DEVELOPMENT AND CHALLENGES OF MOBILE BANKING IN AZERBAIJAN

by

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Declaration of Authorship

"I do solemnly declare that I have written the presented research thesis by myself without undue help from a second person others and without using such tools other than that specified.

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The presented intellectual work of this research thesis is my own. I have not taken any help of any qualified consultant.

I have not directly nor indirectly received any monetary benefit from third parties in connection to this research thesis.

I certify that this research thesis or any part of it has not been previously submitted for a degree or any other qualification at the University of Leipzig or any other institution in Azerbaijan or abroad."

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Abstract

Technology advancement has revolutionized the world, the lifestyle of people has rapidly been changing and smartphones have become an integral part of their personal and business life. Consumers consider mobile accessibility to be one of the most important features when performing everyday tasks. Perceiving this as useful and rapidly embracing device, banks aim to develop their services in this area. According to (Luarn and Lin; 2005) study large investments have been made in mobile banking system but customers are not benefiting from the system. (Laukanen; 2007) strengthening his finding by reporting that adoption rate is not as high as expected in both developed and developing countries. Azerbaijan is an example for this; therefore, the present study is conducting to provide the information on the current situation of mobile banking in Azerbaijan and challenges bank faces in offering the mobile banking services.

This research conducted by collecting data from commercial banks managers. The managers answered the structured questionnaire, which tried to identify the current situation and challenges bank faces in providing mobile banking facility. The questionnaire divided into two sections, each covering a specific objective of this study. Section A of the questionnaire designed to collect information about the current situation and contribution of banks in mobile banking. Sections B investigates the challenges face by bank in offering the mobile banking. A total response rate of 71% recorded. Data analysis done using ratios, percentage and proportions to access the relative importance of various grouped factors. Finding presented through bar charts, pie chart to identify the relative importance of various factors, which makes it difficult to implement mobile banking systems and hinder its adoption.

The successful implementation of mobile banking is crucial for mobile banking adoption. Several factors have significant impact to the mobile banking adoption, these factors include; understanding of current mobile banking situation, bank's contribution in mobile banking and challenges bank face in providing mobile banking. In security, there is a strong feeling that mobile banking systems are not secure and reliable. The legislation that govern use and operation of mobile banking systems still not clearly defined and lack of proper government support in providing license is a serious challenge. Users have not been keen on adopting mobile banking services this might because of security fears and the fact that they are still accustomed to the normal banking systems. However, the study also overall noted that the following factors do not pose a challenge to the implementation of mobile banking information systems; these are competition, collaboration and technological challenge in terms of improving services however technological challenges is considered as great challenge when developing new services in new areas.

Managers in general need to be aware of challenges in implementing mobile banking systems, they should devise ways to minimize and reduce the possibility of such challenges occurring and they should come up with ways to overcome these challenges to ensure a successful implementation.

Referat

Texnologiyanın inkişafı dünyada inqilaba səbəb oldu, insanların həyat tərzi sürətlə dəyişilir, və smartfonlarda insanların həyat tərzində onların ayrılmaz hissəsi hsab edilir. Müştərilər gündəlik işlərini yerinə yetirərkən mobil əlçatanlığını ən vacib xüsusiyyətlərdən biri hesab edirlər. Bunu faydalı və sürətlə cihaz kimi qəbul edən banklar bu sahədə xidmətlərini inkişaf etdirməyi planlaşdırırlar. (Luar və Lin, 2005) Araşdırmalarına görə mobil bankçılıq sistemində böyük investisiyalar edilmiş, lakin müştərilər sistemdən faydalanmırlar. (Laukanen, 2007), həm də inkişaf etmiş və inkişaf etməkdə olan ölkələrdə qəbul nisbətinin gözlənildiyi qədər yüksək olmadığını bildirdi. Azərbaycan bunun nümunəsidir; buna görə də hazırkı tədqiqat Azərbaycanda mobil bankinqin mövcud vəziyyəti və bankın mobil bank xidmətləri təklif etməklə üzləşdiyi problemlər barədə məlumat vermək üçün aparılır.

