contain risks, protect users and help limit the impact of financial shocks. Modern payment and settlement systems and arrangements have the potential to significantly reduce costs and speed up payments and discharge financial obligations, thus meeting the needs of the financial sector and society and contributing to overall economic development.

Columbia University Business School in New York defined Digital Financial Services (DFS) as financial services delivered and accessed through digital channels and tools such as mobile phones, cards, point-of-sale devices and agent outlets – can play a critical role in supporting the achievement of the government's priority objectives through economic, security and transparency. Abbreviated version of the Digital Financial Services (DFS) Potential Assessment (Ref: Agricultural Value Chains Report). Given that digital channels have benefits that dramatically reduce costs and improve the speed at which funds are transferred between individuals,

businesses and organizations, DFS offers an opportunity to improve the efficiency and productivity of small businesses.

In addition, the acceptance and growth of digital payment products helps pave the way for expanded access to credit, savings and insurance in rural areas, allowing financial services providers to utilize the digital payment system. DFS will complement and improve the effect of these programs by reducing operating costs and improving the efficiency of working with rural businesses, Agricultural segments and DFS can also build opportunities for new alliances and business models that concentrate on customized approaches to serving the lower-income segments.

1.1 Rationale of the Study

Daft, Kendrick and Vershinina (2010) claimed in their book that every organization is concerned with strategy. In recent years, Apple has succeeded in pursuing a policy of vigorous product innovation. In one year alone, there are three major new devices made by Apple, iPhone, iPod Touch, and Leopard OS — leading to triple-digit revenue growth for the once-struggle manufacturer. Daft (2010) also reported that McDonald's has devised a new strategy to reduce the size of its menu items and add nutritious goods in response to environmental change.

Banking services are the most significant part of the country. Money and its need are very relevant in this modern time. It can be clear that a well-functioning financial system is capable of ensuring that growth is accomplished. Modern banking services and a competitive environment for private banking services are turning them into creative digital banking that is gradually moving from cash base to cashless society in the near future. Advanced ICT technology and the growth of communications networks and rising mobile phone coverage are also one of the key factors and opportunities for the digital transformation of banking services in Myanmar. A good financial structure should be built to help not only the economy, but also society, in order to achieve growth. The evolution of cash-based to card-based and then card-less, less cash-based and cashless society by conventional digital banking services is being transformed by advanced technology. Modern banking services, therefore, play a vital role in the socio-economic and sustainable economic growth of this country. Banks need to try to increase the customer base that is commonly used for digital banking services, as well as to consider market awareness and the level of use of customers for digital banking services. The integration of

digital banking services needs to be driven by more and more consumer use in the country's financial market.

The main aim of this study is to determine the potential for DFS to contribute to value chain productivity and enhanced financial services for both bank customers and non-banked individuals. The main objectives of the Myanmar DFS Assessment Report are to advance awareness of payment flows and payment service providers in Myanmar, with the potential for DFS to improve the efficiency of the existing product, Services and banking transactions within the banking sector's value chains enable new alliances, business models and product design, and thus lead to improved livelihoods and awareness and transparency of value chain players to DFS, in particular mobile-based payments. (Ref: Myanmar DFS Assessment Report).

Accordingly, this study provides for the development of the digital payment system in Myanmar banks and other financial service providers in order to meet the needs of customers for additional advance payment services.

1.2 Objective of the Study

This study intends to achieve the following objectives

1. To illustrate the current digital payment services in Myanmar, and
2. To evaluate the strengths, weaknesses, opportunities and threats of digital transformation of payment system in Myanmar.

1.3 Method of the Study

This study focuses on both primary and secondary data mainly based on the descriptive method. Survey analysis is conducted by using SWOT analysis. Primary survey data is collected by the Key Informant Interviewing (KII) with 30 key persons who are key position level at KBZ, AYA, CB, AGD Banks, Central bank of Myanmar, WAVE Money, and OK Dollar who are popular at mobile payment services in Myanmar. Secondary data are searched the references from official publication, websites and previous studies of other candidates.

1.4 Scope and Limitation of the Study

The study can be made by survey questionnaire to 30 key persons from selected financial institutions situated in Nay Pyi Taw and Yangon Regions,

Myanmar. This study only focuses on situational analysis based on organizational strengths, weaknesses, opportunities and threats in the industrial environment.

According to the time limitation, there are many branches around in Myanmar to make further researches to the key authorities at popular financial institutions from all the other remaining major cities.

There are other constraints and opportunities at general environment like political, economic, social, technological, environmental and legal influence (PESTEL), and thus this study cannot be focused by environmental analysis.

1.5 Organization of the Study

This study consists five chapters. Firstly, chapter-1 introduces the rationale of the study and objectives of the study, method of the study, scope and limitation of the study and organization of the study. In chapter 2, it is presented the SWOT analysis and literature reviews on development of payment systems and digital transformation around the world. Chapter 3 represents the current digital payment services in Myanmar. Chapter 4 is the survey analysis on the strengths, weaknesses, opportunities and threats of digital transformation of payment system in Myanmar based on SWOT analysis to the key persons who are working in banking and mobile payment service companies in Myanmar. Finally, chapter 5 deals with the conclusion that contains findings and recommendation.

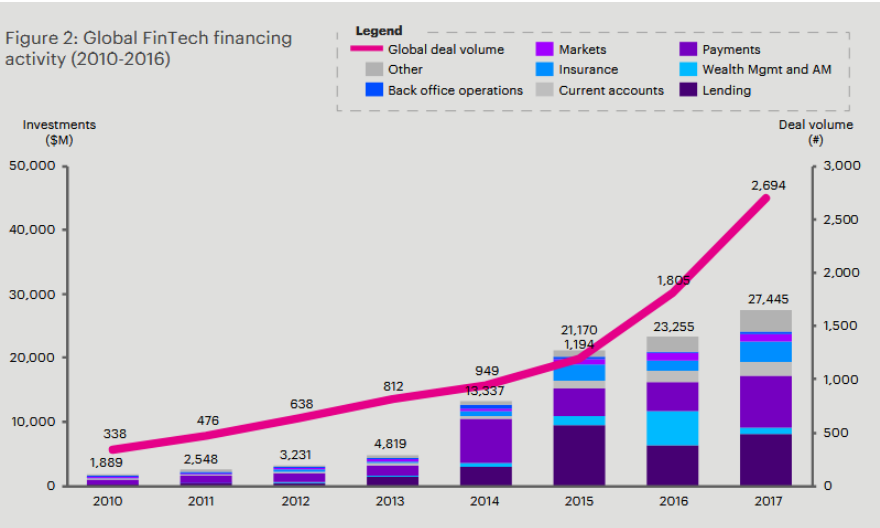
CHAPTER 2
LITERATURE REVIEW

2.1 Growing Financial Market

World Bank data in 2017 stated that remittance payments via mobile phone are experiencing explosive growth. According to the World Bank, today there are 191 million migrants sending over US$270 billion annually, with the G8 markets accounting for 46 per cent of global remittance financial flows (Migration and Development Brief 8 – World Bank. Worldbank.org). In the past, foreign workers and their remittances received scant policy attention. Immigration has become a major domestic and foreign policy issue from Paris to Manila to Mexico City. Many developing countries, such as the Philippines and Mexico, which have come to depend on remittances as a vital source of external finance, are pushing a pro-migration agenda.

According to Accenture Research analysis of CB Insights data, investment in FinTech collaborations is increasing, especially in the lending and payment segments, globally. In 2017, investment in these segments increased by 30 percent.

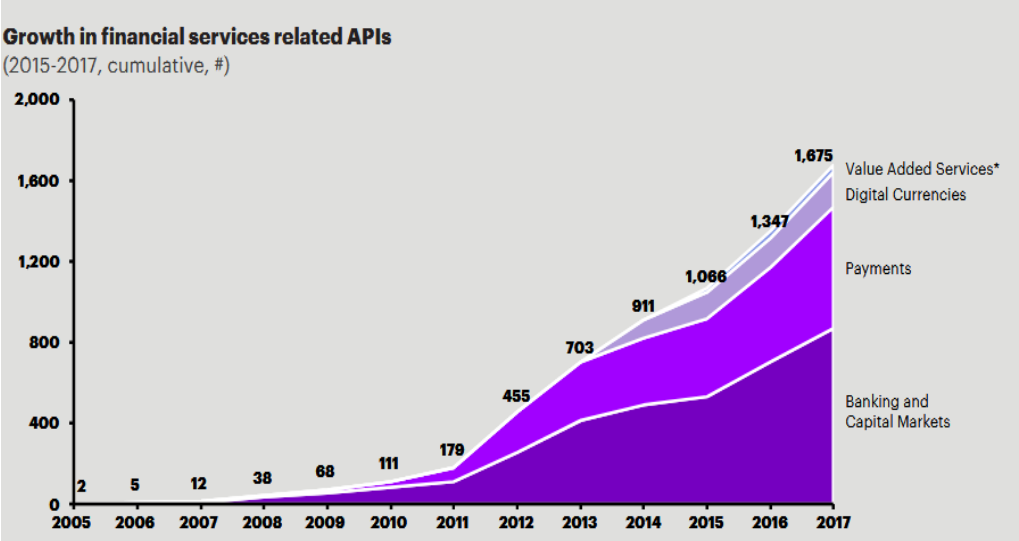
Figure (2.1) Global FinTech Financing Activity (2010-16)



Source: CB Insights data (2017)

Similarly, according to Accenture Research based on Programmable Web's application programming interface (API) dashboard (see figure 2.4), there's been a cumulative growth of APIs in financial services since 2011, with payments APIs claiming a major chunk.

Figure (2.2) Accenture Research based on Programmable Web API Dashboard



Source: Accenture Research, 2011

As research focus more on engaging customers at the point-of-impact, POS technology must evolve to support a more interactive sales experience. At the moment, POS units are dramatically underutilized from a customer experience perspective. I've never seen my name, an offer, or any other personalized information appear on a POS terminal. POS units are dramatically underutilized from a customer experience perspective. As of 1 January 2005, the liability for signature-based transactions in the UK was shifted to the retailer.

This was designed to act as an incentive for retailers to upgrade their POS systems. New cards featuring both magnetic stripes and chips are now issued by all major banks in the UK, and have become the norm outside of the UK, largely in the last few years. The University of Cambridge security group and others have been critical of Chip and PIN technologies citing fraud opportunities. Given the higher incidents of fraud with traditional magnetic stripe technology, however, Chip and PIN is generally seen as a significant improvement. Cardholders who are incapable of entering a PIN because of a mental or physical disability can contact their bank to be issued with a Chip and signature card.

2.2 Transformation of Payment System

Payment system evolved from time to time. It gradually transformed from cash-based to card-based, cash-based to cashless, card-based to cardless and contactless payment system.

2.2.1 Payment System

Payments System includes a country's entire matrix of institutional and infrastructure arrangements for initiating and processing payment and securities transactions. The main elements of a modern NPS are the following:

(i) **Institutions providing payment accounts,** instruments and services to consumers and businesses, as well as access to payment-related services, and offering various products to satisfy market needs. This includes banks, non-bank financial institutions and non-financial institutions;

(ii) **Organizations that operate payment,** clearing and settlement systems (payment operators), including third party service providers;

(iii**)** **Laws, regulations and contractual agreements** that define and govern the payment transfer process and the conduct of payment service markets;

(iv) **Payment instruments and arrangements**, such as credit transfers, direct debits, payment cards and e-money instruments;

(v) **Technological infrastructure.** These are infrastructures for: transacting and clearing payment instruments; processing and communicating payment information; transferring the funds between the paying and receiving institutions; electronic book-entry securities system(s) and central securities depositories to register and record changes in ownership of both private and government securities;

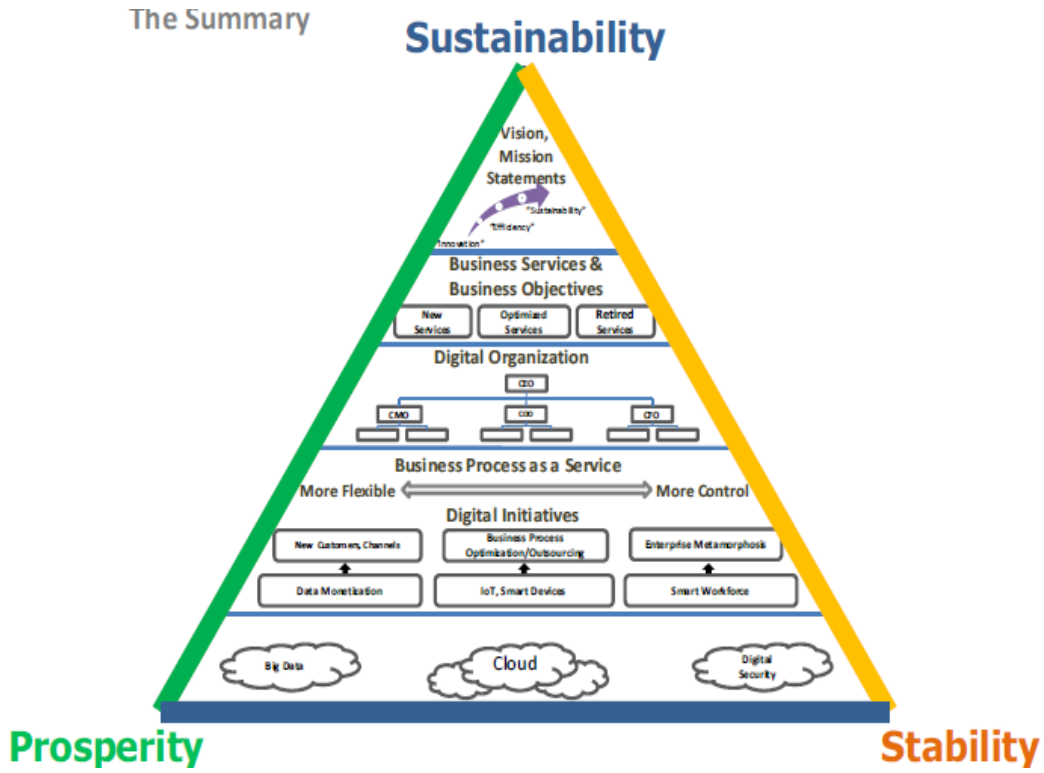
(vi) **Clearing and settlement rules and mechanisms**; and

(vii) **The oversight framework**, i.e. the framework to oversee the designated systems, arrangements, instruments and services by the authorities, including cooperative arrangements.

2.2.2 Digital Transformation

The development of inexpensive computers and the spread of the internet now make it cheap to pay bills electronically (retrieved from https://www.coursehero.com). In the past, you have to pay bills by mailing a check, but now banks provide websites at which you just log in, make a few clicks, and thereby transmit your payment electronically. Gilmar Maia (https://www.spglobal.com) in his book defined digital payment as not only do you save the cost of the stamp, but paying bills becomes (almost) a pleasure, requiring little effort. Electronic payment systems provided by banks now even spare you the pay the step of logging on the bill. Instead, recurring bills can be automatically deducted from customer's bank account. Estimated cost savings when a bill is paid electronically rather than by a check exceed one dollar per transaction. Electronic payment is thus becoming for more common in the United States (retrieved from https://www.coursehero.com).

Figure (2.3) Summary of Digital Transformation Framework



Source: SAP Affiliate Company, 2018

Digital transformation framework has three main characteristics or pillars such as sustainability, prosperity and stability. They altogether support the digital transformation process.

(a) **Sustainability:** The digital transformation can facilitate sustainable development of payment system through ongoing advanced technology in areas of connectivity, digitalization of information and artificial intelligence. All the positive potential benefit of digitalization can bring to sustainable development.

(b) **Prosperity:** It has also the potential to drive economic growth and improve human wellbeing and could lead to increased prosperity for all.

(c) Stability: Digitalization helps to readjust the relationship between humanity and the planet and also develop a global culture of responsibility, stability and a healthy planet.

Sustainable development through digital transformation of payment system can impact on the long-term growth, competitiveness and economic stability of a country.

2.2.3 Digital Banking

The term 'Digital Banking' is widespread but it's an often misunderstood concept. In short, digital banking means the full digitization of banks and all its activities, programs and functions. It's not just about digitizing financial services and products — the front-end that customers see — but also about automating their banking processes (the back-end) and connecting these worlds with middleware. Digital banking is about the automation of every step of the banking relationship, and it goes way beyond an online or mobile banking platform.

Digital banking contains a full transformation to a digital environment — front-end and back-end and anything in between — for both customers and employees. Digital banking relies on big data, analytics and embracing all new technologies to improve the customer's experience. The customers will only be considered a digital bank if they have digitized all the functions they have — from product development to customer service.

There are several reasons why digital banking becomes increasingly important in the banking industry:

a) **To reduce costs**: Banks are under pressure to reduce their costs to remain competitive.
b) **To increase revenue**: Established banks don't have a 360-degree view of their customers. They lack intelligent systems to gather customer intelligence and help them become more customer-centric. Poor customer experience leads to a lower market share.
c) **To attract and retain customers and stay ahead of the competition**: Fintechs and other newcomers including cryptocurrencies have shaken up the banking landscape. As a result, the demand for improved customer experience and personalized services grows, and the products and services of established banks are more expensive. Digital banking enables the banks to improve customer experience and lower costs, which is needed to stay ahead of the pack.
d) **To remain compliant with new legislation**: A greater effort by established banks is needed to remain compliant. Legacy systems make embracing this legislation difficult, reducing the return on expenditure. This leads to banks seeing legislation in purely compliance terms and missing the opportunities that it brings.
e) **To explore the benefits of new technologies**: New technologies, such as data analytics, open Application Programming Interfaces (APIs), block-chain and cognitive banking are predicted to impact banking business models. However, legacy systems limit the ability of banks to react quickly to these developments. Customers need full digitization to explore the benefits of these technologies and future-proof your bank.

Customer expectations are evolving, new regulation is put in place, and competition from tech giants is increasing. These changes force banks to look at the very core of their existence and to plot a way forward in an increasingly digital world. They need to reinvent themselves to survive. It's as simple as 'do or die'.

Digital payment systems include E-money which is electronic payments technology which is in the form of electronic money, so-called branchless banking which is carried out through limited-service facilities: point-of-sale (POS) terminal, automated teller machines (ATMs), Internet Banking Services which is provided through the Internet.

2.2.4 E-Money

Electronic payments technology can substitute not only for checks but also for cash, in the form of **electronic money (**or **e-money)—**money that exists only in electronic form. The first form of e-money was the debit card. Debit Cards, which look like credit cards, enable consumers to purchase goods and services by electronically transferring funds directly from their bank accounts to a merchant's account. Debit cards are used in many of the same places that accept credit cards and are now often becoming faster to use than cash. At most supermarkets, for example, customers can swipe their debit card through the card reader at the checkout station, press a bottom, and the amount of their purchases is deducted from their bank accounts. Most banks and companies such as Visa and Master Card issue debit cards, and customer's ATM card typically can function as a debit card.

A more advanced form of e-money is *the stored-valued card*. The simplest form of stored-value card is purchased for a preset dollar amount dollar amount that the consumer pays up front, like a prepaid phone card. The more sophisticated stored-value card is known as a smart-card. It contains a computer chip that allows it to be loaded with digital cash from the owner's bank account whenever needed. In Asian countries, such as Japan and Korea, cell phones now have a smart card feature that raises the expression "pay by phone" to a new level. Smart cards can be loaded from ATM machines, personal computers with a smart card reader, or specially equipped telephones.

A third form of electronic money is often referred to as e-cash, which is used on the internet to purchase goods or services. A consumer gets e-cash by setting up an account with a bank that has links to the internet and then has e-cash transferred to her PC. When the customer wants to buy something with e-cash, the customer surfs to a store on the Web and clicks the "buy" option for a particular item, whereupon the e-cash is automatically transferred from customer's computer to the merchant's computer. The merchant can then have the funds transferred from the consumer's bank account to his before the goods are shipped. Given the convenience of e-money, you might think that we would move quickly to a cashless society in which all payments are made electronically.

2.2.5 Automated Payment Service Facilities (Branchless Banking)

The high cost of chartering new financial firms and of setting up and operating full-service branch offices has led recently to a sharp expansion in so-called branchless banking, carried out through limited-service facilities: point-of-sale (POS) terminal, automated teller machines (ATMs), telephone banking (including cell phones with imbedded financial accounts and customer call centers), and Internet Supplied Service. Even though full services branches still represent a very important channel through which financial firms communicate with their customers, electronic facilities and systems represent the most rapidly growing firm-customer link today. Online banking through the Internet to pay bills, checks account balances, and transfer funds, in particular, has soared to more than 35 million customers today. In through, the most effective service delivery system in use today appear to be multichannel-combining full-service branches and electronic, limited service facilities within the same financial firm, and increasingly agency or third-party service providers operating call centers and other forms of "outsourcing".

(a) Point-of-Sale Terminals

Computer facilities in stores that permit a customer to instantly pay for goods and services electronically by deducting the cost of each purchase directly from his or her account are known as ***Point-of-Sale (POS) terminals***. The customer presents an encoded debit card to the store clerk who inserts it into a computer terminal connected to the financial firm's computer system. The customer's account is charged for the purchased and funds are automatically transferred to the store's deposit account.