Bu araşdırma, kommersiya bankları menecerlərindən məlumat toplayaraq aparıldı. Menecerlər mobil bankinq sisteminin təmin edilməsində bankın üzləşdiyi vəziyyət və problemləri müəyyənləşdirməyə çalışmış strukturlaşdırılmış sorğuya cavab veriblər. Anket həmin işin xüsusi məqsədini əhatə edən iki hissəyə bölündü. Anketin A bölməsi mövcud vəziyyət və bankların mobil bankçılıq sahəsindəki fəaliyyətləri barədə məlumat toplamaq üçün hazırlanmış. B bölməsi isə mobil bankçılıq təklif etməklə bank qarşısında duran problemləri araşdırır. Yekun cavab nisbəti 71% olaraq qeyd edildi. Məlumat analizləri, müxtəlif qruplaşan amillərin nisbi əhəmiyyətinə çatmaq üçün nisbət, faiz və nisbətlə istifadə edilir. Mobil bank sistemlərini tətbiq etmək çətinləşdirən və onun qəbul edilməsinə mane olan müxtəlif amillərin nisbətən vacibliyini müəyyən etmək üçün histoqram, dairəvi diaqram vasitəsilə tapılması təqdim edilmişdir.
Mobil bankçılığın müvəffəqiyyətlə həyata keçirilməsi mobil bankçılığın qəbul edilməsi üçün çox vacibdir. Mobil bankçılıq qəbuluna bir sıra amillər əhəmiyyətli dərəcədə təsir göstərir, bu amillərə daxildir; cari mobil bankçılıq vəziyyətinin anlaşılması, bankın mobil bankçılıqda iştirakı və mobil bankinqi təmin etməkdə bank qarşısında duran çətinliklər. Təhlükəsizlikdə, mobil bank sistemlərinin təhlükəsiz və etibarlı olmadığı güclü bir duyğu vardır. Mobil bank sistemlərinin istifadəsi və fəaliyyətini tənzimləyən qanunvericilik hələ də aydın şəkildə müəyyən edilməmişdir və lisenziyanı təmin etməkdə müvafiq dövlət dəstəyinin olmaması ciddi problemdir. İstifadəçilər təhlükəsiz qorxu və bununla da normal bank sistemlərinə alışdıqları üçün mobil bankçılıq xidmətlərini qəbul etməyi istəmirlər. Bununla yanaşı, tədqiqatın nəticələrinə əsasən, aşağıdakı amillər mobil bank

məlumat sistemlərinin tətbiqi üçün problem yaratmır; bunlar xidmətlərin yaxşılaşdırılması baxımından rəqabət, əməkdaşlıq və texnoloji problemdir, lakin yeni sahələrdə yeni xidmətlərin inkişafında texnoloji problemlər böyük problem hesab olunur.

Menecerlər, ümumilikdə mobil bankçılıq sistemlərinin tətbiqi ilə bağlı çətinliklərdən xəbərdar olmalıdırlar, onlar bu problemlərin yaranma ehtimalını minimuma endirmək və azaltmaq üçün yollar hazırlamalı və uğurlu icrası təmin etmək üçün bu problemləri aradan qaldırmaq yollarını tapmalıdırlar.

DEDICATION

This research project dedicated to my parents who support and encourage me in every step of my life.

INTRODUCTION

Background:

Digital disruption effects many industries and banking and financial industry is clearly not an exception. With increased investments, innovations in the financial industry enable people to access to new methods of banking (Laukkanen & Pasanen, 2013; Karjaluoto, 2009 & Crabbe, Standing). Newly introduced technologies help to cut cost and increase efficiency for consumers that results in disruption of the traditional method of banking. The disruption has caused the shift from traditional channels to evolve convenient methods and has changed the way individuals handle their finances (Shakih & Karjaluoto, 2015). Banking industry largely effected by rapid innovation in telecommunication. The recent trend of a society of highly reliable on their smartphone, and technological development in the financial industry, makes mobile banking a topic of interest in many countries. As mobile phones are no longer use as simple communication device, with the facility to perform multiple tasks, smartphones have become an integral part of customer's personal and business life. Consumers consider mobile accessibility to be one of the most important features when performing everyday tasks (Dahlberg, Mallat, Ondrus & Zmijewska, 2008).

As embracing new technology in banking sector is not new, investment in technology lead banks to reduction in face-to-face interaction and adopting the electronic means. Furthermore, adoption has positive impact on facilitating the customer as well as lowering the operational cost for banks (Humphrey; 2000). (Jenifer Mull and Sharon Loane; 2017) supporting this argument by his finding that mobile banking adoption has significant impact on bank efficiency by decreasing cost and increasing profitability. However, compared to benefits derived from mobile banking services customer adoption rate is not as high as expected in both developed and developing countries (Laukanen ;2008). Mobile

banking has a potential to earn large profit for banks but unfortunately, it does not seem to do so. For that purpose, bank need to investigate the challenges that it faces in providing the mobile banking services. Recent studies conducted by (Charles Makanyeza and Jenifer Mulan; 2017) suggest that further related studies should be conducted to investigate the factors in different content, market and innovation.

In Azerbaijan, major banks provide the mobile banking facilities but compare to other European countries mobile banking services in Azerbaijan is not yet well- developed. However, a lot of progress in digital sales channels including internet and mobile banking seen in Azerbaijan. It expected that in 2020, because of digitization, Azerbaijan's GDP increase by 135 million Manats. The chairperson of the "Center for Economic and Social Development", Vugar Bayramov told local press "it is expected that by 2030, no bank in Azerbaijan use traditional banking system any further."

Research Gap:

Several studies have looked at the challenges form customers perspective that affect the mobile banking such as researches published by (Reihaneh Bidar and Yucel Salman; 2014 Aijaz Shaikh, 2014). However, few studies that draw attention towards the challenges face by banking sector in providing mobile banking facility and no single study of this nature conducted in Azerbaijan.

This research aim at study the gap in the existing literature and attempts to bring together knowledge and information from mobile banking service provider to obtain the overall understanding of the challenged that affect the growth of the sector. The finding could be useful to banks to understand their present situation as well as to make progress by overcoming the current challenges. The research could possibly guide further academic research.

Mobile Bank History:

Deutsche Bank financially supported the European company called PayBox, in 1999 that started mobile banking. SMS service was first mobile banking service provided. Formerly, mobile phone performs limited functionality compare to present; it developed with the progress of technology.

In the USA, Wachovia bank introduced mobile banking in 2006. Aite group anticipated the mobile banking customer in the United States would compass 1.6 million by the end of the year 2007 and will rapidly increase to 35 million by the year 2010. The report indicated the growth possibility for mobile banking. Bank of America started mobile banking services in March 2007 in collaboration with four major wireless carriers, which reported 500,000 users within the first 6 months. Initially, the services offered were funds transfer, bill payment, branch and ATM locations, account balance, etc. Since then there has been huge progress in mobile banking services.

European and Asian countries have been offering mobile banking services for years. Japan and South Korea are the world leaders in embracing mobile banking technology. Before 2004, the Internet was the only way of using mobile banking in Japan, which enabled customers to browse the merchant website through a web browser this is not a case anymore.

At present, mobile banking, offer almost the same kind of services as online, credit/debit card banking. When mobile banking services introduce, the mobile devices were not able to aid all mobile banking services and they were lacking hardware and software support. Today, mobile devices have the same processing power as computers, and they are still evolving.

There are three types of architectures available for mobile phones to enable mobile banking.

SMS or MMS based mobile banking

Mobile website

Mobile client application

Purpose of Study:

Mobile banking though relevantly new in Azerbaijan it has attracted attention of banking institution in the past few years. Experts believe that mobile banking will rule the world by 2030.The development of digital sales channel, internet and mobile banking in Azerbaijan anticipated the strategic roadmap for the development of financial services that in 2020, Azerbaijan's GDP will increase by 135 million Manat, because of digitalization. Digitalization will make it possible to increase the total income of bank in 2020 by 20%. However, this require the successful implementation of mobile banking which can be ensure after investigating the challenges bank face in providing the financial services through mobile channel. This proposed study aims to explore the challenges that hinder the development of mobile banking.

Problem Statement:

(Luarn and Lin; 2005) study that large investments have been made in mobile banking system, but customers are not benefiting from the system. (Laukanen; 2007) strengthening his finding by reporting that adoption rate is not as high as expected in both developed and developing countries. Azerbaijan is an example for this. Several researches have been conducting to study the individual challenge affecting mobile banking such as researches published by (Porteous , 2006), (V.Devadevan , 2013), (Ajaz Shaikh, 2015) and (Reihaneh Bidar and Yucel Salman ,2014) yet there has not been a study that provide the overview of the challenges facing this sector and no single study of this nature is conducted in Azerbaijan. The present study is conducting to provide the information on the current

situation of mobile banking in Azerbaijan and challenges that hinder the mobile banking services adoption.

Research Objective:

The main objective of this research was to investigate the development challenges of mobile banking in Azerbaijan. Focus was on identifying factors that enhance or discourage banks to implement mobile banking in Azerbaijan.

Accordingly, the research objectives itemized as follows:

i.   To determine the current situation of mobile banking in Azerbaijan.
ii.   To ascertain the extent of bank's contribution in m- banking adoption.
iii. To investigate the challenges bank face in providing these services.
iv.   To recommend effective ways to improve.