(b) ATM Services

Automated Tellers machines are among the most efficient providers of basic financial services, costing far less per transaction than human teller, though they apparently are not quite efficient as the internet for certain transactions. While ATMs are best known for providing customers with cash and accepting deposits and bill payments, many of these machines recently have lengthened their menus, issuing bus and train tickets selling postage stamps, providing passes to athletic event and other forms of entertainment, and selling gift certificates. Some serve as a channel for making payments for purchases made at selected retailed stores.

Today ATMs are often shared by several firms in order to lower costs and are networked around the globe with the thousands of other machines to offer customers access to their accounts while travelling. Though expensive to purchase and install,

ATMs save on employee salaries, utility bills, and maintenance costs. Recent estimates suggest that an ATMs costs an average of about $70,000 to $80,000 to purchase and install and about $1,500 per month to operate, while the cost operating a full services branch office averages at least a million dollars and often for more.

(c) Banking in Homes, Offices, Stores, and on the Street

Giving customers continuous access to financial services – via phone, computer terminal, TV screen, or other electronic devices – from their home, workplace, or anywhere in between may be the ultimate end point in the long-term evolution of financial services delivery. Someday, some experts predict, all financial transactions will arise from the customer's own location, be it at home, in an automobile or airplane, at the office, or in a shopping mall any hour of the day or night. When that day arrives the particular geographic location of the financial firm and its customers may mean little or nothing to either party.

(d) Telephone Banking and call center

The telephone remains among the most popular channels for putting customers in touch with financial service providers today. Indeed, many financial experts believe that phones will be the key financial service delivery device well into the future because so many different services can be marketed, delivered, and verified at low cost via phone. The telephone remains among the most popular channels for putting customers in touch with the financial services providers today.

Many financial service providers operate call centers to assist their customers in obtaining account information and in carrying out transactions, thereby avoiding walking or driving to branch office or ATM. Increasingly call centers have become the high volume service vehicle to ensure customers' questions are answered quickly, to cross-sell services, and build longer-term financial firm-customer relationships. However, call centers have been found to create their own challenges for financial-service managers.

The cell phone, easily transportable and not tied to any particular location, has revolutionized communications and delivery of services, lowering dramatically the cost of both. Cell phones are evolving into handheld computers as illustrated by such commercial ventures as the iPhone network, BlackBerry, and Windows Mobile, among others. Moreover, as more sophisticated cell phones are developed and remain technologically linked to the Internet, the cell phone becomes more and more an

effective “portable bank” as well as a camera, music player, camcorder, TV programmer, laptop computer, and so forth.

Pioneers in the cell phone field include several leading Japanese electronics firms whose cell phones carry “electronic wallets” storing cash and credit card numbers, enabling the user to either spends stored cash or charge purchases simply by waving his or her cell networks next to a device that picks up the phone’s signal.

2.2.5.1 Internet Banking

(a) Services Provided through the Internet

Use of the Internet to carry out financial transactions is certainly one of the most promising avenues today for linking customers with financial-service providers. Close to half of American households obtain at least some of their financial services online, roughly doubling the proportion doing so in 2000.

Through the Internet a customer can usually

(1) verify in real time account balances at any time and from any location;
(2) move funds instantly from one account to another;
(3) confirm that deposits of funds have been received, checks have cleared, and online transactions have been completed;
(4) view and print images of checks that have passed through a customer’s account;
(5) submit an application for loans and credit cards; and
(6) carry out online bill paying (such as telephone and utility bills). The latter service is especially beneficial for banks because it ties bill- paying customers more closely to their current financial-service institution, making it harder to switch to another financial-service provider.

(b) Challenges in Providing Internet Services

Despite all of these potential advantages of the Net financial-service managers have discovered some real limits to what the Internet can do, at least until upgraded technology comes along. While scores of Internet-only (“virtual”) financial institutions have appeared over the past decade, not all of these institutions have succeeded. For example, the managers of such virtual banks as National Interbank and Juniper Financial discovered that not having a network of convenient neighborhood branch offices may prove to be a real business obstacle, especially in attracting household deposits.

Customers of many virtual banks have to mail in their deposits or drive to prearranged ATM locations to obtain the spendable cash they need. They sometimes complain about their inability to speak with "real live" service representatives in order to straighten out problems. Most online-only firms have found they must compensate their customers when they don't have a network of neighborhood branch offices by promising higher interest rates on the electronic accounts they do attract.

(c) The Net and Customer Privacy and Security

Probably the greatest challenge facing Internet services is the issue of customer safety and security. The Net has proven especially vulnerable to fraud and identity theft in which sensitive private information about businesses and individuals is stolen by unauthorized persons and used to run large credit bills or to ravage the reputation of victims. Invasion of online banking accounts and theft of funds and personal credit have recently reported average losses of more than $30,000 per event. Moreover, following the deadly terrorist attacks of 9/11, banking authorities soon discovered how efficient the Net had become in moving money around the globe to finance terror.

Current ID procedures require customers to present one or more authentication factors to gain access to their accounts. These authentication factors generally fall into three categories:

1. Something a customer knows (such as a password or PIN)
2. Something a customer has (such as a smart card, one-time-password(OTP) or token)
3. Something a customer is (such as his or her fingerprint, facial characteristics, or handprint)

(d) Financial Service Facilities of the Future

Despite continually advancing technology, most experts seem to agree that the total number of financial service outlets industry wide may not decline significantly for a time; indeed, the total of all financial service facilities may continue to grow if the population desiring to use these services continues to increase. However, the design and function of most financial service facilities are likely to evolve into new configurations-more wholly or partially automated facilities with broader self service capability and adjacent to other stores and shops. Future facilities will also likely include information accessing equipment that is so portable that financial service

outlets will be able to visit or accompany the customer wherever he or she goes, rather than requiring the customer to visit them.

The use of "digital cash" will permit customers to be their own financial service branches for certain transactions. Customers will be able to carry a pocketsize computer terminal to register payments for goods and services and to transfer funds as needed or carry a "smart card," which is an electronic purse holding a specified of electronic money to spend. When all the customer's electronic money is spent on purchases of goods and services, the card can be electronically "refilled" with digital cash in order to support future purchases. But even with these service innovations, there is still likely to be a significant role for traditional full service branch offices geared to the special service needs of the neighborhoods and communities they serve, helping customers plan for the future with the aid of a broad menu of service offerings and expert financial advice.

Service providers of the future are likely to follow the lead of many retail stores in evaluating the success of their branch offices and limited service facilities in terms of profits and costs per square foot. Future service facilities will have to combine a retail, sales oriented environment with customer friendly automation and still be flexible enough to deal with continuing product innovation. Finally, "outsourcing" of financial service delivery is likely to grow. Such firms as Equifax and Intuit are likely to find promising business opportunities as third party service providers, developing and delivering services with high profit potential, especially in those areas where technological innovation is rapid and pervasive.

2.3 Strategic Management Process

In defining strategic management, it concerns with identification and description of the strategies that leader and managers can perform together achieving better performance and more competitive advantage for their organization. An company is said to have a competitive advantage if its profitability for all firms in its sector is higher than the average profitability

Strategic management can also be described as a package of decisions and actions conducted by a manager and deciding the outcome of the company's performance. To make the right decisions, the manager must have a thorough knowledge and analysis of the overall and competitive organizational environment. They will perform a SWOT Analysis (Strengths, Weaknesses, Opportunities, and

Threats), i.e. make the best use of strengths, reduce organizational weaknesses, leverage opportunities from the business environment

Strategic management is nothing but preparation for contingencies that are both inevitable and unfeasible. This refers to both small and large organizations as even the smallest company faces pressure and can gain a sustainable competitive advantage by formulating and implementing suitable strategies.

Strategic management provides an organization's workers with a broader perspective and they can better understand how their work fits into the organization's entire plan and how it is connected to other organization members. This is nothing other than the art of managing workers in a way that maximizes the ability to achieve business goals. Employees are gaining more confidence, more committed and more satisfied as they can co-relate themselves very well with each organizational task.

Porter (1996) defined strategy as a pattern of decisions that are selected and implemented to achieve a long-term goal and a sustainable competitive advantage.A strategyis the overall game plan for deploying resources to establish a favorable market position. (Ref; Grant, 1991). Porter further defined strategy as the creation of a unique and valuable position, involving a different set of activities (Ref; Porter,1996). Chrisman and many researchers stated that a strategy which describes the fundamental characteristics of the match that an organization achieves among its skills and resources and the opportunities and threats in its external environment that enables it to achieve its goals and objectives. (Ref; Chrisman,1988)

Porter concluded that a company only could be able to outperform competition if it can establish a difference of value to customers, which can be maintained over a long period of time. (Ref; Porter, 1980) Strategies are plans for top management which should lead to resultsmatching mission and goals of the organization**.** (Ref; Wright, 1992). Strategy is about how to compete successfully of a firm (Ref; Barney, 2002). Harvard Business Essential (2005) text stated strategy as a plan that aims to give the enterprise a competitive advantage over rivals through differentiation.

Wisdom Ayitey (March 2010), in his book at Simple Approach to Strategic Management, stated strategic management as the process and approach of specifying an organization's objectives, developing policies and plans to attain management set objectives, and allocating resources to implement the policies and plans. N Lorare, in his discussion article, stated that strategic management as a formal process designed to interpret the organization's environment for the purpose of identifying its adaptive

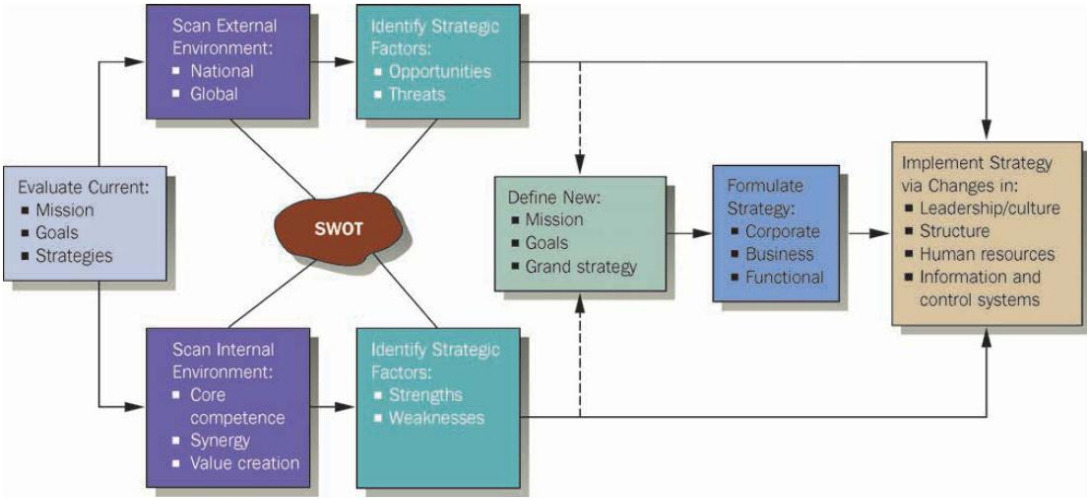
challenges and guiding its responses so as to optimize longer term competitive advantage (Ref; Barrella - 2012; Beerel, 1998). Kerzner explained strategic management process which was for decisions making process on the future direction of the organization that was vital for the survival of any organization (Ref; Kerzner, 2001). Strategic management process is the dynamic nature of the process that has become a necessity in a constantly changing environment that requires a continuous monitoring and adaptation to environmental challenges. (Ref; Adriana, 2011).

2.4 SWOT Analysis

Daft (2012) stated strategic management which can be referred to the set of decisions and actions used to formulate and execute strategies that will provide a competitively superior fit between the organization and its environment so as to achieve organizational goals (Daft, 2007, Business & Economics), quoted by Business News (Jun 23, 2019), SWOT Analysis can be defined as frequent making action by the most of companies which is trying to promote their service level, and to meet their mission of being a leader in the passenger transporting industry (Tanaji , 2018). Situational analysis helps managers to make choices about how to position their organizations in the environment with respect to rival companies (http://www.economicsdiscussion.net/). Daft (2012) stated that superior organizational performance is not a matter of luck. It is determined by the choices that managers make.

Samson and Daft (2012) stated that the first step in strategic management is to develop explicit strategy, which is the plan of action that describes resource allocation. This resource allocation activities is for dealing with the environment, achieving a competitive advantage, and attaining the organization's goals. Competitive advantage is the sets the organization apart from others and provides it with a distinctive edge for meeting customer or client needs in the marketplace (www.cengage.com›cgi-wadsworth›course-products-wp). Daft, (2007) stated that the essence of formulating strategy is choosing how the organization will be different company's core competence. That is the something the organization does especially well in comparison to its competitors (https://quizlet.com).

Figure (2.4) Strategic Management Process



Source: Daft, (2012)

Formulating strategy often begins with an assessment of the internal and external factors that will affect the organization's competitive situation (retrieved from web: (https://freebooksummary.com). SWOT analysis includes a search for strengths, weaknesses, opportunities, and threats that affect organizational performance. Daft, 2008, in his book, stated that external information about opportunities and threats may be obtained from a variety of sources, including customers, government reports, professional journals, suppliers, bankers, friends in other organizations, consultants, or association meetings (Retrieved from web: https://www.scribd.com). Many firms hire special scanning organizations to provide them with newspaper clippings, Internet research, and analyses of relevant domestic and global trends(Ref; Vallabhaneni,2017) further stated that, many companies were hiring competitive intelligence professionals to scope out competitors.

Strengths are positive internal characteristics that the organization can exploit to achieve its strategic performance goals (Ref; Vallabhaneni, 2019). Weaknesses are internal characteristics that might inhibit or restrict the organization's performance. In the review of Grant, 2019, he further defined SWOT (strengths, weaknesses, opportunities, and threats) analysis as a framework used to evaluate and to develop strategic planning. SWOT analysis assesses internal and external factors, as well as current and future potential. A SWOT analysis is designed to facilitate a realistic, fact-based, data-driven look at the strengths and weaknesses of an organization, its initiatives, or an industry. The organization needs to keep the analysis accurate by

avoiding pre-conceived beliefs or gray areas and instead focusing on real-life contexts. Companies should use it as a guide and not necessarily as a prescription.

2.5 Review on Previous Studies

Myo Win Ye (2016) had a study on customer adoption on internet banking of AYA Bank. In his study, he found out the difficulties of customers to use internet banking. They need to familiar with computer skills to use. His study proved that the development of digitalized internet banking need to improve customer self service technology and thus, firm must have to develop its mobile application for user friendliness on the use of its service. His study also suggested that customers are needed to log with password.

Myat Sandar Kyaw (2015) had a study on the development of payment system in Myanmar Banking Industry. In her study, primary survey was conducted upon the authorities from Central Bank of Myanmar. In the finding of her study, she found out that payment system is still not yet developed and payment system in Myanmar is just an infant stage. Her study examined that current international payment trend, process of payment channels, card, cheque usage and progress of merchandize clearing house system (MCH)., and the development in telecommunication infrastructure for digitalization of payment system in Myanmar.

Ei Ei Phyu (2018) had a study on attitude toward the use of mobile wallet and mobile payment service in Myanmar. She focused on selected mobile financial service (MFS) License companies in Myanmar. Her study is mainly based on the objectives and data about the attitude of customers on using mobile wallet services. Because of the ease of use and convenient, the attitudes of the users are changed and they started feel that the services are intention to use.

Nang Myat Mon (2016) had a study the effect of core banking system on services of KBZ Banks. Her study focused on three factors: software utilization, work productivity and security. Sample included authorities from the bank. Her study found that core banking system enhances and increase quality, quantity of work, whereas, there would be associated with the risks for data system security. Unauthorized access of data and information stores in the system could result to information leakage and may impose a big problem so that KBZ is strongly emphasizing for their data security.

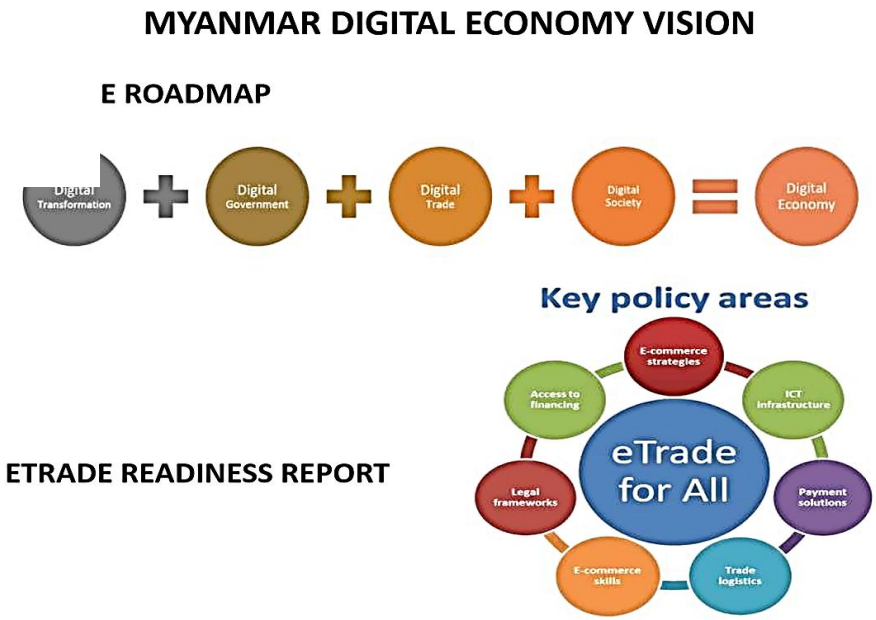
CHAPTER 3
DEVELOPMENT OF DIGITAL PAYMENT SYSTEM IN MYANMAR

This chapter includes the background of digital banking in Myanmar, CBM-Net System in Myanmar, Development of Mobile Financial Services in Myanmar, Access to and Reach of Mobile Infrastructure, Usage of Electronic Payment System in Myanmar, Mechanized Clearing House, Myanmar Payment Union, Smartphone and Mobile Money, Profile and Functions of selected Mobile Financial Service Companies. This session provides insights into the methods and practical ways employed to conduct the study.

3.1 Background of Digital Banking Services in Myanmar

Myanmar is among the 48 countries included in the LDC (Least Developed Category) list by the United Nations in 2018. Myanmar, however, is rich in natural resources and has the advantage of making economic progress through the development of its banking sector. Today, the electronic payment system is very common, simple and convenient, reduces overhead costs and saves time for both traders and consumers. Consumers can easily order and item online and merchants also save the money for rental costs as they do not need display areas.

Figure (3.1) Myanmar Digital Economy Vision



Source: – e - Government Department Information Technology and Cyber Security Department

In 2013, UNCDF and UNDP jointly conducted a nationwide survey on the state of financial inclusion in the country, described as access to affordable and sufficient financial services for all segments of the population. This report shows that only 30% of the adult population in Myanmar has access to these financial products. Recent data on mobile phone use in 2015 showed that 40 percent of the population owned mobile phones (i.e. 83% in the Yangon area) and 41 percent of those who did not plan to do so. Myanmar is the world's first mobile-based and fourth fastest-growing market with 66% of smartphone users shifting to smartphones rather than keypads. The use of private telephones as an alternative means of accessing financial services can therefore provide an enormous opportunity to increase their distribution among the population, especially in the rural and low-income sectors.

In this regard, the Central Bank of Myanmar recently issued, on 30 March, a regulation authorizing non-banking institutions to provide mobile banking services. With this new regulation, qualifying businesses will encourage their customers to cash in and out their mobile wallets through agents and use this electronic platform to pay their utility bills, airtime uploads and transactions in the partner shop, as well as to transfer money to another individual.

Digital financial services (DFS) support a range of players from end-customers to suppliers and governments: end-customers benefit from digital payments through increased

access, lower costs and more reliable services. Nevertheless, bank penetration in Myanmar is small, which means that many households live far from branches. In order to carry out a financial transaction, consumers must bear the cost of entering the bank, which has a financial aspect as they have to pay for transport and a time dimension as they can not be focused on earning income when traveling. In fact, if individuals carry cash, there is always a chance that they will be robbed on the way. By using mobile services, these limits are lifted, and low-income households are more likely to use them than they would use traditional banking channels.

Electronic payments often allow the sender to exert greater control as they can select a particular household individual who is most capable of managing and saving money. Digital means can also aid in the accumulation of money, as people can configure automatic transmissions and notification texts. Individuals are also more related while being geographically distant and may receive (or provide) quicker assistance for unexpected income shocks. Indeed, these payments can be instantaneous which is crucial in times of crisis and timely for people managing a tight cash flow.

Digital financial services providers benefit from lower costs as digital or agent networks are much cheaper to set up than opening a new physical branch, which can cost from half a million dollars (for rental) to five million dollars (for purchase) in Myanmar. In fact, with the large amount of information gathered by suppliers, the customer needs and the payment potential can be better understood client needs and payment capacity allowing them to develop customer centric products in the future.

3.2 Regulations of Financial Sector in Myanmar

Myanmar DFS Assessment Report (2015) showed that the Myanmar Central Bank (CBM) released a Mobile Banking Directive (Directive 4-2013) to exploit technology-enabled platforms to facilitate greater access to finance. The Directive sets out a bank-led model, authorizing only banks and financial institutions to provide mobile banking services. Although the Mobile Banking Directive was useful for water testing, it did not encourage the level of activity that the CBM would have liked to see two years after its release. The Directive was rather short, leaving several questions unanswered. Coupled with industry stakeholders' expectation of more robust regulations, the Directive created significant uncertainty that discouraged potential providers.

In early 2014, the CBM started consultations with various stakeholders, such as CGAP and the World Bank, on the creation of the Dedicated E-Money Issuer (DEMI) Directive. The policy has undergone many modifications and changes in name and remains under consideration by the CBM. In comparison to the Mobile Banking Directive, the new Directive is designed to allow non-bank players to be authorized to issue electronic money (e-money) and to use agents to perform electronic transactions. The latest draft Regulations also forbid the exclusivity of agents and require different levels of interoperability with other mobile financial services providers, including agents, consumers and network providers. The Regulations have set out the specifications of the KYC, with the opening of entry level accounts (Level 1 accounts) permitted without the presence of an ID card, although the final details of the Regulations have yet to be verified. If a sound version of this plan for a regulation were to be adopted by the CBM, it would significantly change the market dynamics as the industry opens up to a wider range of institutions, such as mobile network operators (MNOs) and third-parties.

Allowing non-bank players to compete in the DFS region has the potential to increase competition in the market, encourage innovation and investment and, in effect, facilitate greater financial inclusion. Financial institutions in Myanmar have not been able to take full advantage of the opportunity to develop digital-centric models due to limited internal resources, lack of automated processes and the need to deploy secure IT systems (core banking systems, middleware, and gateways). In the light of these realities, creating a more enabling regulatory environment that opens up the digital financial services market to non-bank players could provide the investment, infrastructure and resources required to scale up DFS services in Myanmar.

Myanmar is among the 48 countries included in the LDC (Least Developed Category) list by the United Nations in 2018. Myanmar, however, is rich in natural resources and has the advantage of making economic progress through the growth of its agricultural sector. Access to financial services is key to any development and economic growth that may take place. Financial inclusion is therefore a consideration of increasing importance. Myanmar's rural economy scarcely has access to any structured financial products or services that could contribute to the growth of agricultural production. For a long time, unregulated money lenders and pawn shops have been common sources of credit for low-income people.

The silver liner in the cloud is the country's mobile boom. From a mere 10% penetration of mobile users in 2014, the number of users increased to over 90% in 2018. This also indicates access to online services that have been introduced in the region. Nevertheless, though people have moved to mobile phones, the economy continues to operate almost entirely in currency, primarily due to lack of trust in the banking system, besides the inaccessibility of services. The challenge for financial institutions is to make use of digital financial services and remove cash from lending operations. Loan officers also spend long hours every day receiving cash instalments from lenders, counting the cash several times, and planning to disburse cash to new customers. Advances in technology are changing the way people in Myanmar access and use financial products and fine tech companies and corporations' cash in on the country's mobile boom and Internet access to bring low-priced, user-friendly, digital financial products to people.

3.3 Adoption and Reach of Digital Payment Infrastructure and Digital Financial Services Opportunity in Myanmar

As outlined in Table (3.1), a number of providers have been piloting, launching or preparing to launch mobile money services in Myanmar. Nevertheless, continued regulatory complexity (discussed in Section 3 below) has made it difficult for many of these programs to step beyond the planning stage, as key regulatory elements are still under development.

Table (3.1) Launched and Planned DFS Initiatives Service

Service Provider Name	Launch Status	Partners
Myanmar Mobile Money	Launched	Innwa Bank, Oberthur Technologies & Mobilemate Telecommunications
MyKyat	Launched	Frontier Payment Technologies, First Private Bank
MYWALLET plus	Launched	CB Bank, Leo Tech, MCC Group
Wave Money	Launched	Telenor & Yoma Bank
M-Pitesan	Launched	Ooredoo
Myanmar Payment Solution Services (MPSS)	Planned	Blue Ocean Operating Management, Myanmar Technologies and Investment Corporation, Myanmar Citizen Bank

Source: CBM, 2019

In their approaches for the roll-out of DFS, many of these companies have suggested plans to develop programs specifically for the agriculture sector. MyKyat and Myanmar Mobile Money, for example, are working with existing players, such as fertilizer distributors, to extend their DFS agent networks in rural areas. Some distributors, especially Awba, plan to set up their own proprietary payment systems. Ooredoo and Frog Design, funded by GSMA, are designing mAgri services through a user-centric design approach. Ooredoo and Telenor also have plans to provide bulk payment services, including loan disbursements and collections for MFIs and cooperatives. Mobilizing Myanmar: Smartphone Revolution Connects the Poor with Economic Opportunities, a new report by Pwint Htun and Paula Bock discusses the dramatic transformation underway in Myanmar and the unique opportunity for Digital Financial Services. Mobilizing Myanmar shows that Myanmar has among the world's most progressive mobile financial services regulations and three mobile network operators actively working to connect rural and urban populations with financial services.

The report is based on country-level diagnostic data from the Central Bank, the Ministry of Transport and Telecommunications, three telecommunications companies operating in Myanmar, Twitter, Viber, a nationally representative Information and Communication Technology survey of 7,500 households, and recent UNFPA census data. Interviews with more than 150 people in rural and urban areas on their mobile phone use, financial lives, challenges and hopes show that the careful implementation of digital financial services could change the lives of poor and marginalized people in Myanmar and provide a way out of poverty.

The timing is right to use digital financial services to make the greatest impact for marginalized people who have long been excluded from the formal economy. (**Ref**: Wayan Vota, *The Massive Myanmar Opportunity for Digital Financial Services* - 2017)

The Digital Economy Development Committee (DEDC) is drafting the Myanmar Digital Economy Development Master Plan to develop and regulate the country's booming digital economy. (Ref: U Mya Moe Aung,2017)

In addition, the DEDC will prepare a short-term (2-3 years) and a medium-term (3-5 years) working programme. It will start implementation when the master plan and these accompanying working programmes are completed.

Myanmar's digital economy is booming and growing. The nation has an estimated 46,39 million Internet users and 89% of the population is penetrated by the Internet. According to data from the Ministry of Transport and Communications and the DEDC, over 80 per cent of mobile users have adopted smartphones. The relatively young population is also predicted to be very resilient when it comes to technological innovation.

Sectors including agriculture, livestock and tourism, as well as emerging small and medium-sized enterprises (SMEs) in the region, need digital technology to compete with competitors from neighboring countries as well as the international community. (Ref: U Mya Moe Aung, 2019)

3.4 Smartphones and Mobile Money

According to the Ministry of Transport and Telecommunications, by the end of 2016, more than 90 per cent of Myanmar's adults had mobile phones (up from just 7 per cent in 2012), with smartphone penetration approaching 80 per cent of all mobile phones. However, according to UNCDF's 2013 Making Access Possible Survey, only 6% of adults use a formal financial institution. And only 30% of them have access to a regulated financial service provider, such as a microfinance institution or a credit union. Unregulated money lenders and pawnshops are the most popular way for poor Myanmar people to access credit. A study of three low-income areas in Yangon in 2015, Save the Children, found that 85 percent of the population relied on short-term loans and half of these loans were for food and basic needs. Such uncontrolled sources of credit come at a high cost—10–20 percent per month for an unsecured loan and 3–5 percent per month if the borrower provides collateral, usually a small piece of jewelry, but pawn shops often accept the family's cooking pans. Digital loans, paid out to a mobile, may give low-income clients access to credit in situations where they would otherwise be forced to rely on a high-interest moneylender.

- Myanmar is experiencing one of the world’s fastest adoption of mobile phones. Three years ago, less than 10% of the population had access to mobile phone. Today, over 90% of population of Myanmar has 3G coverage and more than half of all adults have smartphones.
- Despite this rapid uptake of mobile technology, Myanmar remains one of the least developed financial systems in Southeast Asia. The country’s

largest bank by asset has only 307 branches. Only 2 percent of adults have a debit card, and only 3 percent of adults have insurance.

3.5 Financial Inclusion Roadmap

UNCDF is working with UNDP in Myanmar to create an enabling environment for improved financial inclusion. UNCDF will provide funding for the introduction of mobile banking, one of the six focus areas of this Roadmap, through its Expanding Financial Access (EFA) program designed to support the Government of Myanmar's Financial Inclusion Roadmap. To do so, the agency will provide assistance to ensure the sustainable development of the six components that compose the digital financial services ecosystem:

1. Policy and regulation, to make sure proper guidance to regulate the market and protect the customers are in place,
2. Providers of DFS (banks, telecom companies, microfinance institutions, FinTech),
3. Customers that will use these services and need to be educated,
4. Infrastructure to be able to channel these services,
5. Distribution to ensure customers get access to these new products and
6. High volume drivers, such as remittances or government payments to individuals, as DFS require a widely use services for the market to take off and the business to be profitable.

3.5.1 Enabling Financial Inclusion

Enabling consumers to safely store money and transact is a strong driver of financial inclusion. Here's why:

- **It's safer.** Before mobile money, workers sending money to their families in rural villages had to travel with cash or pay someone else to do so, which often led to theft or loss. Now, money can be transferred to just about anyone across the country in an instant. Money is also stored digitally with proper authentication methods to restrict access, a safer alternative to cash under your mattress.
- **It's cheaper.** The cost of sending money across the country is significantly reduced. On top of this, many mobile money operators enable users to make purchases in the app at a heavy discount, such as "top ups" which enable users to buy more airtime with the telco companies.

- **It helps businesses grow.** Those typically underserved by traditional financial services can now open an account at a local shop and begin accepting payments. This is particularly important for rural economies and unregistered businesses. Mobile money tellers make commission on each transactions which helps support their business. At Wave Money, over 80% of such merchants are women. This is the case in many other emerging markets as well.
- **It increases resiliency and access.** Mobile money makes it easier for businesses to collect on payments such as loan payments, debt, invoices, etc. This helps businesses reduce costs which in turn enables them make products more affordable for underbanked consumers.
- **It's more efficient.** Transacting in cash requires time to move, count, and store money. Mobile money helps business accurately account, reduces corruption, and decreases costs. Mobile money still has a ways to go to completely replace cash, but the trend is up and to the right.

3.6 Current Digital Payment Services in Myanmar

With these various initiatives launched or under growth, providers are preparing to take advantage of the market potential of DFS in Myanmar and the ability it provides to address the current weaknesses of the financial sector. In spite of recent developments, Myanmar remains one of the most under-banked countries in the world. Fewer than 5 per cent of adults have savings accounts with a formal financial institution, just 30 per cent of adults claim to have access to any type of financial service provided by a regulated financial service provider, and 5.9 million adults (approximately 15 per cent of the adult population) borrow from unregulated money lenders. The availability of financial services in rural areas is particularly low, with only 2.5 per cent of loans going to rural areas, despite the fact that the sector accounts for 30 per cent of Myanmar's GDP and two-thirds of employment. (OECD, Multi-dimensional Review of Myanmar, 2015, pg. 208)

Increasing evidence indicates that poor households ' access to an interconnected digital financial system strongly supports the achievement of direct welfare benefits, including (i) access to a basic store-of-value account, (ii) payment connections to peers, (iii) connections to institutions (e.g. utility companies,

enterprises, governments), and (iv) access to enhanced financial services (e.g. savings, credit, insurance).

Nevertheless, migration from the cash world to the digital economy is not to be seen as happening within a single boundary. The economies are likely to pass through several stages of business growth along the road to an inclusive digital economy. It is, of course, to be expected that many countries will be able to chart unique pathways that leapfrog or even reverse certain stages.

A general pathway to digital financial inclusion may be hypothesized as according to the following four key stages:

Stage 1. ***Basic Connectivity*** - Critical mass of mobile coverage and penetration among the rural poor.

Stage 2. ***Digital Remote Payments*** - Poor people adopt and use digital channels for person-to-person transfers and government payments.

Stage 3. ***Full Range of Digital Financial Services*** - Poor people adopt and use digital channels for savings, credits, insurance services, and other financial services

Stage 4. ***DFS Plus*** - Poor people conduct a majority of transactions, from payments to merchants and vendors to installments for infrastructural improvements and substitutes.

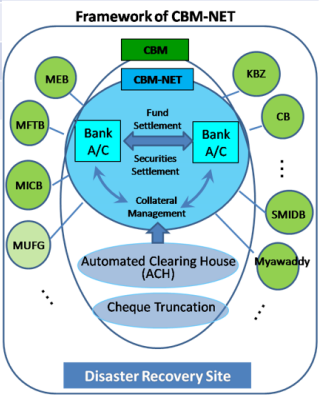
3.7 CBM-Net System in Myanmar

The Myanmar Central Bank is collaborating with NTTDATA to develop a new core banking system for the settlement of government bonds, funds and collateral management. This initiative is sponsored by the Government of Japan and is part of CBM's efforts to develop a fully modernized payment system for the financial sector. This project is intended to move CBM's manual processes to a fully automated and centralized environment.

Figure (3.2) Outline of New CBM-Net: Development of Financial Market Infrastructures (CBM-NET Enhancement) Grant Aid Project

1. Project Summary	
Purpose	In order to address increasing financial transactions and demands for more sophisticated services, latest technologies including international standards are to be implemented, which will contribute to improve current payment and settlement system of the Central Bank of Myanmar (CBM-NET), thereby contributing to enhancing stability of the financial system in Myanmar
Implement Agency	Central Bank of Myanmar
GA Amount	5,549 Million Yen
Date of E/N	14 Jun 2018
Date of G/A	8 Aug 2018
Completion Date	2020

CBM-NET Phase 1
RTGS Based Payment and Settlement system linking up 44 Bank(31 Domestic, 13 Foreign), 6 Securities Company, and MPU(Myanmar Payment Union) (Jan 2016 going live)
・Electronic Funds and Securities (T-bond/Bill) Transfer
・Real Time Gross Settlement (RTGS)
・Automated T-Bond Coupon payment/redemption and collateral management



Source – JICA (CBM) Survey Team

Currently, **CBM-NET functions** are;

(a) Online-interbank Fund Settlement and Customer Remittance,

(b) Real Time Gross Settlement (RTGS) system,

(c) Real Time Payment System,

(d) Online T-Bond/Bill Transfers – Collateral Management and Delivery versus Payment (DVP),

(e) Cheque/ PO Clearing House (Mechanized Clearing House),

(f) Message Format (Screen Entry or CSV only),

(g) Production and Development Environment (Only Yangon Data Center),

(h) Data Redundancy and History of Data,

(i) Security (Use of id/password multi-layer approvals, mac address authorization),

(j) Data export (CSV file through FTP servers)

New CBM-NET Functions are:

(a) **Straight Through Processing (STP)** - Directly connecting CBM-NET with core banking system (CBS) of participants using widely accepted technologies to have better interoperability (Improved Efficiency),

(b) **Liquidity Saving Feature (LSF) with queueing and Offsetting for RTGS transactions** - Offsetting transactions on both parties to settle with less liquidity (Integrated System) → improved liquidity management capacity and removing grid locks,

(c) ***Automated Clearing House (ACH)*** - Bulk payments (Salary, Billing, Government Expenditure/Revenue, etc.) and Rapid/ Fast Payments (Mobile wallet, real time remittance, etc.) will be available at 24/7,

(d) **Simultaneous Processing of DVP and Collateralization : DVP-C** - Even bonds pledged as collateral can traded and settled with DVP → Improve bond liquidity drastically,

(e) **Cheque Truncation System** - Online Processing of Cheque/PO images → Allowing Cheque/PO usage for non-MCH / remote areas,

(f) **Standardized Message (ISO20022)** - XML to be used to allow flexible message patterns and Financial EDI (Electronic Data Interchange) → basis for ASEAN＋3 cross border settlement infrastructures,

(g) **Disaster Recovery** - Backup Site in NPT for contingency → Improved Business Continuity Plan,

(h) **Multiple data backup/mirroring/replication methods** → Improved resilience,

(i) **USB Tokens, and PKI** → Two factor authentication and strengthened encryptions,

(j) **Linkage with Sub-systems and External Systems** - Interface to other systems, file upload/ download, automatic data exports

Automated Clearing House (ACH) can provide; Improved availability through 24 hours a day/7 day a week operation, Improved potential and diversity in used of customer bank accounts, improved public expenditure and revenue management, Stimulate financial inclusion.

Variety of Settlement Options/Modes can display; RGTS → High Value Payment, Interbank Trades, and B2B Payments, **Retail Payment** → Bulk payment and faster payment (B2C, C2C, G2B, G2C), **Cheque Transaction** → Electronic Clearing House for Cheque/PO, Inter-region payment, and B2B, B2C, G2B, G2C payments.

Disaster Recovery Facility can be supported by; NPT Servers are to be used as standby in case of emergency and used for development and testing during normal situation

and it will become a primary server within 2 hours in case of YGN servers damaged and malfunctioned.

In the future, CBM-NET outcome will be impacted after the project competition; Enhanced CBM Payment and Settlement systems to meet growing financial sectors

(a) Rapid growth of branches and its networks by the introductions of Core Banking Systems that leads to the variety of banking services available to Myanmar

(b) Fintech comes into Myanmar as well to reach people at the marginal areas for financial inclusion

(c) 10% of annual growth rate in bank account holders

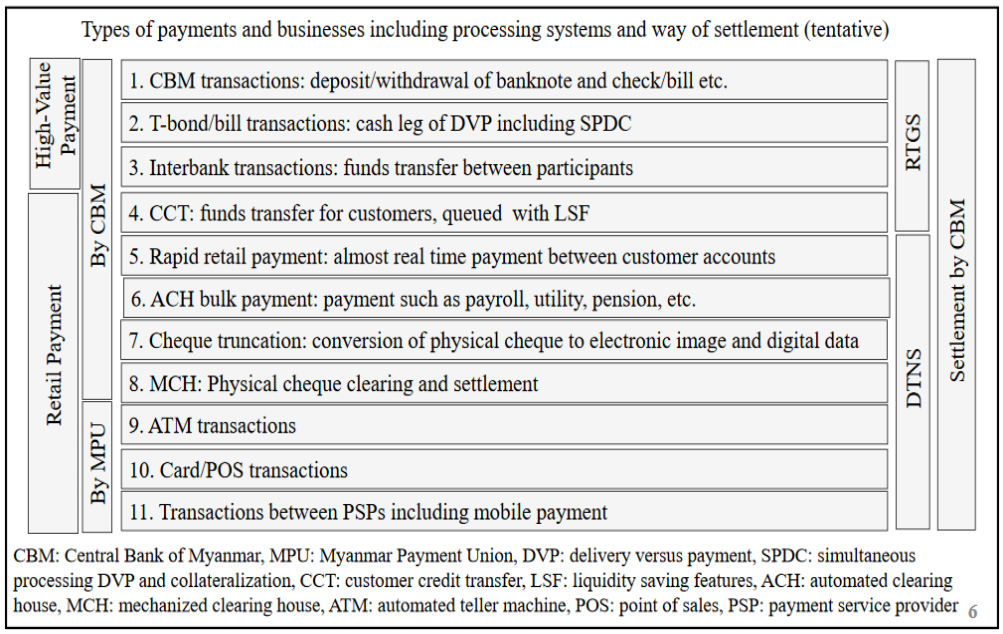
(d) Transition period in the mode of payment from cash based to bank account or mobile payments

(e) CBM-NET needs to be upgraded to meet and accommodate the above momentum

(f) Modernizing financial sector will help Myanmar economy develop at faster pace. Improved CBM-NET is a driving engine and basis for this.

(g) Achieving Financial Stability through Finance System that can support the sustainable long-term development of households, farmers, and businesses (Economic Policy of the Union of Myanmar: 2016)

Figure (3.3) Types of Payments and Businesses



Source – JICA-CBM Expert Team

3.8 Mechanized Clearing House

he central ization of test clearing is a function of the MCH. One MCH reads the test data, the calculation and sorting are done automatically. In order to facilitate MCH, passing instruments are expected to be provided in a standard format. Member banks issue uniform checks on which all products of the Magnetic Ink Character Recognition (MICR) band are printed using MICR encoders.

Before bringing cheques into the clearing house, participating Member banks encode the amount on each cheque, and necessary information (total number and amount of cheques, etc.) on attached slips using the MICR encoders.