Research Questions and Scope:

Three key players preside over the mobile banking industry in Azerbaijan the banking institutions, the telecommunication service provider and the independent ventures. In general, collaboration and partnership between two or more players are involved in providing the product and services. These different stakeholders have somewhat distinctive objectives. The goal of the telecommunication operator is to increase the customer base and usage, banking institutions aim at not only increase the customer base but also provide the service flexibility for the customers although independent ventures are driven to deliver the financial services to unbanked. Up to now, these different industry players not been able to tap into the Azerbaijan market.

Porteous in 2006 published a paper on enabling environment for mobile banking in Africa he defines enabling environment as " the set of conditions, which promote a sustainable

of market development" (Porteous; 2006). He explains that enabling environment to require the right combination of legal and regulatory openness to ensure the security of business. He argues that countries with low level of regulation allow risk for investors, as there is uncertainty of regulation. However, countries with strict regulation cut off the ventures. In Azerbaijan case it is important to look at legal and regulatory framework whether it provide the right balance for mobile banking business to develop and grow.

Besides regulatory framework customer acceptance is another element that affect the development of mobile banking. Several researches have been made to explore the factors that influence the customer acceptance of mobile banking such as (Pousttchi & Wiedemann: 2007), (Gerpott & Kornmeier; 2009) and (Mallat; 2009) these studies have proposed that factor such as technology acceptance, task-technology fit, ease of use of technology affect the acceptance of mobile banking.

At the third International Banking Forum in Baku chairperson of the Azerbaijan Banks Association, announced, "Digitalization may become one of the drivers of the development of the Azerbaijani banking system, digitalization requires big investments from banks, and the banks will receive big income over the medium term." (Zakir Nuriyev: 2017). Digitalization includes online banking and mobile banking compare to online banking mobile banking is new banking service in Azerbaijan, so the questions are formed to understand mobile banking present situation as well as the challenges bank face in providing these services. Proposed study helps the banks to understand their contribution in digitalization, but they can also make progress by overcoming the current challenges.

Research Questions:

Question 1: What is the current mobile banking situation?

Question 2: What is bank contribution in providing mobile banking services?

Question 3: What are the challenges bank face in providing mobile banking services?

Significance of the Study:

The finding of this research will be of great importance to both the banking sector and their consumers. For consumers they will have the privilege of enjoy the banking services remotely and wherever they are, and they will be able to conduct mobile banking services without being worried. They will reach bank financial services and do transactions at the comfort of their homes and hotels. Moreover, mobile banking services expected to be cheaper than normal banking services.

For banks, they will be able to provide new competitive services that result in to develop more and diverse customer's base. Besides banks will be able to attract and reach customers country wide without having to set up branches in such areas. If extended to include businesses, then this service has a high potential to change the traditional business systems of billing and paying. It can result in secure and fast payment systems that enhance trade and facilitate faster development of a nation.

Research Assumptions:

1. It assumes that major industry player would welcome such research and find the information useful to help the industry grow.

2. It assumes that the selected banks play influential and leading role in banking industry of Azerbaijan and set trend of development for other banks.

3. It assumes that banks would cooperate by allocating time and resources for interviews.

4. It assumes that people interviewed would be knowledgeable in their subject matter and would provide reliable and valid information.

Research Ethics:

Proposed study paid attention to several ethical issues while carrying out the research. This research follows the American Psychological Association (APA) instructions.

Planning: The research study arranged in such a way that chance of misleading the results minimized and it met the ethical acceptability. Moreover, participants informed presciently about the data. Questions were forward in advance when requested.

Responsibility: participants treated in an ethical manner.

Reporting result and plagiarism: Data was not contaminated; corrupt and erroneous data was not use. Proper acknowledgement gives to work performed by other through appropriate citation and referencing as stipulated by UCT/ GSB instructions.

Informed consent: In order to ensure the informed consent general nature of the study briefed to the participants as well as any potential harm or risk that study may rise. Deception not used to secure the participation.

Another important ethical issue that is considered is data protection. It is important to ensure that confidential information not shared even on an informal basis.

CHAPTER ONE
LITERATURE REVIEW

Mobile banking technology have potential to provide financial services to the non- banked and besides in curing poverty it will play an important role, DFID report (2006). For banks if they introduce latest technology will help them in reducing transaction costs and competitive advantage and an increase in the customer base (Mennecke, 2003).

1.1 What Is Mobile Banking?

Technologies such as M-commerce, M-payment, M-finance, M-remittances and branchless banking indiscriminately used in the literature to describe related technologies. The terms M-banking, M-payment and M-finance refer collectively to a set of M-commerce applications, which enable people to use their telephone to conduct their banking transactions such as transfer funds and access loan and insurance product (Donner, 2007). Mobile banking is a subgroup of e-banking in which customers can approach range of financial products and services (Porteous, 2006)

(Alvarez et al, 2009) differentiated among Mobile remittances (M-remittances), Mobile payment (M-payment) and Mobile banking (M-banking). Such as Mobile remittances function is to send and receive funds at domestic and international level however, Mobile payment process is text-based transaction, Mobile banking on the other hand cover the vast area of banking. He further explains that mobile remittances mobile payment and mobile banking are part of mobile commerce. According to his description, mobile payment functionality seems to be different from mobile banking.