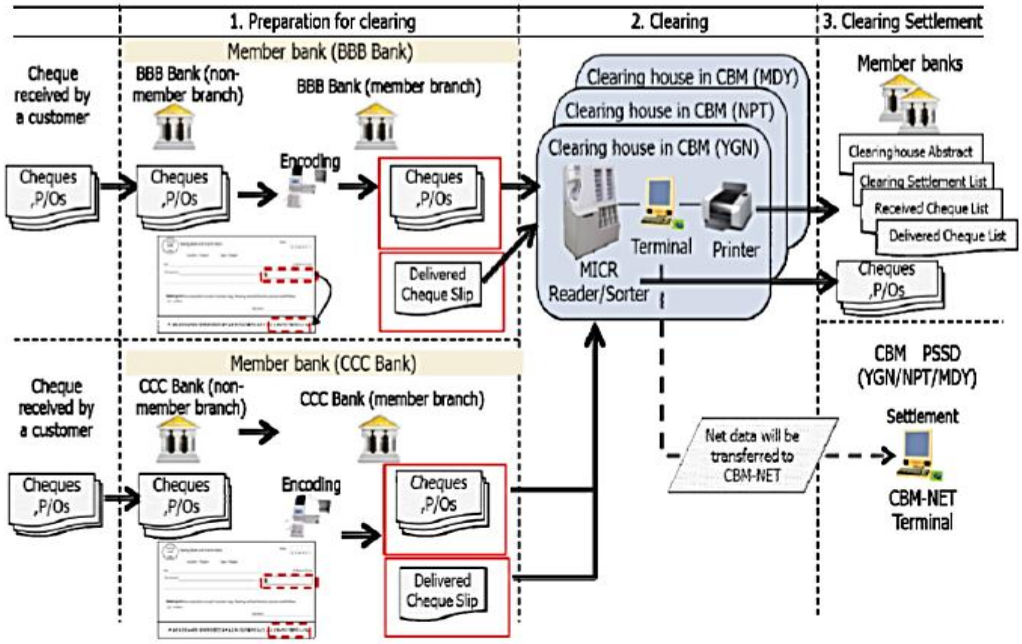
(a) Clearing house aggregates and calculates net position automatically using MICR Reader/ sorter. Net position data can be transferred to CBM-NET applications electronically.

(b) Cheque clearing result (net position data) can be settled in CBM-NET applications. Overview procedure of MCH is shown in following chart.

(c) In figure (3.7) It shows that the procedure of cheque and data processing from Government and Private bank vise visa to CBM (Yangon, Mandalay, Naypyidaw) by using MCH new system. In MCH, all of banks need to use MICR Encoder, MICR Reader/Sorter and Cheque issuing format. Issuing bank prints account number, cheque number, issuing branch code, issuing bank code, clearing location, and type on cheques/payment orders, using a MICR encoder. The printing place is shown in

(d) the red frame of the following figure (8.6). It shows that this cheque is new issue for MCH system and Customer used started at January 2016.

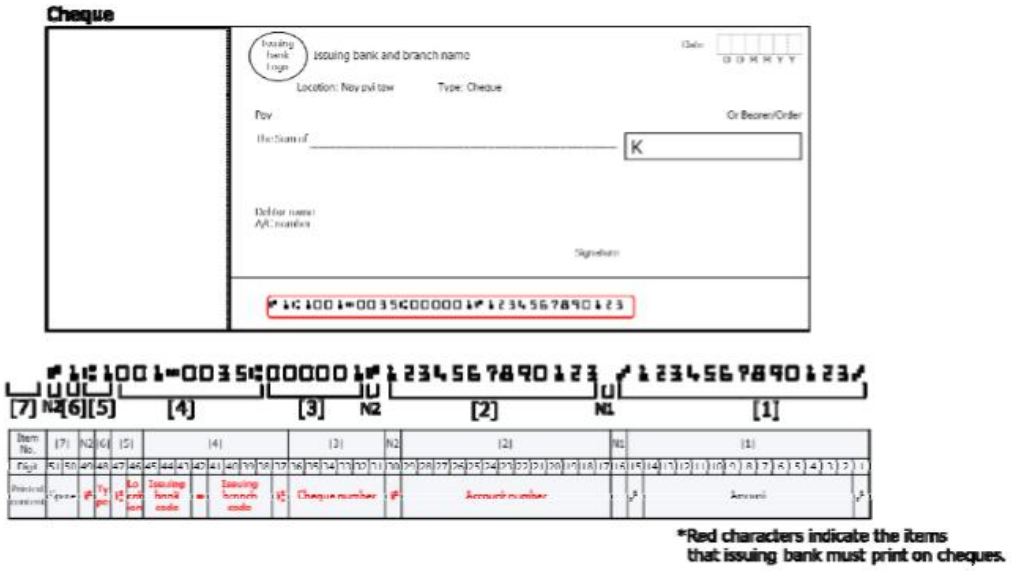
Figure (3.4) Overview Procedure of MCH



Source – Central Bank of Myanmar

As well as the new core banking system, CBM is also purchasing a new automated clearing house (ACH) for payment settlement, as well as equipment for both new systems to operate. This network, based in Yangon, funded CBM's two other offices in Mandalay and Naypyidaw Head Office. NTTDATA has also formed a subsidiary in Myanmar that will carry out the work of the project and will provide for further business in the country.

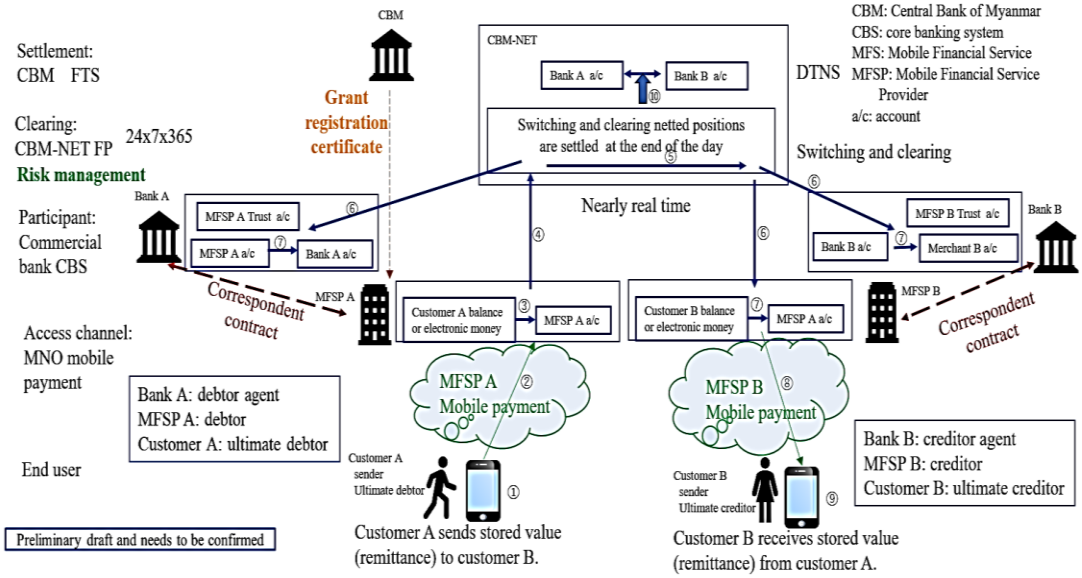
Figure (3.5) Cheque Truncation System of MCH



Source – Central Bank of Myanmar

Figure (3.6) Middle Value Payment for both BP and FP of CBM-NET ACH

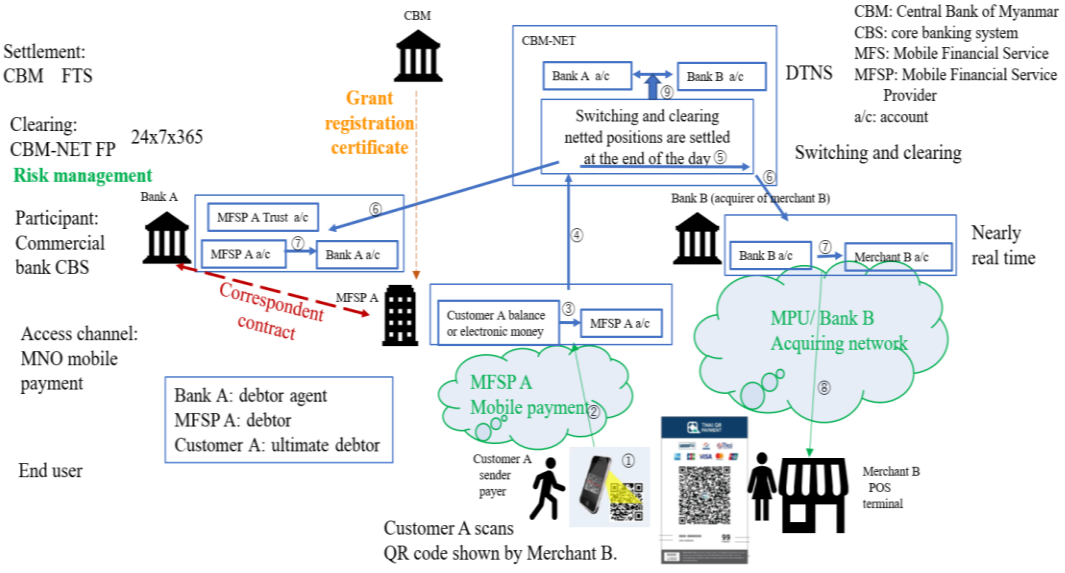
Mobile remittance: Customer A having some mobile phone balance or mobile (electronic) money issued by MFSPA sends the mobile balance or money to customer B through MFSP B which opens a/c at Bank B. MFSP A and B are Switching participants of CBM-NET (FP of CBM-NET ACH)



Source – JICA (CBM) Survey Team

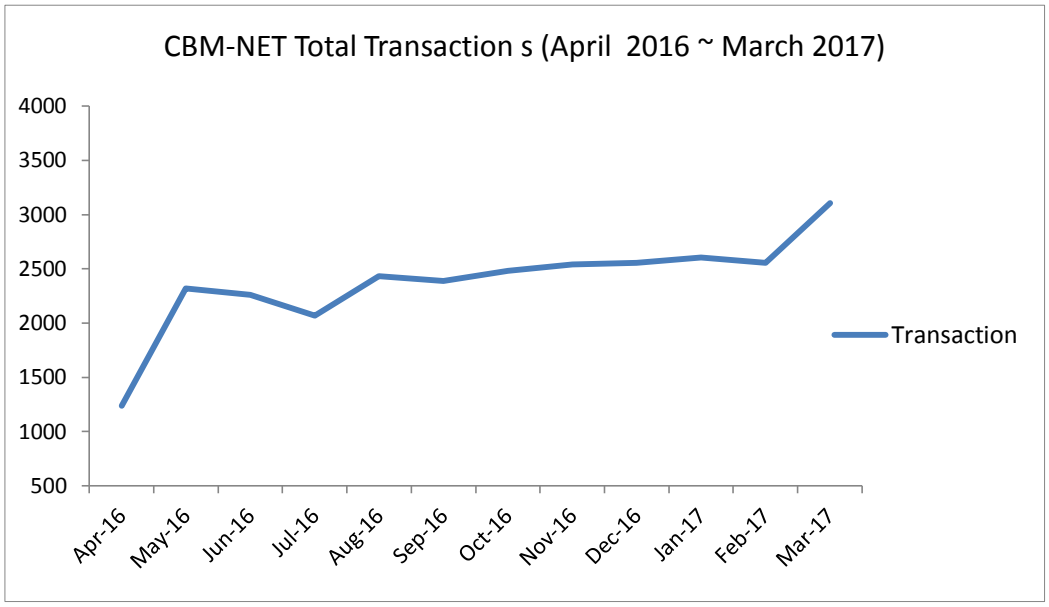
Figure (3.7) Middle Value Payment for both BP and FP of CBM-NET ACH

Mobile payment: Customer A having some mobile phone balance or mobile (electronic) money issued by MFSP A can be used for the payment to Merchant B having an account at Bank B through mobile payment of the MFSP which will be a Switching participant of CBM-NET (FP of CBM-NET ACH is used)



Source – Central Bank of Myanmar

Figure (3.8) CBM-NET Total Transactions (April 2016 ~ March 2017)



Source – Central Bank of Myanmar

3.9 Myanmar Payment Union

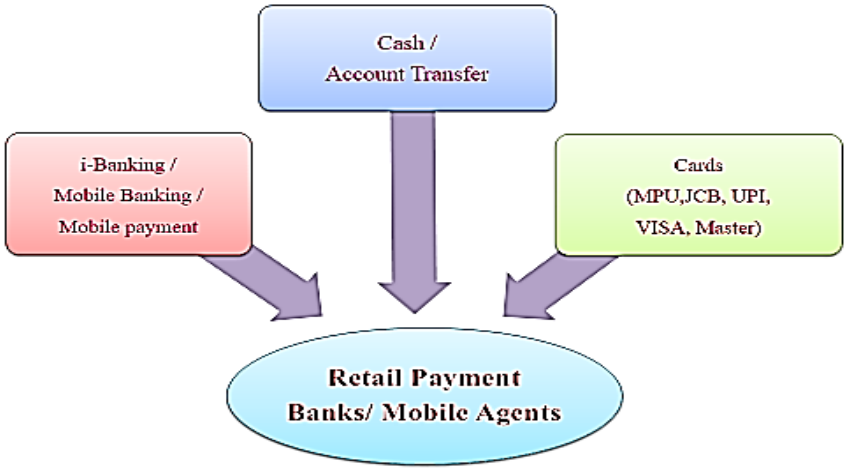
Under the guidance and supervision of the Myanmar Payment and Settlement Development Committee (MPSDC), the MPU was formed on 15 November 2011 to issue the Myanmar Payment Union Card, which can be used in all sectors covered by the Banking Network.

Beginning time, MPU member banks consist of 3 state-owned banks and 14 domestic private banks, with the total number of member banks now exceeding 30 members and all international branches. All members of the MPU must contribute equal shares of income. At the initial stage, MPU cards can be used in the major cities of Yangon, Naypyidaw and Mandalay, and the expansion of the network is currently taking place throughout the whole currency as of better connectivity.

Myanmar Payment Union (MPU) debit cards and credit cards have already been implemented and the MPU has initiated the issuance of the MPU debit card by member banks since late 2012 and the acquisition of the international payment scheme (JCB, UPI) in early 2013 by the MPU member banks network. The main objective of the MPU is to develop the exchanging of national payments and the sharing of resources between the Member Bank, As a result, a more accessible and secure card payment system eliminates the transition from cash-based payment to cash-based payment using a digital payment

process. MPU debit cards can be used to make payments to merchant POS terminals as well as to withdraw cash from any member bank's automatic teller machine.

Figure (3.9) Retail Payment System



Source – Central Bank of Myanmar

3.10 Myanmar Financial Services

In December 2013, the Central Bank of Myanmar issued a Mobile Banking Directive establishing a bank-led model for the provision of mobile banking services. In March 2016, the CBM published the Mobile Financial Services Regulation and the Regulation on the expansion of the Myanmar Financial Services sector to allow non-bank entities such as MNOs and third parties to provide such services. MFS Regulations allow MNOs or any non-bank organization to first set up a dedicated entity as an MFS provider. The MFS Regulations promote the 'Know Your Customer (KYC) Policy, which makes it much easier for someone to open an account.

In January 2017, the CBM removed all limitations on the provision of financial services, and then the CBM allowed all international payment firms on the market to prevent local companies from controlling the market. With the goal of significantly moving from cash-based to digital economies within the country, the CBM has created incentives for all international payment providers to be able to connect the unbanked in Myanmar. In 2018, the four non-bank organizations especially Mobile Network Organization (MNO) and eight bank organizations are created mobile wallet and mobile payment service players in Myanmar. Wave Money, M Pitesan, MPT Pay, Mytel Pay and OK$ are provided by non-bank organization and My Kyats, Easy Mobile, CB Pay, 663, MAB, AGD Pay, KBZ

Pay, K Pay and On Go mobile wallets are provided by bank organization. Mobile Financial Services License companies are needed to follow the CBM rules and regulation, especially transaction limits and know Your Customer and Customer Due Diligence (KYC/CDD). For the purpose of AML/CFT requirements, MFS accounts are categorized into three levels: Level-1 and Level-2 for individual and Level-3 for registration. KYC/CDD requirements are required and proper record keeping is necessary for all account opening. The cumulative transaction limits and maximum balance limits can vary from time to time by the Central Bank.

Mobile Financial Service Licensing companies are introducing mobile financial services that are capable of providing interoperable services to other MFS Licensing companies at different levels of interoperability. This is suitable for making demands, including on agents, customers or mobile platforms. Several commercial banks have provided MFS services to the Central Bank and have pursued the provision of MFS services to Central Bank and they followed the provision of these regulations as they do not conflict with the Financial Institutions Law. Non-compliance of these regulations shall constitute and offence under the Financial Institution Law (2016).

3.11 Development of Mobile Financial Services in Myanmar

In Myanmar, financial system remains largely denominated by bank, the non-bank and Fintech sector is on route to growth and likely be playing a key role in the country's modernization push. The total of Merchants for POS using member banks are 18,112, ATMs of MPU member banks are 3,474 and Total MPU cards are 6,009,061 Debit cards, 141,103 credit cards and 2,004,236 Co-brand cards.

Table (3.2) Background information of Cards Issuing and Acquiring Processes

Sr. No	Card's Name	Launching dates	Remark
1	MPU Debit Cards	14- 9- 2012	
2	MPU Credit Cards	7- 5- 2015	
3	Co-Brand Cards Issue	4-11-2015	
4	UPI Cards (Acq) in Myanmar	23- 2- 2013	Co-Brand Cards MOU 4- 2- 2015
5	JCB Cards (Acq) in Myanmar	27-12- 2013	Co-Brand Cards MOU 9- 1- 2015
6	MPU e-commerce	13- 2- 2015	
7	MPU&NETS MoU Signing	26- 4 2019	

Source – Myanmar Payment Union, 2019

There are (13) banks accepting UPI / JCB cards in Myanmar; AGD, AYA, CB, KBZ, MAB, MOB, MWD, MCB, SMIDB, UAB, INNWA, MFTB and CHDB, accepting banks of e-commerce (12) banks; AGD, AYA, CB, CHDB, MCB, MEB, MOB, MWD, SMIDB, UAB and YOMA, accepting merchants of e-commerce (162). Credit cards issuance and current continuous banks are CB, KBZ, AYA and MOB and then MPU-UPI Co-Brand Cards and MPU-JCB Co-Brand Cards are issued by AGD, CB, MOB, AYA and KBZ currently.

Table (3.3) MPU Members Lists up to May, 2019

Sr. No	State-owned Bank (3)	Private Banks (25)	System-live members (20)	Member Banks under processes
1	MEB	AGD	MCB	MMB
2	MFTB	AYA	MWD	FPB
3	MICB	CB	MOB	GFDB
4		CHDB	TUN	A-BANK
5		GTB	KBZ	MTB
6		INNWA	INNWA	MDB
7		KBZ	CB	NSB
8		MAB	AGD	
9		MCB	AYA	
10		MMB	MAB	
11		MOB	SMIDB	
12		MWD	UAB	
13		RDB	MFTB	
14		SMIDB	CHDB	
15		SRUDB	MEB	
16		TCB	RDB	
17		UAB	SURDB	
18		YCB	YOMA	
19		YOMA	YCB	
20		FPB	MICB	
21		GFDB		
22		A-Bank		
23		MTB		
24		MDB		
25		NSB		

Source – Myanmar Payment Union, 2019

MPU new NPS SIT to MPU New NPS plan is to be implemented Go-Live on (27-7-2018) by three groups of action plan;

1. 1st Group = SURDB, YOMA and AYA
2. 2nd Group = CHDB, MWD, SMIDB, INNWA, MEB and MFTB
3. 3rd Group = YCB, AGD, FPB, KBZ, UAB, TCB and RDB

The processing stages of two groups of New IST SWITCH are as follows;

1. 1st Group (Go-Live) = AYA, YOMA, MWD, CHDB, MFTB, YCB, UAB, TCB and RDB.
2. 2nd Group (SIT/UAT) = SHWE

The key players of mobile financial services are banks, MNOs, Regulators, Payment services providers and Agents/ Retail Networks. Banks offer banking services and hold float or account in customers' name. Bank provide the services such as full banking relationships and promote the usage of new banking channels with new clients. (MSME and Corporate Clients) MNOs provide infrastructure and communications services and acquire clients, super agents. Agents provide cash-in, cash-out and account opening functions and support customer services, sale and marketing. Payment Services Provider (PSPs) provide payment infrastructure and IT platforms. Regulators provide enabling environment and protect stability of financial system. Regulators are encouraged and protect behavior change.

Mobile wallets allow the customer to pay the Utility bill, Wage disbursement, Business-to-Business Supply Chain Payments, Mobile Trade, Retailer and Agent Banking. Mobile Wallet can handle banking transactions from home easily 24 hours a day. As a result of this factor, mobile wallet customers can better manage their financing and corporate (or) MSME customer enable specific growth opportunities with corporate and SME clients, generating with banks to get involved and boosting overall penetrating and volume. Customer can register easily for mobile wallet from mobile with NRC, License or passport.

According to Fintech, Singapore's 2018 report, just 5 per cent of Myanmar's population has a formal bank account and 2 per cent has a bank card, but Myanmar's 95 per cent mobile penetration makes a fertile ground for mobile penetration a fertile ground for mobile revaluation. The arrival of the mobile financial services and Fintech in the past years has opened up new opportunities in the southeast Asia Market (Fintech, sg, 2018)

3.12 Access to and Reach of Mobile Infrastructure

The state-owned operator Myanmar Posts and Telecommunications (MPT) held a monopoly on the telecommunications industry until June 2013. Network coverage was

limited to Yangon and a few other cities, leaving rural areas largely without access to mobile networks. Mobile penetration levels, however, increased rapidly with the licensing of Telenor and Ooredoo in 2013, followed by Mytel in March, 2018, providing a positive outlook for the deployment of DFS to reach rural segments. Key figures on Myanmar's mobile infrastructure are highlighted below.

Myanmar has undergone significant reforms in the financial sector in its transition to a market-based economy over the last year. The Financial Institutions Act (2016) opened the market to non-bank payment service providers. Financial reforms have rapidly changed the way people, businesses and the government make payments and demand for efficient payments using a modern payment instrument has been increasing.

The establishment of a stable and effective National Payments System (NPS) is crucial to the growth of the financial sector and to economic development in Myanmar. The CBM and the Government of Myanmar have played a key role in modernizing the NPS.

The following are the key milestones that support the development of the NPS.

- The financial institutions law has introduced some important elements of a modern legal basis supporting payments, payment systems and instruments, including innovative payment instruments, and has opened payment services to non-bank financial institutions.
- The system is developing payment systems, alongside with regulations and its payment oversight function in order to respond to the needs of the fast-changing payment industry and the economy as a whole.
- The CBM is
  (i) operating an interbank payment system for large-value payments called CBM Financial Network System (CBM-NET);
  (ii) supporting the banking industry in developing interoperable infrastructure for card payments; and
  (iii) promoting the adoption of innovative payment instruments and services.

In addition, the rapidly changing payment environment around the world, driven mainly by technological innovators, has resulted in the introduction of new payment instruments, payment platforms and services, in particular for retail payments. Such international developments have also been seen in Myanmar and have given rise to new challenges for payment service providers and regulatory authorities, and need to be addressed in timely manner.

Further measures are needed to remove possible obstacles to the adoption of new payment systems and electronic payment instruments. The current Interbank High Value Payment System (CBM-NET) also lacks some key features that would make it possible for participants to reduce costs and speed up settlement. Innovative payment devices, such as e-money and digital payment systems, are gaining popularity among the urban population mostly due to the dramatic increase in mobile phone penetration and internet penetration.

Banks are the main payment service providers in Myanmar. The modernization is supported by the World Bank (WB) and is a key step towards enabling the migration of payments, including government payments, to electronic means. One of the major parts of the population is unbanked. According to the Global Index of the World Bank, only 26 percent of adults (age 18+) have a transaction account, compared to a regional average of 70.6 percent have not been middle income countries average of 57.8 percent. Of these account, 10 percent have not been used over the previous year and as such to be considered inactive. Lack of access to a basic account leads to lack of access to electronic payment instrument and services and to heavy reliance on cash for making payments.

Prudential legislation and the participation of regulators are key to the growth of the electronic payment system in Myanmar. The rules and regulations need to protect traders and customers in the implementation of electronic payments. Once cardholders are aware of the benefits of electronic payments, such as security and convenience of cards, electronic payments are likely to become common in Myanmar. Commercial banks provide payment services by introducing these new types of banking facilities are as follows:

(a) Automated Teller Machines (ATM)

Automated Teller Machine (ATM) cards were first introduced in Myanmar in 1995. The May Flower Bank was established. Nevertheless, these services were discontinued in 2003 when a number of financial lending firms collapsed across the country, leading to widespread panic and temporary suspension of banking activities. In November 2011, the Cooperative Bank of Myanmar (CB Bank) and KBZ Bank were the first to reintroduce ATM cards, followed by three other banks: Myawaddy Bank, Asia Green Development Bank and Ayeyarwady Bank. After December 2017, ATM machines were located in Yangon, Mandalay, Taungoo, Naypyidaw, Pyinmana and other cities across Myanmar. ATM accounts could be opened with a minimum amount of K10,000 while the maximum withdrawal amount per day is K 1,000,000 and per transaction is K 3,000,000.

(b) Payment Card Issuance

In 2012, the Central Bank of Myanmar released an electronic payment card regulation for the production of a payment card. The creation of the MPU and the issuance of debit and credit cards for domestic market use is one of improvements for the financial sector, and the extension of the e-commerce payment channel and the issuance of international co-branded cards is the development stage for the payment mechanism in Myanmar. It is not easy to set up a secure payment network without sound and stable infrastructure such as communication, electricity, which is vital to the growth of the payment sector.

(c) Mobile Banking

The Mobile Banking Directive issued by CBM in 2012 offers a bank-led model in which an agent may collaborate with a bank to register customers for services and conduct cash and cash transactions. In addition, technical service providers, financial service providers and mobile network operators may be appointed as agents for the provision of mobile banking services. There can be seen the potential for expansion of mobile banking network through (1) Mobile Network Operators (2) Microfinance Institutions (3) Other Financial Services Providers. Additionally, to reap the benefit of the mobile financial services including –

1. Access to the banking facilities without visiting the bank;
2. Save time and transportation costs;
3. Promote financial inclusion;
4. Help to transform the current cash-based economy to a lesser cash-based one;
5. Minimize cost of banks to expand banking network.

(d) Electronic Fund Transfer (EFT)

The Myanmar Payment System Development Committee (MPSDC) was founded in 2008 to develop a payment mechanism in Myanmar. The Committee has also set up an Electronic Fund Transfer (EFT) to allow banks to transfer funds. The Electronic Fund Transfer (EFT) was introduced in December 2011 to enable banks to make large value transfers through EFT. It is run by the Central Bank of Myanmar. This scheme is available to both Stated-Owned Banks and Private Banks. Both participating banks can submit payment instructions quickly, and these payments are settled almost in real time.

(e) Point-of-Sale (POS)

Point-of-sale (POS) which means that card holder will be able to pay for services and goods in big chain stores that will have agreements with these banks, and interbank

payment system which means that card holders will be able to withdraw money at any bank participating in Myanmar Payment Union (MPU) system.

3.13 Usage of Electronic Payment System in Myanmar

The potential for electronic and digital payments to promote financial inclusion is immense. Myanmar's population is young, mobile phone penetration is increasing rapidly and CBM is opening up the market to international players such as foreign payment firms. Nonetheless, in order to fully exploit this opportunity, the government will need to continue reforming the fundamental structures of the financial sector that is only now catching up with global development.

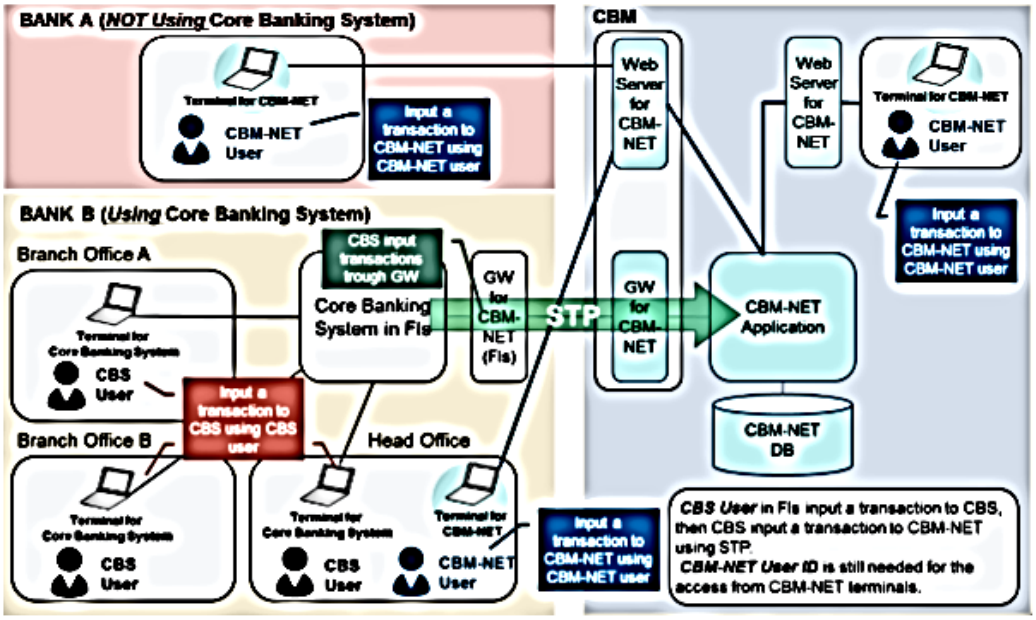
In January 2016, the new Financial Institutions Act was promulgated to replace the obsolete 1990 Act. This includes parts related to digital banking, and some observers have said border legislation will serve as a new platform for the financial sector to drive electronic transactions. Improvements are already clear. Several private banks have recently started issuing credit cards for the first time in more than a decade, even though Myanmar still does not have a credit bureau.

According to MPU (GIZ, 2016 report), 1.8 million cards are in use, which can be used at about 1,500 ATM Machines and 3,000 POS terminals across the country. In some cases, the holder of the card has also used overseas as a result of agreements between MPU and two international card providers, the Japan Credit Bureau (JCB) and the Union Pay International (UPI) of China.

3.14 Overview of Core-Banking System (CBS) Transformation in Myanmar

Building IT infrastructure for the modernization of banking is another challenging task for private banks in Myanmar. Selection of suitable partners, programs and CBS at reasonable cost, and giving trainings on IT to their staff are sometimes complex and time consuming and need heavy investment.

Figure (3.10) Direct Connections of CBM-NET with Participant Core-Banking System (CBS)



Source – JICA – CBM Expert Group

(a) CBS Vendor and Private Banks' CBS Usage

Myanmar continues to pose a challenging environment for banking transformation. The path forward will definitely not always be easy: the various challenges and risks to the banking transformation process, particularly in the context of CORE Banking Transformation, are too big. There are two big providers of banking solutions in Myanmar, such as ACE and MIT. ACE Data Systems Ltd. was established in 1992 as a small software company and IT training center.

Nowadays, the ACE Data Systems Group has developed into a group of nineteen companies with over six hundred employees working in software development and system integration, outsourcing, IT infrastructure and cyber security, education and e-commerce. ACE Data Systems Ltd. is a leader in the software industry. (ACE) launched the first computerized accounting system in Myanmar in 1993. Subsequently, ACE implemented various software solutions for the banking and finance sector with INFOSYS Finacle Banking Solution, the retail and distribution industry, the manufacturing, hotel, tourism and hospitality industries, and became Myanmar's leading software development and system integration business.

Table (3.4) Banking Software Usage of Private Banks in Myanmar

No.	Name of Bank	CBS Vendor Information
1	Myanmar Citizens Bank Ltd	TEMENOS-T24
2	First Private Bank Ltd	Finastra (MISYS)-Fusion Essence
3	Co-operative Bank Ltd	TEMENOS-T24
4	Yadanabon Bank Ltd	MIT-iCBS
5	Myawaddy Bank Ltd	INFOSYS-Finacle
6	Yangon City Bank Ltd	MIT-iCBS
7	Yoma Bank Ltd	MISYS-Fusion Essence
8	Myanmar Oriental Bank Ltd	TEMENOS-T24
9	Asia Yangon Bank Ltd	MIT-iCBS
10	Tun Foundation Bank Ltd	Oracle FLEXCUBE
11	Kanbawza Bank Ltd	Oracle FLEXCUBE
12	Small & Medium Enterprise Development Bank	ACE-IBS, IBL
13	Global Treasure Bank Ltd	INFOSYS-Finacle
14	Rural Development Bank Ltd	MIT-iCBS
15	Innwa Bank Ltd	ACE-IBS, IBL
16	Asia Green Development Bank Ltd	INFOSYS-Finacle
17	Ayeyarwaddy Bank Ltd	JITS-Max7, MISYS-Fusion Essence
18	United Amara Bank Ltd	NEPAL (Mercantile Office System) PUMUORI Enterprise
19	Myanma Apex Bank Ltd	Oracle FLEXCUBE
20	Naypyitaw Sibin Bank Limited	MIT-iCBS
21	Myanmar Microfinance Bank Limited	TEMENOS-T24
22	Construction and Housing Development Bank Ltd.	TEMENOS-T24
23	Shwe Rural and Urban Development Bank	Oracle FLEXCUBE
24	Ayeyarwaddy Farmers Development Bank (A Bank)	INFOSYS-Finacle
25	Glory Farmer Development Bank (G Bank)	ACE-IBS, IBL
26	Mineral Development Bank	MIT-iCBS
27	Myanma Tourism Bank	Oracle FLEXCUBE

Source – Survey Data, 2019

MIT provides a comprehensive suite of integrated core banking solutions powered by the new Oracle FLEXCUBE Banking System, Service-Oriented Architecture (SOA) and Open Standards technologies. MIT remains at the forefront of digital banking transformation in Myanmar as we have made 1st ATM, National Payment Network, International Card Payment and Mobile Banking a technology partner. Today, MIT is

capitalizing on 20 years of experience to help customers thrive in digital age delivering safe and secure innovative technologies.

Table (3.5) CORE Banking Solution Usage of Private Banks in Myanmar

No.	Name of Bank	CBS Vendor Name
1	Myanmar Citizens Bank Ltd	TEMENOS-T24
2	First Private Bank Ltd	Finastra (MISYS)-Fusion Essence
3	Co-operative Bank Ltd	TEMENOS-T24
4	Myawaddy Bank Ltd	INFOSYS-Finacle
5	Yoma Bank Ltd	MISYS-Fusion Essence
6	Myanmar Oriental Bank Ltd	TEMENOS-T24
7	Tun Foundation Bank Ltd	Oracle FLEXCBUE
8	Kanbawza Bank Ltd	Oracle FLEXCBUE
9	Global Treasure Bank Ltd	INFOSYS-Finacle
10	Asia Green Development Bank Ltd	INFOSYS-Finacle
11	Ayeyarwady Bank Ltd	JITS-Max7, MISYS-Fusion Essence
12	United Amara Bank Ltd	NEPAL_PUMUORI
13	Myanma Apex Bank Ltd	Oracle FLEXCBUE
14	Myanmar Microfinance Bank Ltd	TEMENOS-T24
15	Construction and Housing Development Bank Ltd.	TEMENOS-T24
16	Shwe Rural and Urban Development Bank Ltd.	Oracle FLEXCBUE
17	Ayeyarwady Farmers Development Bank Ltd.	INFOSYS-Finacle
18	Myanma Tourism Bank	Oracle FLEXCBUE

Sources: Surveyed Data, 2019

Twenty years of continuous growth is a clear testimony to the confidence and interest of our customers in what MIT does. Today, MIT is a team of 400 professionals from five offices in Myanmar and Singapore, with the development work concentrated at the MIT Innovation Hub in Yangon. Table (3.4) shows that 27 private banks in Myanmar are currently using the respective vendor's banking software. Nine Private Banks still use a distributed banking system that is not centralized international banking applications. These

banks include Yadanabon Bank, Yangon City Bank, Asia Yangon Bank, Small and Medium Enterprise Development Bank, Rural Development Bank, Innwa Bank, Naypyidaw Sibin Bank, Glory Farmer Development Bank Limited (G Bank) and Mineral Development Bank.

And Table (3.5) shows that currently (18) Private banks are using the international CORE banking solution. Myanmar Citizens Bank, Myanmar Oriental Bank, Building and Housing Development Bank (renamed Construction, Housing and Infrastructure Development Bank), Co-operative Bank and Myanmar Microfinance Bank use TEMENOS-T24 CBS, the largest customer in Myanmar Bank Market. Yoma Bank, First Private Bank and AYA Bank selected MISYS-Fusion Essence CBS which is called now as Finastra core banking solutions.

(b) The Role of Payment System

The Payment and Settlement System (PSS) plays a key role in economic and financial growth. A stable and effective payment system leads to the preservation and promotion of financial stability and economic growth. The successful operation of monetary policy relies on the orderly settlement of transactions and the efficient distribution of liquidity. Payment systems that function properly therefore enhance the stability of the financial system, reduce transaction costs in the economy, promote the efficient use of financial resources, improve financial market liquidity and facilitate the conduct of monetary policy. The central bank has a legitimate and important role to play in ensuring the safety, soundness, efficiency and fairness of the payment process. As the lender of last resort, it is important for the central bank to have the knowledge and the means to supervise and, if necessary, to assist the institutions involved in the payment system. Given the role of the central bank and its special obligation to avoid systemic risk, any new value-added mechanism needs particular attention from the central bank. Like the rest of the other central banks, the Central Bank of Myanmar (CBM) is in charge of monetary and financial stability and supports the development of the national economy.

In compliance with the regulations on the financial sector, the CBM implements monetary policy to preserve economic stability and ensure the smooth functioning of the financial system. In this regard, the CBM has a significant role to play in maintaining a stable and sound payment and settlement system (PSS) and establishing an effective PSS system in Myanmar. The CBM is also committed to improving the reliability of the payment mechanism. In order to facilitate the smooth

functioning of the payment system, the CBM offers intraday liquidity support (ILS) to financial institutions that have opened accounts at the Central Bank for a period not exceeding 92 days for government-guaranteed securities.

3.17 Usage of Cards by using ATM and POS

ATM cards were first introduced in Myanmar in 1995. The May Flower Bank was established. Nevertheless, this service was discontinued in 2003 when a number of financial lending firms collapsed across the country, leading to widespread panic and temporary suspension of banking activities. The Co-operative Bank of Myanmar (CB bank) and KBZ were the first to reintroduce ATMs in November 2011, the Co-operative Bank of Myanmar (CB bank) and KBZ were the first to re-introduce ATM cards, later another three banks offered this service: Myawaddy Bank, Asia Green Development Bank and Ayeyarwady Bank. ATM machines can be found in Yangon, Mandalay, Taungoo, Naypyidaw, Pyinmanar and some other cities.

Table (3.6) Payment Channels Slightly Increase in Every Year in Banking Industry

No	Banks	Cash	Cheques	PO/ Credit Transfer	Debit	e-commerce	Mobile	Internet
1	Myanmar Citizens Bank Ltd.	Â	Â	Â	Â	Â		
2	First Private Bank Ltd		Â	Â	Â		Â	
3	Co-operative Bank Ltd	Â	Â	Â	Â	Â	Â	Â
4	Yadanabon Bank Ltd	Â	Â	Â	Â			
5	Myawaddy Bank Ltd	Â	Â	Â	Â	Â	Â	
6	Yangon City Bank Ltd	Â	Â	Â	Â			
7	Yoma Bank Ltd	Â	Â	Â	Â			
8	Myanmar Orient Bank Ltd	Â	Â	Â	Â	Â		
9	Asia Yangon Bank Ltd	Â	Â	Â	Â			
10	Tun Foundation Bank Ltd	Â	Â	Â	Â	Â		
11	Kanbawza Bank Ltd	Â	Â	Â	Â	Â	Â	Â
12	Small & Medium Enterprise Development Bank Ltd	Â	Â	Â	Â	Â		
13	Global Treasure Bank Ltd	Â	Â	Â	Â			
14	Rual Development Bank Ltd	Â	Â	Â	Â			
15	Innwa Bank Ltd	Â	Â	Â	Â	Â	Â	
16	Asia Green Development Bank Ltd	Â	Â	Â		Â		
17	Ayeyarwaddy Bank Ltd	Â	Â	Â	Â	Â	Â	Â
18	United Amara Bank Ltd	Â	Â	Â		Â		
19	Myanma Apex Bank Ltd	Â	Â	Â		Â		
20	Naypyidaw Sibin Bank Limited	Â	Â	Â				

No	Banks	Cash	Cheques	PO/ Credit Transfer	Debit	e-commerce	Mobile	Internet
21	Myanmar Microfinance Bank Limited	Â	Â	Â		Â		
22	Construction and Housing Development Bank Limited	Â		Â		Â		
23	Shwe Rural and Urban Development Bank Limited	Â	Â	Â				

Source: Central Bank of Myanmar, Myanmar Payment Union, 2019

ATM machines are available at banks' branches and also shopping centers. ATM accounts can be opened with a minimum amount of K 10,000 while the maximum withdrawal amount per day is K 1,000,000 and per transaction is K 300,000. According to Table (4.1), payment channels slightly increased and the digital banking services can be supported in the banking industry as per above-mentioned.

According to Table (3.7) Total card holders are over 10,000,000 and it is over 18.87% of total populations in June' 2019. So we can say that the ATM transactions is getting increase year by year but it doesn't mean payment is developed. It has convenient for customer to access banking service 24/7 and as a bank, not necessary to open the branch at every location, they can reduce the operational overhead cost. And total numbers of ATM are over 3731 and transaction volume is K 1,244,544 million in June' 2019. Therefore, the ATM service is in introductory stage in Myanmar with customers being able to withdraw money only at the ATM machine of the bank that issued the card. The services that are expected to be introduced next are point of sale (POS) which means that ATM card holders will be able to pay for services and goods in big chain stores that will have agreements with these banks, and interbank payment system which means that card holders will be able to withdraw money at any bank participating in the Myanmar Payment Union (MPU) system.

Table (3.7) ATM Transaction October 2012 to June 2019

Financial Year	No. of Card Holders	% of Population	No. of ATM	Transaction Amount (Kyats in Million)
FY Oct'12-Mar'13	>50000	-	>200	3,700
FY Apr'13-Mar'14	>500,000	>.94%	>600	37,700
FY Oct'14-Mar'15	>1,500,000	>2.83%	>1200	137,600
FY Apr'15-Mar'16	>2,800,000	>5.28%	>1800	287,200
FY Oct'16-Mar'17	4,300,000	8.11%	>2414	420,100
FY Apr'17-Mar'18	>6,500,000	>12.26%	>3123	651,200
FY Oct'18-Mar'19	>8,300,000	>15.66%	>3449	930,367
FYApr'19-June'19	>10,000,000	>18.87%	>3731	1,244,544

Source: Myanmar Payment Union**.** 2019

In accordance with Table (3.8) Total numbers of POS are over 18.800 pieces, numbers of transactions 2,163,077 and transaction volumes is K 185,846 million in June' 2019. The Number of POS Transactions is always changing every month depend on the people consumption power, seasonal affair and connection failure when they use. The usage of ATM cards is greater than POS. It shows that Myanmar has still cash based economy and payment system not yet developed. Cashless payment can only drive to financial sector development which leads to the economic growth of the nation. Thus, National strategy for payment system development is needed and government must encourage for it by means of enforcement such as accepting of payment card when giving license to merchant to open a shop and giving incentives like tax rebate to merchant and cardholder who use payment card while their purchase. During the FY 2015-2019, the value of ATM increased by 107% as compared to the previous year according to table (3.7), mainly due to increase the using of ATM customers.

MPU will be a brand reflecting a national financial switching system that will interconnect all ATM and Point of Sale systems in Myanmar and will then be connected to international payment systems. State-owned banks and 27 private banks are involved in the Myanmar Payment Union. This program will be a breakthrough for Myanmar, allowing easy cash flow and payments within the country and outside the country at a later stage. This blueprint would focus on developing a national

transition for all interbank payment transactions, including ATM payments, Treasury Bond payments and interbank loans. To order for the program to function properly, the following must be ensured: a secure data center that will be a single database for all participating banks, Efficient connection between the bank's own switch and the national switch, smooth operation of the ATM network within the national switch, smooth operation of the Point-of-Sale (POS) system within the national switch, secure and high-speed use of MPU cards, use of international payment cards within the MPU network and use of MPU cards outside Myanmar.

Table (3.8) POS Transaction October 2012 to June 2019

Financial Year	No. of POSs	No. of Transactions	Transaction Amount (Kyats in Million)
FY Oct'12-Mar'13	>700	2,834	68.9
FY Apr'13-Mar'14	>2700	15,136	423.3
FY Oct'14-Mar'15	3000	7,617	366.4
FY Apr'15-Mar'16	>4500	26,841	892.1
FY Oct'16-Mar'17	8000	217,194	21,520
FY Apr'17-Mar'18	14000	1,038,097	94,443
FY Oct'18-Mar'19	>18100	1,678,611	143,511
FYApr'19-June'19	>18800	2,163,077	185,846

Source: Myanmar Payment Union**,** 2019

The use of international payment cards within the MPU network and use of MPU cards outside of Myanmar late in 2012. The committee developing MPU is working with banks in Singapore, India and Malaysia and connecting the network to the swift payment transfer system.

MPU developers have also envisaged pairing up with VISA and Chinese CUP payment card brands in the future; this means that banks will issue MPU+VISA cards or MPU+CUP cards which can then be used at any store or ATM in the world that accept these brands. VISA has already been reported as negotiating its re-entry into Myanmar with the local banks there.

3.18 Profile and Functions of selected Banks' Mobile Financial Services

This section provides the profile information of AYA Bank and AGD Bank that are now operating and they got trust from customers.

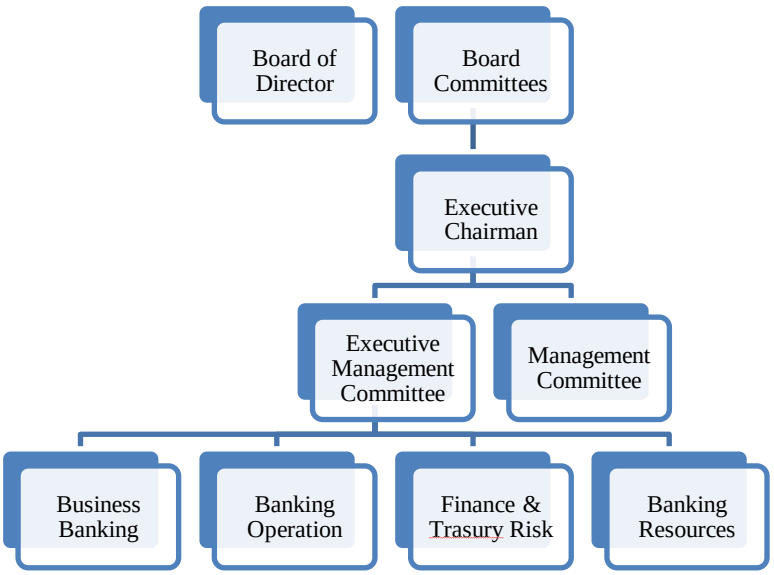
3.18.1 Profile of Ayeyarwady Bank

`Administrative bank of AYA situates in Kyauktada Township, Yangon, Myanmar. Operation Head Office is situated in Thiri Yadanar Shopping Complex, Dekhina, Naypyidaw and for international banking office; it is situated in Bo Aung Kyaw Street, Kyauktada Tsp, Yangon. In Yangon, there are 75 banks and 4 mini banks. In Mandalay, 20 banks branches and 2 mini banks and in Naypyidaw, there are 2 banks and 5 mini banks. In Taunggyi, Muse and Pathein, there are two respective banks and other states and cities, there are one bank respectively. The banking networks cover the whole country. The bank is authorized to operate as an investment or development bank for the domestic market and the approved banking activities include:

- Borrowing or Raising of money
- Lending or Advancing of Money either secured or unsecured
- Receiving Securities or Valuables for Safe Custody
- Collecting and Transmitting money and Securities
- Provides International Banking Services including international remittance, payment and trade services

AYA Bank has adhered to global governance, risk and security requirements in its management and operations. The bank has engaged talent with both domestic and international exposures and has invested heavily in training and technology as a means of ensuring long-term sustainable growth for the business and the community it serves. At the same time, the Bank's objective is to improve its governance, risk and enforcement framework as a measure to ensure balance and maintain growth. AYA Bank's products are deposits, loans and advances, remittances, cash management, money processing, e-banking, commercial services, AYA Royal Banking and Other Services.

Figure (3.11) Organization Structure of AYA Bank



Source- Survey Data, June 2019

3.18.2 AYA Bank's Digital Banking Services

AYA bank's Digital Banking services are as the following.

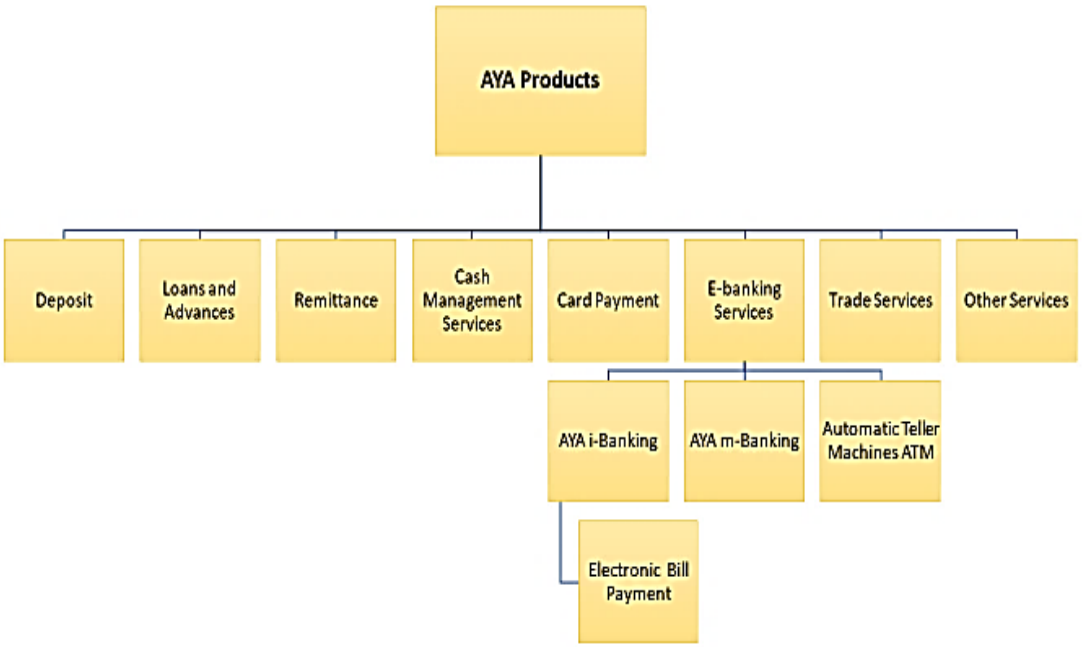
a. ATM Card
b. Internet Banking
c. Mobile Banking
d. Point of Sales

AYA Bank launched the ATM Card,e-Banking service in August 2011. Internet banking started in June 2013 and mobile banking started in January 2014. The e-banking services of AYA Bank are Automatic Teller Machine (ATM), Internet Banking and Mobile Banking. The AYA ATMs are located at 417 numbers in Myanmar. The customer must be the manager of the AYA account. ATMs allow money to be withdrawn, account balances to be reviewed, and can print a statement. ATM can use 24 hours a day, 7 days week and allow selecting the language want to use.

There are currently four different types of Internet banking products and services (e-banking services) offered by AYA Bank to all customers. We are AYA bank I also known as Internet Banking, AYA m-banking, AYA Automatic Teller Machine (ATM) and Electronic Bill Payment. AYA Internet Banking I is a web-enabled electronic delivery channel through which bank customers can perform real-time banking transactions through PCs, laptops, smartphones or other Web-enabled devices. (Ref: AYA Bank, 2019) As long

as consumers have an electronic device with access to the Internet, they can easily perform banking transactions.

Figure (3.12) AYA Bank Banking Products



Source: AYA Bank, 2019

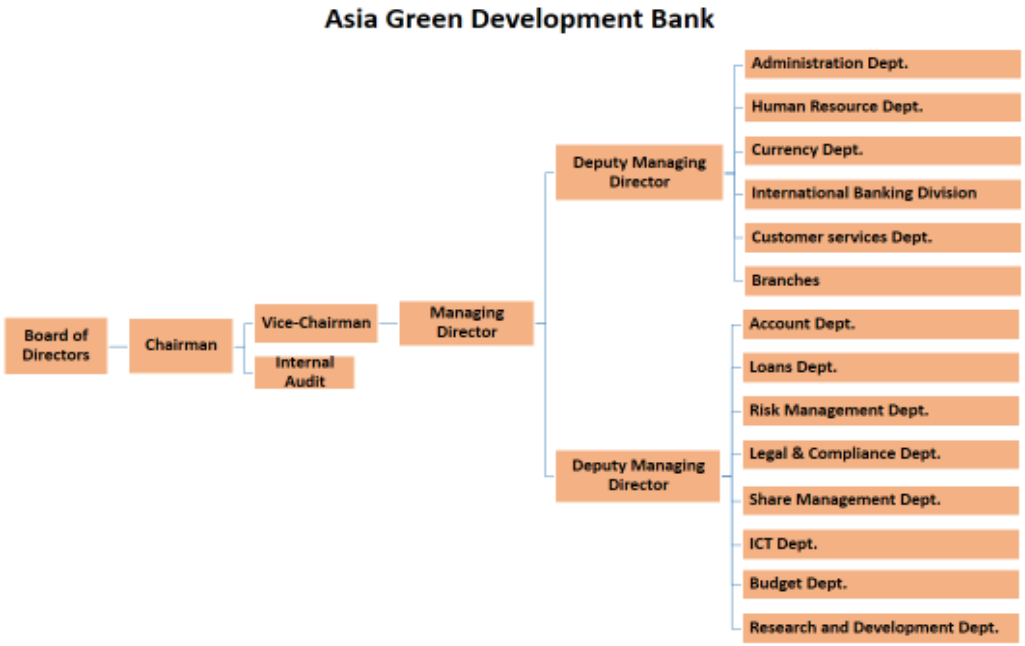
AYA Bank launched Internet Banking in June 2014 in order to provide better customer service. (Ref: AYA Bank, 2019) AYA Bank has been growing rapidly in the nine years since its establishment, and according to the AYA management team, there are currently more than 840,000 customers in total, and more than 90% of its customers are conservative and prefers traditional banking which means most of the customers do day-to-day financial transactions at the branch location. By far, only 10% of its total customers have been enrolled in Internet banking services since its inception. As a result, most of the time during banking hours, AYA banks are completely packed with customers, especially at the beginning of the month and at the end of the month, and this causes long waiting times for customers to do the It is quite challenging for the bank to accommodate all the customers at times and ensure the customer's satisfaction of banking with AYA Bank. Good customer loyalty guarantees repeat customers as well as new customers. Customer satisfaction is not an easy task. Internet banking or online banking is seen as a modern approach to providing consumers with alternative means of performing their banking transactions. Internet banking also increases operational performance and reduces costs, as well as providing a platform for offering value added services to the customer. Since there

is an Internet Banking service provides by AYA Bank, it gives the bank the opportunity to solve the issue of a long queue at the branches. Nowadays, AYA Bank offering internet banking service together with account opening stage, therefore that customer is able to access their account from internet banking.

In order to sign up for the AYA mobile banking service, the customer must be the holder of the AYA account and sign up for the Internet banking service that will provide the customer with a username, password and security device. AYA Mobile Banking is a secure mobile application for an electronic distribution platform that enables bank customers to conduct real-time banking transactions through mobile devices through Apps and SMS channel. Internet Connection is required to use Mobile Apps but not required for SMS channel. AYA Bank's mobile banking known as AYA Mobile Banking makes it easy and convenient for customers to conduct taking transactions from their mobile devices at any time of the day to their convenience in a secured manner.

3.19 Profile of AGD Bank

Figure (3.13) AGD Bank's Organization Chart



Source: AGD Bank, 2019

The AGD bank was set up in August. 2010 as a private bank limited company with an approved capital of Kyat 30 billion and a paid-up capital of 10 billion. Authorized capital and paid-up capital were increased to EUR 100 billion and EUR 27.08 billion respectively in November 2010. AGD bank limited was converted into a public company in November

2013. The paid-up capital rose three times and the paid-up share capital stands kyats 30,087 billion in 2015.

In order to improve the bank's operations and to achieve sustainable growth of the Bank, the following plans will be implement in future.

(a) To open more bank branches in towns and townships where there is economic and trading prospects;

(b) To promote new banking services, in line with advanced technology, for prompt dependable and modernized operations;

(c) To upgrade banking staffs for the bank;

(d) Innovative Competition leading bank products and services

(e) Global Access and connectivity

The AGD bank is authorized to operate as an commercial for the domestic market and the approved banking activities include:

- Saving Deposits
- Fixed Deposits
- Current Deposits
- Special Deposits
- Loans and Overdraft
- Hire-purchases
- Internal Remittance
- Payment Order
- Performance Bank Guarantee
- Foreign Banking
- Foreign Remittance
- Online Payment System
- Automated Teller Machines (ATMs)
- 24 hour call center
- Tele-Banking
- E-Banking
- E-commerce

3.19.1 AGD Bank's Digital Banking Services

AGD has more than 80 branches in Myanmar and was the first bank to provide ATMs and online banking services. It's one of the few banks with a very deep digital approach. AGD has chosen Infosys systems (HQ India, revenue USD 1 billion in 2016) for world-class back-end technology. These advanced systems are leading the way in Myanmar, enabling financial, corporate and personal banking, e-Banking, Card services with also e-Wallet and mobile banking. AGD services include: -

(a) **International Banking Services:** Foreign Currency Accounts, Foreign Exchange Services, Foreign Remittances.

(b) **On-line banking:** Remittances, checking your account balances, transaction history, on-line payment enquiries, mini statements, transfer funds, pay bills, mobile top up.

(c) **Corporate Banking:** For Businesses large and small, Company's Current, Saving and other accounts.

(d) Loans and Lending Services, Cards, Payment and Cash Management Services, and local remittances.

(e) **Card Services:** AGD secured banking card for payments at both national and international shopping malls, restaurants, hotels and other places where the individual card payment scheme is accepted. If you need cash, you can use ATMs across the world to obtain the cash. Online shopping is part of daily life and having an AGD card can help to fulfil it.

AGD Pay was also launched in December 2016 which was development by the online payment services, AGD Pay, one of the few banks with a better digital banking service. The number AGD mobile users and progressive data can be promoted year by year (2013, 2014, 2015,…2019) as the following;

Table (3.9) AGD Pay, Mobile Wallet

Sr. No	Year	Numbers of User	Number of Transactions	Transaction Volume	Remarks
1	2016	2,220	1,534	36,209,459	
2	2017	22,375	31,553	4,070,516,082	
3	2018	26,600	65,402	12,827,413,946	
4	2019 (Oct)	20,804	92,764	20,919,796,242	

Source – Survey data, 2019

3.20 Smartphone and Mobile Money

According to the Myanmar Telecommunications Ministry, over 90 percent of Myanmar adults had a cell phone by the end of 2016 (up from just 7 percent in 2012), with smartphone penetration approaching 80 percent of all mobile phones

Table (3.10) Telecommunication Density

Sr.	Fiscal Year	Number of Telephones	Teledensity (%)
1.	2011 - 2012	3,598,113	6.99
2.	2012 - 2013	6,704,203	13.01
3.	2013 - 2014	9,021,418	17.52
4.	2014 - 2015	28,095,036	54.57
5.	2015 - 2016	44,564,886	86.54
6.	2016 - 2017	56,315,038	109.37
7.	2017-2018	56,478,727	109.69
8.	2018-2019 (May)	68,578,294	126.83

Source - Information Technology and Cyber Security Department, 11-7-2019

According to the Myanmar Telecommunications Ministry, over 90 percent of Myanmar adults had a cell phone by the end of 2016 (up from just 7 percent in 2012), with smartphone penetration approaching 80 percent of all mobile phones.

Digital loans, disbursed to a smartphone, can give low-income clients access to credit in cases where they would otherwise be forced to rely on a high-interest moneylender.

- Myanmar is experiencing one of the world's fastest adoption of mobile phones. Three years ago, less than 10% of the population had access to mobile phone. Today, over 90% of population of Myanmar has 3G/4G coverage and more than half of all adults have smartphones.
- Despite this rapid uptake of mobile technology, Myanmar remains one of the least developed financial systems in Southeast Asia. The country's largest bank by asset has over 400 branches. Only 2 percent of adults have a debit card, and only 3 percent of adults have insurance.

3.21 Profile and Functions of selected Mobile Financial Service Companies

This section provides the profile information of OK$ Internet Wallet Myanmar and Wave Money that are now operating and they got trust from customers.

3.21.1 Profile of OK$ Internet Wallet Myanmar Company

OK$ Internet Wallet Myanmar Limited is based in Myanmar Country and has built OK$ 2016 for the fast-growing Myanmar Market. It is becoming the fastest growing mobile payment company in Myanmar. OK$ is a mobile payment and mobile wallet that runs fast, secure and secure, and is very easy to use as digital money. Technology comes from the United States of America as Fintech Technology, OK$ Fintech is a leading provider of outsourcing services for the banking and financial services industry. Global financial institutions have partnered with OK$ Fintech to develop the revolutionary banking technologies needed to compete in today's global market. OK$ Fintech's team of financial technology experts, combined with a regional distribution model, ensures that banking and investment software products are of the highest quality, with the lowest possible cost and risk. (OK$, 2017) (OK$, 2017)

OK$ Internet Wallet Myanmar Limited was established in January 2017 and was created by OK$ Mobile Payment, on the other hand Mobile Wallet to Myanmar People as a Service. (Open companies, 2017). They have different types of consumer products, such as coffee blends, rice, sugar, etc. Internet Wallet Myanmar Limited has distribution offices in all 14 States and regions of the Republic of the Union of Myanmar to serve as the best service to the people of Myanmar. (Ref: The CGM. 2017)

OK$ has about 1,000,000 mobile wallet users in 2018, including 200,000 merchant users and 6,000 agent users across Myanmar in two years. OLD wallet everyone can make cash and cash transactions from their CGM Office (Main Office, One Stop Mart, OK$ Agent Stores, Post Offices and some banks).

The following features are general internet banking services provided by OK$ wallet.

1. Account Register
2. Cashless Payment
3. Balance Inquiry
4. Bus Ticket Fees Payment
5. Cash In/Cash Out from Bank Account
6. Gift Card
7. Cash In/ Cash Out at Agent
8. Bill Payment
9. Merchant Payment
10. Phone bill top-up
11. Request Money
12. Promotion
13. Agent Location

During this year, OK$ Internet Wallet Myanmar create OK TAXI service and Go Auto ticket mobile applications. OK TAXI services provide transportation for people and Go Auto ticket service provide the bus ticket, train ticket and movie ticket, etc. OK TAXI and GO Auto ticket wallet user can pay the charges from OKS wallet.

Table (3.11) Usage of OK$ Mobile Payments

Sr. No	Month	Customer Registration	OK$ A/C to OK$ A/C Trans:	OK$ A/C to OK$ A/C Amt:	Increase User Qty
1	Sep-17	471,566	1,958,620	142,816,252,448	-
2	Oct-17	511,581	2,510,262	159,478,506,307	40,015
3	Nov-17	551,446	2,599,265	133,548,959,239	39,865
4	Dec-17	588,483	2,867,196	171,623,107,774	37,037
5	Jan-18	626,077	3,111,400	114,142,961,022	37,594
6	Feb-18	655,264	2,774,852	140,185,660,340	29,187
7	Mar-18	691,674	3,609,821	173,396,159,864	36,410
8	Apr-18	724,311	3,202,880	189,461,885,548	32,637
9	May-18	980,774	3,104,339	188,203,899,722	256,463
10	Jun-18	1,037,987	3,266,159	166,558,478,180	57,213
11	Jul-18	1,068,568	3,832,522	197,643,200,680	30,581
12	Aug-18	1,076,882	4,103,107	218,109,052,743	8,314
13	Sep-18	1,081,894	3,528,517	194,489,287,722	5,012
14	Oct-18	1,080,326	3,934,800	218,867,348,836	3,444

15	Nov-18	1,081,059	3,863,486	213,597,372,432	4,177
16	Dec-18	1,079,885	4,004,204	206,682,860,984	3,003
17	Jan-19	1,081,570	4,115,745	167,060,000,000	4,688
18	Feb-19	1,082,293	3,939,669	148,071,000,000	5,411
19	Mar-19	1,080,040	4,275,572	181,068,860,914	3,158
20	Apr-19	1,079,795	3,515,859	184,309,610,000	2,913
21	May-19	1,087,383	4,064,820	196,551,850,000	10,501
22	Jun-19	1,088,111	4,082,714	179,945,349,000	11,229

Source-OK$ Internet Wallet Myanmar Limited, 2019

Eligible individuals can make self-registration online. There are no registration fees for the mobile wallet account creation process. Cashless payment apps can allow quick and easy payment of cash via QR scanning at the merchant and agent shop. Balance survey that can check the balance of the account, transaction history and account details. Bus Ticket payment feature allows to customer to pay for Entrance Parking, Fuel, Restaurant, Hotel, and Shop. Supermarket, Ferry, Train, Bus, Intercity Bus, Flight etc.

Customer can choose the respective merchant and make a simple payment OKS mobile wallet user can make use of the cash in / cash out feature that allows you to deposit or withdraw from the bank account using the OK$ mobile wallet. Customer may choose the respective bank name, bank address, branch number, bank account number and transfer to the bank account. Gift Card apps allow customers to purchase dedicated e-pin from US Google Play Store Credits, US iTunes Store Credits, US Steam Credits, Viber Out Credits and Easy Point Credits. Meter bill payment feature allows customers to pay Electricity bills or phone bills or DTH bills online. Cash and Cash Out Agents feature allows the customer to send or receive money to their nearest agent.

Consumer, no need to wait and can easily pay from their mobile phone bill top-up apps allows customers to switch to Ooredoo, MPT, Telenor, Mectel, Mytelboth GSM and CDMA. OK$ Mobile wallet users can use the option of asking for money when they want to make a very urgent payment. Customers can easily request money from a friend of OK$ mobile users. Customer simply click promotion option and get promotions from a list of merchants who have promotions. OK$ mobile wallet user can know any promotions information. Agent Location feature can allow customer to know nearest agent shop in region.

3.21.2 Profile of Wave Money Company Information

Wave Money is the first company in Myanmar to receive an MFS license from the Central Bank and has been in operation since 2016. Wave Money is a joint venture between Telenor and Yoma Bank to provide open, safe and convenient mobile financial services through a national agent network or a wave account on the phone. The Telenor Group is one of the world's largest mobile operators with 192 million mobile subscriptions across 13 countries. Yoma Bank is an innovative and private bank, operating since 1993, with more than 3,000 employees and 63 branches across Myanmar.

Wave Money has a dream that empowers Myanmar's people with freedom to manage their money the way they want. Wave Money's goal is to provide secure, easy, affordable and reliable financial services that can be easily accessed through mobile phones and our extensive agent network. Wave Money promises to customers that Wave Money allows customer to transfer money quickly, safely and conveniently throughout Myanmar, freeing you from the hassles and worries of traditional methods.

Wave Money has around 1300000 mobile wallet users in 2018 and operates with over 24,000 wave shops in Myanmar. Wave Money provides convenient, fast and secure mobile financial services through a national agent network. Wave Money is an innovative way to transfer money, allowing millions of people in Myanmar access to formal financial services. Thousands of people can transfer money via the Wave Money mobile wallet and agents anywhere at any time. The Wave Money operates a 24/7 call center that customers can call and complain about errors all day long. (Wave Money, 2018).

3.21.3 Functions of Wave Money Mobile Wallet Services

The wallet of Wave Money is a creative way to transfer money. The Wave Money wallet app can transfer money anywhere at any time. Wave Money wallet Users can transfer money securely from their mobile phone or from one neighborhood to Wave Shop Agents. Wave Money provides an easy, secure and convenient way to send and receive money, bringing financial inclusion to all. The following features are general internet banking services provided by Wave Money.

1. Account Registration
2. Pay
3. History
4. Cash In
5. Wave Account Balance

6. Mobile Top-up
7. Bill & Donation
8. Bus Ticket Payment

Registration can be made available to everyone by themselves via the Internet. There are no costs for registration of the account. Pay feature enables the customer to send money from the Wave account to the Wave account and the non-account holder (NRC, phone number) by phone anywhere, anywhere. All transactions are encrypted with a hidden pin number. The History feature helps the customer to verify the balance of their account. Wave wallet user can visit any of the thousands of Wave Money stores in Wave account with Wave account number or cell phone number of the receiver. The confirmation message sent for one transaction has been completed. And then, cash in feature allows customer to transfer money from some mobile wallet by banks (Yoma, CB, KBZ). Mobile top-up function allows to customer top-up their phone easily. Donation feature allows to customer make donate some charity firm on mobile wallet. Bus ticket payment feature allowss to customer pay for bus ticket that no need to go bus station.

OKS mobile wallet is a digital money transfer service, which is owned by the marketing arm of a corporation rather than by a bank or a telecommunication company. OKS mobile wallet service is unique in the export of high technology from Myanmar based on the technology of the USA. OK$ Customer can make any payment only via smartphones such as mobile top up, intercity bus payment, card, bank account transfer, bill payment, government taxes and is available in the entire country through an application without going anywhere. And it can be done 24 hours a day and it's fast, safe, convenient and secure for users. OKS promotional approach for top-up users, billing users, as an extra bonus or cash back. OKS seeks to target customers by giving them whenever they can get extra bonuses or cash back by using the OKS smartphone top-up. Wave Money, a money transfer provider in Myanmar with a national retail scope, is extending its business to include billing and other business services. Wave Money was introduced as an over-the-counter service in which people would be able to contact an agent, usually in Telenor outlet, and send money quickly and cheaply to anyone else in the country, with the cash being able to be collected via another agent. Mobile money transfers followed, with Telenor customers first to gain access to the service. Wave Money is trying to get basis KYC information from other telecom operators' customers and expand user network in Myanmar. Wave Money generate revenue through small fees for taking cash out of the network, as well as by reselling phone top-up for Telenor. Wave Money wants to become a broader financial

services company (DIGFIN, 2017) OKS and Wave Money are the pioneers of money transfer in Myanmar and are now known as the country's top-of-the-line brand. We find their mobile wallet easy to use and stylish. The SMS verification process continues automatically and you can easily navigate through the app. They help to people change from cash base to card and banking base to mobile payment system base that is secure, safe a convincing payment.

3.22 E-Commerce

There is more than USD 7 million in e-commerce market size in Myanmar. There are 2.5 million e-commerce shipments per year in the industry. That's a lot lower than in Thailand. E-commerce is a major contribution to the transformation of traditional logistics. Business opportunities for rural e-retailers trigger logistics efficiency and the Warehouse market will expand due to the need for service delivery. Cross-border e-commerce is very likely to provide local services for the last mile from neighboring countries. With regard to cross-border e-commerce trends, local products will facilitate sales and direct sales to neighboring countries. Freelance delivery and small distribution companies are emerging in a competitive market because delivery services are easy to set up.

Table (3.12) E-Commerce Transaction February 2015 to June 2019

	No. of Merchants	No. of Transactions	Transaction Amount (Kyats in Million)
FY Feb'15-Mar'15	3	50	0.053654
FY Apr'15-Mar'16	36	47,300	7,017
FY Oct'16-Mar'17	77	368,141	2,293
FY Apr'17-Mar'18	154	607,977	4,232
FY Oct'18-Mar'19	246	545,695	19,176
FYApr'19-June'19	254	667,414	29,490

Source: Myanmar Payment Union, 2019

CHAPTER 4
SURVEY ANALYSIS

4.1 Survey Profile

This Chapter analyses the advantages, disadvantages, barriers and constraints to digital banking services in Myanmar according to the analytical assessment based on the secondary data and KII (Key Person Informal Interview) of regulators, selected bank officials and spoke persons of respective mobile financial services which design to explore the objectives. It consists of the role of payment system, usage of cards by using ATM and POS, profile and functions of selected banks' mobile financial services smart phones and mobile money, profiles and functions of selected mobile financial service companies, e-commerce and SWOT analysis.

In this study, data are collected both primary and secondary data. For the primary data, total 30 numbers of key authorities who are working at various financial institutions namely Central Bank of Myanmar, AYA Bank, CB Bank, AGD Bank, KBZ, OK Dollar, Wave Money, and MPU. These respondents are taking part as important role in digital transformation of payment system in each financial institution. Since, state owned-banks are not popular at digital banking services, survey mainly focuses on financial regulator (Central Bank of Myanmar), privately owned banks (total 27 number of private commercial banks), and mobile financial services. For the data availability, survey is made on the head offices of banks in Yangon region.

4.2 Survey Design

For the collection of primary data, predetermined survey questionnaire set as survey instrument and reviews and comments from these key personnel by the use of Key Informal Interviewing (KII) method. Question is composed with four sections: section (I) is the demographic profiles, section (II) is the important of reasons to transformation to digital payment system, section (III) is situation analysis, and section (IV) is the key informant interviewing questions. Survey is caring out during

the month of August 2019. Situational analysis is made on the banking industry relating to the digital payment system to find out the barriers and constraints to develop the digital payment system development strategy in Myanmar. By using SWOT analysis, samples from Central Bank of Myanmar, four private banks, and two mobile money services and MPU (National Gateway) are asked to answer their option the extent to which the barriers and constraints to develop the digital payment system development strategy in Myanmar. Study aimed at interviewing to thirty key persons who are key position level at selected digital payment services department in Myanmar. The findings are stated as follows.

4.3 Survey Result

In this survey, it examines the profile of respondents. Firstly, it analyzes the gender and age of respondents, as follows.

4.3.1 Gender and Age of Respondents

Demographic profile analysis includes studying on the gender composition, age level analysis as follows.

Table (4.1) Gender and Age Analysis

Sr. No.	Factor	Total respondents	Percent
Gender of Respondents			
1	Male	13	43%
2	Female	17	57%
Age of Respondents			
1	26 – 35	13	43%
2	36 – 45	9	30%
3	Above 45	8	27%
	Total	30	100%

Source: Survey data, 2019

Gender of respondents are asked to answer whether they are male or female. Finding of the survey shows that 43% are male while 57% are females. In term of percent, female composition is more than male composition in the study.

Age of respondents are asked by grouping into five: under 18 years old, above 18 to 25 years old, above 26 to 35, above 36 to 45, and above 45. By the table, 43% of respondents are age from 26 to 35 years old, 30% of respondents are age from 36 to 45 years old, and the rest 27% are age above 45 years old. In term of percent, most of respondents are found as age more than 26 years old.

4.3.2 Types of Core Banking System and Working Status of Respondents Content

To clarify that all the respondents are from relevant financial institution, survey is made on that of the name of their current working institution along with current using core banking solution software with respect to particular respondents, which are stated as follows.

Table (4.2) Core Banking Solution and Working Financial Institution of Respondents

Sr. No.	What institution are they working in?	Name of Core Banking Software	Total respondents	Percent
1	Central Bank	Oracle Flexcube	4	13%
2	KBZ Bank	Oracle Flexcube	5	17%
3	AYA Bank	MiSYS	5	17%
4	CB Bank	Temenos-T-24	5	17%
5	AGD Bank	Infosys	5	17%
6	OK Dollar	Other	2	7%
7	Wave money	Other	2	7%
8	MPU Platform (Gateway)	Other	2	7%
Total			30	100%

Source: Survey data, 2019

By the analysis of the survey, there are 4 respondents who are from Central Bank of Myanmar, each 5 respondents from from KBZ, AYA Bank, CB Bank and AGD Bank, each 2 from OK Dollar, Wave money, and MPU Platform (Gateway). Their use Oracle Flexcube software is by Central Bank and KBZ Bank, MySis by AYA Bank, Temenos- T-24 by CB Bank, Infosys by AGD bank, and mobile wallet companies are using mobile application.

a) Current Working Department

After clarifying of all the respondents are representing to different financial institutions, their current working department is asked. Findings on that analysis is stated in Table (4.3) as follows.

Table (4.3) Department of Respondent Working at the Institution

Sr. No.	What department are you working in?	Total respondents	Percent
1	Policy and regulation	4	13%
2	Core banking (software application)	5	17%
3	Infra (hardware section)	5	17%
4	Core team	3	10%
5	Digital channel	6	20%
6	Omni channel	7	23%
Total		30	100%

Source: Survey data, 2019

By the analysis on the respondents' working sector, Table (4.3) states that all are from the sectors which are key roles at digital transforming at their respective financial institution. In term of percent, respondents who are working at Omni Channel are found as 23% with the most, is followed by working people at digital channel with 20%, and 17% of each people who are working at Core Banking Software application, and Infra (hardware section).

b) Position Level of Respondents

Analysis on the position level of respondents is stated in Table (4.4) as follows.

Table (4.4) Position Level of Respondents

Sr. No.	What is the position that they are working in that bank	Total respondents	Percent
1	Senior management (AGM and above)	6	20%
2	Middle management (Assistant manager to senior manager)	21	70%
3	Other	3	10%
Total		30	100%

Source: Survey data, 2019

By the analysis, survey only includes key personnel from financial institutions. In term of percent , respondents who are working at middle management (Assistant Manager to Senior Manager) with the most with 70% and Senior management (Assistant General Manager and above) with the second most with 20%, respectively.

c) Role of Respondents in Digital Transforming Process

Further, their roles in involvement at transforming process in digital payment system is analyzed. Result from that analysis is stated in Table (4.5) as follows.

Table (4.5) Analysis on the Role in Digital Transforming Process in Bank

Sr. No.	Role in Digital Transforming process in their institution	Total respondents	Percent
1	Organizer	6	20%
2	Leader	9	30%
3	Team member	15	50%
4	Facilitator	0	0%
5	Other	0	0%
Total		30	100%

Source: Survey data, 2019

By the analysis on their role in Digital Transforming process in bank, Table (4.5) shows that 50% or half of respondents are taking part in the team member roles. The rest of the respondents are as organizer and leader in the digital payment transforming process.

4.3.3 Importance of the Reasons to Transform Digital Payment System

Respondents are asked to rate the importance of the following reasons to Transform Digital Payment System in Myanmar. Their option on each statement is rated from 1= strongly disagreed, 2= disagreed, 3= neutral or could not comment, 4= agree, 5= strongly agreed, as follows. Survey findings on the reasons to transform digital payment system are stated, as follows in table (4.6).

There are many important reasons to transform digital payment system. Major reasons include under pressure to reduce their costs, establishing 360-degree view of their customers, demanding for improved customer experience and personalized services growing, improving customer experience and lower costs, attracting and

retain customers and stay ahead of the competition, and new technologies, such as data analytics, open application programming interfaces.

Table (4.6) Reasons to Transform Digital Payment System

Sr. No.	Variable Name	Agreeable Level					Mean	St. Dev.
1	Banks are under pressure to reduce their costs to remain competitive	1	2	3	4	5	4.37	0.61
2	To establish 360-degree view of their customers so that bank can improve intelligent systems to gather customer intelligence and help them become more customer-centric.	1	2	3	4	5	3.73	0.45
3	The demand for improved customer experience and personalized services growing	1	2	3	4	5	3.90	0.31
4	Improving customer experience and lower costs,	1	2	3	4	5	4.30	0.60
5	Attract and retain customers and stay ahead of the competition	1	2	3	4	5	3.83	0.46
6	New technologies, such as data analytics, open Application Programming Interfaces	1	2	3	4	5	3.73	0.45
	Overall mean for reasons to transform digital payment system strategy	1	2	3	4	5	3.98	

Source: Survey data, 2019

By the Table (4.6), the obtained overall mean score is 3.98, indicating that there has important reason to transform to digital payment system. Among them, there are the most important reasons. They are the financial institutions that are under pressure to reduce their costs to remain competitive (mean value 4.37, standard 0.61), and improving customer experience and lower costs (mean value 4.30, standard 0.60).

4.3.4 Situational Analysis on the Transforming Digital Payment System (SWOT Analysis)

Knowing that, transforming digital payment system has many benefits, there are disruptive forces or the forces pressure to the transforming system. As customers progress from using cash and physical cards to making transactions over digital

platforms, new challenges and opportunities are emerging for the existing players in the payments sphere. To grasp the chances of emerging on top of this challenges, payments players need to develop and execute a strategic roadmap to best position themselves for success.

a) Strengths of Transforming Digital Payment System

Situational analysis of respondents' financial institutions includes analysis on its strengths, weaknesses, opportunities or chances, and threats from the environment. First live payments bank with 24/7 service beyond banking timeline, strong core banking system, stakeholders' interest in transforming, accessibility of the information technology know-how, user friendliness with digital payment system, which all are the strengths of the current financial organizations for transforming to digital system.

For that, the first analysis is made on by their strengths to transform process, which is stated in the following Table (4.7).

Table (4.7) Strengths to Transform Digital Payment System

Sr. No.	Variable Name	Agreeable Level					Mean	St. Dev.
1	The first live payments bank with 24/7 service beyond banking timeline	1	2	3	4	5	4.60	0.50
2	Strong core banking system setting up at current banking industry	1	2	3	4	5	3.83	0.38
3	Stakeholders interest in transforming digital payment system	1	2	3	4	5	3.90	0.31
4	Accessibility of the information technology know-how	1	2	3	4	5	4.30	0.60
5	User friendliness with digital payment system	1	2	3	4	5	3.90	0.40
6	Human Skills at advance technologies	1	2	3	4	5	3.50	0.51
Overall mean for financial institute internal strength							4.01	

Source: Survey data, 2019

By the Table (4.7), the obtained overall mean score is 4.01, indicating that current financial institutions are strongly interested and possessing internal strengths to transform to digital payment system. Among them, the highest strength is found as

the skills of all financial institutions that can go live payments bank with 24/7 service beyond banking timeline (mean value 4.60, standard deviation 0.50). Current financial institutions are also strong at internal strength in the area of accessibility to that of the information technology know-how which are requiring to digital transformation (mean value 4.30, standard deviation 0.60). User friendliness with digital payment system, stakeholders' interest in transforming digital payment system, and having the strong core banking system setting up at current banking industry which all are the strengths of current financial institutions to transform digital payment system in their organizations. Among them, the least mean value of 3.50 with standard deviation 0.51, is found at human skills at advance technologies. This means that financial institutions are somewhat needed of human skills for transforming of digital payment system.

b) Weakness of Transforming Digital Payment System

Along with the strengths of financial institutions for transforming digital payment systems, there are some weaknesses on that of the financial organizations. Table (4.8) shows the weakness to Transform Digital Payment System, as follows.

Table (4.8) Weaknesses to Transform Digital Payment System

Sr. No.	Variable Name	Agreeable level					Mean	St. Dev.
1	Strong technical engineering and business skills	1	2	3	4	5	2.93	0.52
2	High initial set up costs in IT infrastructure as a key element of the support infrastructure needed to reach more customers	1	2	3	4	5	3.77	0.43
3	Infrastructure, especially digital identity that can be linked to bank accounts	1	2	3	4	5	2.73	0.45
4	Skills required to access the information technology	1	2	3	4	5	3.20	0.66
5	Skills at financial knowledge	1	2	3	4	5	3.37	0.49
6	Ethical violation at personal account transaction through technological loophole.	1	2	3	4	5	3.80	0.76
7	Bank internal control system	1	2	3	4	5	3.37	0.56
8	Learning & Growth weaknesses: bank biggest challenges with employees particularly high turnover in certain departments or a negative perception of the organizational culture?	1	2	3	4	5	4.50	0.57
Overall mean for financial institute internal weakness							3.46	

Source: Survey data, 2019

By the Table (4.8), respondents are agreeable on that of somewhat weaknesses of their organizations. From the survey, the overall mean for financial institute internal weakness is 3.46, indicating that respondents are agreed to that of having somewhat weaknesses at their organization to overcoming digital transforming system.

Among these weakness variables at their organizations, respondents are strongly agreed on that of the weaknesses of learning & growth: bank biggest challenges with employees particularly high turnover in certain departments or a negative perception of the organizational culture (mean value 4.50 with standard deviation 0.57). The second most weakness is found at the ethical violation at personal account transaction through technological loophole with mean value 3.80.

Respondents are least voting on that of little weakness on that of the strong technical engineering and business skills requirement with lower mean value 2.93.

c) Opportunities of Transforming Digital Payment System

After knowing there has strengths inside the organizations, further analysis is made by focusing on the environmental situation called opportunities and threats analysis. In the analysis on the opportunities in the organizational environment, total 9 statements are used with regards to the analysis on transforming digital payment system.

Table (4.9) Opportunities to Transform Digital Payment System

Sr. No.	Variable Name	Agreeable level					Mean	St. Dev.
1	Government liberalization in telecommunication sector and the development of mobile network increase in smart phone users	1	2	3	4	5	4.80	0.41
2	Central bank liberalization its financial rules and regulation in payment system	1	2	3	4	5	4.73	0.45
3	Reducing the use of physical cash through promoting digital payment system	1	2	3	4	5	3.97	0.41
4	Bank can improve intelligent systems to gather customer sales history and help them become more customer-centric.	1	2	3	4	5	4.17	0.59
5	The demand for improved customer experience and personalized services growing such as online payment platform	1	2	3	4	5	4.20	0.48
6	Improving customer experience and lower costs,	1	2	3	4	5	4.30	0.60
7	Increase access to financial services for unbanked or underbanked groups such as small businesses, low-income households and migrant workers	1	2	3	4	5	3.90	0.40
8	Improve in customer data analytical skills	1	2	3	4	5	3.50	0.51
9	Digital identity that can be linked to bank accounts, have provided an opportunity to reduce the cost of customer on-boarding and ongoing compliance.	1	2	3	4	5	4.33	0.48
Overall mean for opportunities in transforming digital payment system							4.21	

Source: Survey data, 2019

Survey findings are shown in the Table (4.9). Survey finding of the overall mean value 4.21 is very much higher value, indicating that there are opportunities when transforming to digital payment systems in Myanmar because country is very late comers in digital payment system comparing to neighboring countries.

There are big opportunities as well as threats by the effects of Political, Economic, Social and Technological (PEST) condition. This is highlighting that of the response of the respondents with the receiving highest mean value 4.80 on that of the Government liberalization in telecommunication sector. This means that liberalization in telecommunication laws encourages the development of mobile

network and further increasing in smart phone users is the main source of opportunities at transforming digital payment system. Respondents are also strongly agreed on that of having opportunity on that of the Central bank liberalization. As the Government liberalization, central bank of Myanmar also releases its financial rules and regulation in payment system, and thus, it encourages to the change of digital payment system (mean value 4.73). Finance is a binding constraint on Myanmar's future development. The central bank needs a reform strategy that supports the financial sector's rapid development while ensuring its stability, efficiency, and accessibility.

The other opportunity is coming from technology advancement that financial institutions can improve intelligent systems to gather customer sales history and help them become more customer-centric with the received mean value of 4.17. For that technical aids, there is improving customer experience and lower costs with the mean value 4.30. With the technical aids, financial institutions can overcome the bargaining power from the customers with their increase in demand from technical assist payment services like online payment. The growing demand for improved customer experience and personalized services growing such as online payment platform with the respondents' higher agreeable mean value 4.20.

For the incensement in customer relationship market, customer data are required to find out which customers are purchasing very frequently and which customers are purchasing high volume transactions at financial institution. In the survey, the received mean value 4.17 is highlighting that the financial institutions can improve intelligent systems to gather customer sales history and help them become more customer-centric.

d) Threats or Challenges of Transforming Digital Payment System

The development of technology is proviant a lot of opportunities, along with that, there are associated with many threats. Table (4.10) is the analysis on the threats when transforming digital payment system, as follows.

Table (4.10) Threats to Transform Digital Payment System

Sr. No.	Variable Name	Agreeable level					Mean	St. Dev.
1	Required financial education	1	2	3	4	5	3.53	0.57
2	Over the Counters banking are more significant financial services brands and thus challenging to traditional banking system	1	2	3	4	5	4.50	0.57
3	Intense competition at online digital payment system (among traditional banking industry and mobile wallet service providers)	1	2	3	4	5	4.60	0.50
4	Limitation by electronic transaction laws in Myanmar	1	2	3	4	5	4.07	0.52
5	Bargaining power of technical vendors	1	2	3	4	5	3.33	0.55
6	Complicated Software system	1	2	3	4	5	3.87	0.43
Overall mean for Threats in transforming digital payment system							3.98	

Source: Survey data, 2019

By the Table (4.10), the received overall mean 3.98 for threats facing in transforming digital payment system is indicating that there will be threats which can not be avoidable for financial organizations. Major threat would be development of over-the-counters banking, which are more significant financial services brands and thus challenging to traditional banking system. There are also threats to traditional financial institutions for the Intense competition at online digital payment system (among traditional banking industry and mobile wallet service providers) How government liberalizes in its telecommunication laws, there is still limitation by electronic transaction laws in Myanmar.

e) Summary Analysis on Situational Analysis at Transforming Digital Payment System

Table (4.11) shows the summary analysis at Transforming digital payment system based on organizational strengths, weaknesses, opportunities in the environment, and threats that will frighten to the organization, as follows.

Table (4.11) Summary Analysis on Situational Analysis

Sr. No.	Variable Name	Mean
1	Strengths of the organization	4.01
2	Weaknesses of the organization	3.46
3	Opportunities of the organizations	4.21
4	Threats of the organization	3.98

Source: Survey data, 2019

In conclusion, survey found that there are some risks, on the other hands there are high returns from transforming physical payment system into digital payment system.

4.3.5 Key Informal Interviews

It this section, it states the survey result from the analysis on Key Person Interviewing on their views at strengths, weakness, opportunities, and threats of the transforming digital payment system as follows.

a) Respondent Review on the Strengths of Transforming Digital Payment System

In the question regarding to the strengths of transforming digital payment system, respondents are answering that local banks are now implementing in digital banking solutions. The change in the new roadmap for Financial Inclusion Roadmap (2018-2022) will involve creating a digital service working group managed by Central Bank and Financial Regulatory Department (FRD).

The digital services working group members will be drawn from the private sector, such as insurance firms, private banks and micro-finance institutions. Central Bank may allow product by product [one by one] regarding digital finance. For doing these, Myanmar financial institutions are trying to change to the cashless financial market, which other countries have already developed.

Myanmar usage for digital financial services stood at 8%, though 74% of the working population uses mobile phone. In recent years, Myanmar has seen an expansion of formal financial sector due to an increase in private bank depositors, as well strong growth in the microfinance and cooperative sectors. The new roadmap will include financial literacy and customer protection.

One respondent replies that the 2018 assessment, conducted during the beginning of that year, discovered a significant increase in financial inclusion growth from the MAP (Making Access Possible). Adult's access to at least one formal regulated financial service increased from 30% in 2013 to 48% today. Moreover, sole reliance on informal financial services fell by 30% from 10 million to 7 million adults over the past five years. It showed that adults are less dependent solely on unregulated financial services (e.g. money lenders or informal savings) by almost one-third since 2013.

b) Respondent review Weaknesses of Transforming Digital Payment System

Regarding to weakness, most of respondents are highlighting to the area to improve security, they are requested to suggest these additional steps in the area to improve security. By summarizing their answer, most suggested areas are the account level check, create unique account user ID, dual control, multi-factor authentication, SMS message alert, email message, and IP email address control. For the need of improving security, many institutions impose transaction limits as a way to stop fraud.

Regarding the account level checking, respondents suggest to look at the types of transactions that are happening -- what is typical behavior, logins, when they happen. Then if they start logging in at night or over weekend, that's a red flag to hold transactions until you can talk to the business owner, stopping fraud from taking place.

Regarding the creating unique account user IDs, it is needed to make sure users all have different log-in identification. It is needed to limit them use the same user name and password. There should be a unique user names for each person in order for the institution to be able to create unique profiles of use for each of the users. Similar to the PCI requirements; for anyone who accesses data, they each need a separate log-in.

Regarding the dual control which have two unique users approve transactions. If bank can implement that, it goes a long way in reducing the chances of criminals stealing from the bank account with a single user logon, and it also stops the threat of internal fraud as well. Regarding the multi-factor authentication - Even though this solution is susceptible to man-in-the-middle and man- in-the-browser attacks, bank sees it as an effective layer of protection. SMS messaging - Out-of-band message to users and account owners which is important. It can be bypassed if a criminal can get into and change numbers or email contacts.

One weakness is the most people' worry about mobile banking and digital financial services that their cash disappearing with a single click. One of key persons states that the survey for digital financial services on 12,000 pensioners in North Dagon township, only 600 people are able to use it. Some are not familiar with the app. Others do not want to use, in this study. Government or NGOs should provide digital learning trainings like other countries are practicing on it.

Myanmar MAP Refresh workshop is to upgrade 2014 roadmap, to overcome the income inequality between rural and urban and to increase the people's socio-economic development," U Myat Thu said at the workshop.

The workshop, the third such forum since the data was published, is organised and led by the FRD and supported by the United Nations Capital Development Fund (UNCDF) and the UK government's DaNa Facility.

Liz Patterson, Private Sector Adviser at DFID in regard to the research said that the move towards increased access to formal services is good news and means that "people across Myanmar are more able to save, invest and prosper through their use of formal finance services." "We still have a lot to do though, as we work to make sure that people across Myanmar have the financial means and tools they need to improve the lives of their families and communities," she added.

Paul Luchtenburg, country coordinator for UNCDF in Myanmar commented that the improvements in financial inclusion result from the government's leadership in financial inclusion combined with the work of development partners and stakeholders.

The 2018-22 framework will target low income farmers, individuals, women, self-employed individuals and SMEs, digital financial services, financial literacy and customer protection.

c) Key Persons' reviews on the Opportunities of Transforming Digital Payment system

In this regard, the Central Bank of Myanmar recently released, on 30th March, a regulation allowing non-bank institution to provide mobile banking services. With this new guideline, eligible companies will allow their customers to cash money in and out their mobile wallets through agents, and use this electronic channel to pay their utilities bills, airtime top ups and purchasing in partner stores, as well as to transfer money to another individual.

One respondent recognizes the increase in financial inclusion within Mandalay region and the country. Local government encourages financial industries to increase service outreach in savings, credit, insurance, and digital finance to broaden and deepen financial inclusion and its benefits throughout society.

Digital financial services (DFS) benefit a variety of actors from end customers to providers and Government. End customers benefit from digital payments through greater access, lower costs and more secure services. Indeed, the bank penetration is low in Myanmar, meaning many households live far from branches. To perform a financial transaction, customers have to bear the cost to reach the bank, which has a financial dimension as they have to pay the transportation and a time dimension as they cannot be focused on an income-earning activity while traveling. Moreover, if individuals carry cash, there is always a risk to get robbed on the way. By using mobile services, these constraints are lifted, and low-income households are more likely to use them than they would use traditional banking channels.

Electronic payments also allow the sender greater control as they can target a specific person in the household who is most able to manage and save money. Using digital means can also assist in savings accumulation as people can program automatic transfers and reminder texts. People are also more connected despite being geographically distant and can receive (or provide) faster assistance for unexpected income shocks. Indeed, these payments can be instantaneous which is crucial in times of crisis and timely for people managing a tight cash flow.

Providers of digital financial services benefit from lower costs as digital or agent networks is much cheaper to set up than opening a new physical branch which can cost from half a million dollars (for rental) to five million dollars (for purchase) in Myanmar. Additionally, with the huge amount of information collected providers can better understand client needs and payment capacity allowing them to develop customer centric products in the future.

Government benefits from increased transparency and easier record for the collected taxes and its disbursement to individual when the payments are digital: for example, the number of ghost recipients receiving social payments (social security transfers, pension) decreases. Electronic payments also reduce the level of bribery or fraud compare to the situation when an official goes to each village to process the payment. Additionally, there is lower cost in the long run when providing social transfers, due to the large scale of government to public payments.

d) Key Persons' reviews on the Threats of Transforming Digital Payment System

In the interview for their reviews on that of which types of threats would be facing to their financial institutions. Survey is collecting the different view of key personnel, it is found that connectivity in terms of speed of internet, which are driving digital payments transformation. There are also be difficult on the migration of cash payments and plastic card payments to payments made over digital channels, either from dematerialized cards held on digital wallets or in the cloud, or from new digital payment mechanisms

There are still limited access points for deposits and digital payments. As the financial sector infrastructure is underdeveloped, there is a shortage of access points for financial services, including savings and digital payments. As a result of this limited digital payment infrastructure, rural populations face higher costs for transportation and time spent traveling to deposit and transfer funds.

CHAPTER 5
CONCLUSION

In this chapter, it concludes the survey findings of the study on competitive forces when transforming digital payment system in Myanmar. It is followed by recommendations and suggestions of researcher and then states the future needs of this researches.

5.1 Findings

This study observes the current digital payment services in Myanmar, and analyzes the strengths, weaknesses, opportunities and threats to transform the digital payment system development strategy in Myanmar. Myanmar remains one of the world's most under-banked countries. Few of adult can access formal financial service.

The provision of financial services in rural areas is particularly low. At present days, Myanmar's digital economy is booming and Myanmar is experiencing one of the world's fastest adoption of mobile phones. Along with that development, Myanmar has opportunity for digital financial services. In the analysis on the current challenges and opportunities at transforming digital payment system, samples of 30 key persons from selected financial institutions, which are successfully undertaking digital payment services in Myanmar, are interviewed.

The first analysis on reason to transform digital payment system is found out by the high pressure to reduce the costs to remain competitive by the use of new digital payment system. Regarding to the situational analysis, the strength is at live payments bank with 24/7 service beyond banking timeline. Bank people and customers are found as easy accessibility of the information technology know-how in that of digital payment system. However, the weakness is found at the ethical violation at personal account transaction through technological loophole.

Along with that, there are a lot of opportunities for transforming digital payment system. One of them is the liberalization in financial services and

telecommunication laws not only by central bank, but also by respective Government authorities. There is also the opportunity by the growing demands for improved customer experience at online payment. Along with that, threats which cannot be avoidable for financial organizations includes development of over-the-counter banking, which is more significant digital financial services brands, and thus challenging to traditional banking system. There are also threats by the limitation of recent electronic transaction laws in Myanmar.

Key personal interviewing can be concluded that there will be the growing number of digital payment system for its digital financial service providers benefit from lower costs as agent networks, which is cheaper than setting up and opening new physical branches.

5.2 Recommendation

Digital Financial Service (DFS) in Myanmar is still in the incubation stage, and providers have yet to gain a foothold in a space that offers much potential to support the agriculture sector and to enhance financial inclusion in the country. However, the industry risks are stalling because of regulatory restrictions, infrastructure deficiencies, and capacity limitations of authorized players. Improved strategies and coordinated efforts of all stakeholders, including policy makers, DFS providers, and development partners, are therefore needed to support the industry.

Survey is only made in Yangon region, in Myanmar. Since there are many bank branches around in Myanmar, researcher would like to suggest to make further researches to the key authorities at popular financial institutions from all the other major cities like Mandalay, Taungyi, Bagan, Mawlamyine, etc., as well as to the rural area. This study only focuses on situational analysis based on organizational strengths, weaknesses, opportunities in the environment, and threats. There are other constraints and opportunities at general environment like political influence, technological influence, and socio-economic condition, and thus further studies should also make on these environmental analysis to find out more on the current transformational issues at digital payment system in Myanmar.

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Appendix-A

A STUDY ON DIGITAL TRANSFORMATION OF PAYMENT SYSTEM STRATEGY IN MYANMAR

Survey Questionnaires

My name is Zaw Thu. I am a student in Master of Public Administration Programme. I am currently writing my Mater Thesis in this fields of "Study on Digital Transformation of Payment System Strategy in Myanmar". It would be grateful if you could kindly complete this questionnaire. Your honest opinion might help me to implement this dissertation. Please note that all your answers are completely confidential. No one will see your individual answers.

Zaw Thu
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(16th Batch)

Part I: Demographic Profile of Respondents

1. Gender

☐ Male
☐ Female

2. Age (Years)

☐ 18 – 25
☐ 26 – 35
☐ 36 – 45
☐ Above 45

3. What institution are you working in?

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4. What department are you working in?

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5. What is your position that you are working in that bank?

☐ Senior management (AGM and above)
☐ Middle management (Assistant manager to senior manager)

- Other

6. What is your role in digital transforming process in bank?

- Organizer
- Leader
- Team member
- Facilitator
- Other

7. What type of Core Banking system is using in your bank?

- Oracle Flexcude
- InfoSys
- MySis
- Termanos
- Other

Part II: Importance of the Reasons to Transform Digital Payment System

How do you rate the importance of the following reasons to Transform Digital Payment System in Myanmar?

From 1= not very important, 2= not important, 3= normal, 4= important, 5= very important

Sr. No.	Reasons to Transform	Agreeable Level				
1	Banks are under pressure to reduce their costs to remain competitive	1	2	3	4	5
2	To establish 360-degree view of their customers so that bank can improve intelligent systems to gather customer intelligence and help them become more customer-centric.	1	2	3	4	5
3	The demand for improved customer experience and personalized services growing	1	2	3	4	5
4	Improving customer experience and lower costs,	1	2	3	4	5
5	Attract and retain customers and stay ahead of the competition	1	2	3	4	5
6	New technologies, such as data analytics, open Application Programming Interfaces	1	2	3	4	5

Part III: Situational Analysis on the Transforming Digital Payment System

A) Strengths of Transforming Digital Payment System

Sr. No.	Variables	Agreeable Level				
1	The first live payments bank with 24/7 service beyond banking timeline	1	2	3	4	5
2	Strong core banking system setting up at current banking industry	1	2	3	4	5
3	Stakeholders interest in transforming digital payment system	1	2	3	4	5
4	Accessibility of the information technology know-how	1	2	3	4	5
5	User friendliness with digital payment system	1	2	3	4	5
6	Human Skills at advance technologies	1	2	3	4	5

B) Weakness of Transforming Digital Payment System

Sr. No.	Weakness of Transform Digital Payment System	Agreeable Level				
1	Strong technical engineering and business skillsets	1	2	3	4	5
2	High initial set up costs in IT infrastructure as a key element of the support infrastructure needed to reach more customers	1	2	3	4	5
3	Infrastructure, especially digital identity that can be linked to bank accounts	1	2	3	4	5
4	Skills required to access the information technology	1	2	3	4	5
5	Skills at financial knowledge	1	2	3	4	5
6	Ethical violation at personal account transaction through technological loophole.	1	2	3	4	5
7	Bank internal control system	1	2	3	4	5

C) Opportunities of Transforming Digital Payment System

Sr. No.	Opportunities to Transform Digital Payment System	Agreeable Level				
1	Government liberalization in telecommunication sector and the development of mobile network and increase in smart phone users	1	2	3	4	5
2	Central bank liberalization its financial rules and regulation in payment system	1	2	3	4	5
3	Reducing the use of physical cash through promoting digital payment system	1	2	3	4	5
4	Bank can improve intelligent systems to gather customer sales history and help them become more customer-centric.	1	2	3	4	5
5	The demand for improved customer experience and personalized services growing such as online payment platform	1	2	3	4	5
6	Improving customer experience and lower costs,	1	2	3	4	5
7	Increase access to financial services for unbanked or underbanked groups such as small businesses, low-income households and migrant workers	1	2	3	4	5
8	Improve in customer data analytical skills	1	2	3	4	5
9	Digital identity that can be linked to bank accounts, have provided an opportunity to reduce the cost of customer on-boarding and ongoing compliance.	1	2	3	4	5

D) Threats or Challenges of Transforming Digital Payment System

Sr. No.	Threats or Challenges to Transform Digital Payment System	Agreeable Level				
1	Cyber security for protection at consumer as well as bank	1	2	3	4	5
2	Financial education	1	2	3	4	5
3	Over the Counters banking are building significant financial services brands which challenging to traditional banking system	1	2	3	4	5
4	Intense competition at online digital payment system (among traditional banking industry as well as mobile wallet service providers)	1	2	3	4	5
5	Limitation by electronic transaction laws in Myanmar	1	2	3	4	5
6	Bargaining power of technical vendors	1	2	3	4	5
7	Reducing costs to remain competitive.					

Part IV Key Informal Interviews on Digital Transformation of System Strategy in Myanmar

1. Please state your review on the areas to improve security

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2. Please state your review on the strengths of transforming digital payment system

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3. Please state your review on the weaknesses of transforming digital payment system

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4. Please state your review on the Opportunities of transforming digital payment system

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5. Please state your review on the threats of transforming digital payment system

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