(Porteous, 2006) categorize mobile payment as a part of mobile banking he explains that mobile banking enables the customers to use the mobile phone to reach the different areas of banking. He further argues that mobile payment and mobile payment are the subgroup

of e banking so categorizing the mobile banking according to mobile remittances, mobile payment is appropriate since mobile banking facilitate the access to financial services through mobile channel. Laudon and (Laudon, 2005) defines mobile banking (M-banking) as the presenting of financial services using handheld devices such as mobile phones, palmtop computers and personal digital assistants Variety of services are providing through mobile channel:

a) Payments of bills

b) Checking bank statements

c) Checking account balances

d) Transferring funds from one account to another

e) Checking whether cheques have been cleared

f) Checking status of transactions

g) Checking credit card information

h) Account maintenance and administration

i) PIN alteration

j) Topping up mobile credit

(Tiwari and Buse, 2007) illustrates mobile banking in their academic model are, the availability of banking and financial services with the help of mobile telecommunication devices. Finally, (Donncr,2007) argue that the terms M-banking, M-payments and M-finance are set of m-commerce applications which facilitate people to use their mobile telephones to access their bank accounts, store value on an account, transfer funds, or even access loans or insurance products.

Mobile banking brings with it many benefits both to the consumer and to the banking institution. Customers are not limited by time or by location, busy customers can check account balance as they walk on the street and make payments or transfer funds while

riding in elevators. Customers can still reach mobile banking services remotely and even without a bank account (May 2001). (Mennecke,2003) explains banks do not need to establish full branches to offer services through mobile channel, moreover banks can offer mobile banking services at a lower rate from services provided in branches. Besides banks can target more customers and expand their market easily and faster using mobile banking than with branches. Finally, banks have advantage to provide secure transactions through mobile banking devices such as phones and personal digital assistants PDAs (Rhoton, 2001).

Mobile banking offers include several activities; first make sure the availability of all the hardware and software systems that are required. Set up links between the telecommunications network and mobile devices such as cell phones, palmtop computers and PDAs should and also make sure it works reliably and safely (May, 2001). There are number of ways to provide mobile banking services using web-based applications: using short message service: using voice-based communication systems (Ajc, 2007).

1.2 Trends in Mobile Banking:

(Tiwari and Buse,2007) analyze that the development of the Internet has revolutionized the way the financial services industry conducts business, empowering institutions to set-up new business models with round the clock accessibility to their customers. New players appear in financial services from the online competence of financial transactions, such as online banks, online brokers and wealth managers who deliver customized services, although such players still consist of small percentage of the industry. Recently, the mobile and wireless market has been one of the fastest developing markets in the world and it is still growing at a rapid pace. According to the Global System for Mobile Communication GSM Association and Ovum, the number of mobile subscribers forecast to reach 4.68 billion in 2019 Mobile banking users are set to reach 2 billion by 2020.

While mobile phones have been prevalent in the U.S. for the past decade, smartphone adoption has grown rapidly in recent years. The uses for smartphone technology have expanded, including the use of mobile phones for banking. In 2017, about half of U.S. adults with bank accounts had used a mobile phone to access a bank account in the past year. According to (Richard, 2019) study 71% bank customers regularly use online while 43% customers use mobile banking.

According to the Canadian Bankers Association (CBA), Canadian attitudes towards mobile banking and Fin-Tech innovations are very favorable among consumers; in 2017, the top six Canadian banks recorded 398 million mobile banking transactions. 90% of Canadians say banks have done well bringing forward innovation to banking.26percentage of Canadians say their use of mobile banking is increasing. Canadian retail bank customers value the convenience mobile banking offers. The (CBA) also reports three areas of importance for consumers; 90% of Canadians value banking at a convenient time.77 percentage of Canadians value saving time and value banking from anywhere

(Karen, 2019) describes in his study mobile banking is certainly taking off, especially considering recent branch closings. Yet, experts predict that consumers are looking for more value in their mobile banking apps, with more functionality such as cordless ATM access, easier authentication processes using biometrics, more personalization using machine learning and customer data to provide financial advice, with some human or human-like intervention, either by voice activation or with human connections when necessary to remote locations.

1.3 Mobile Banking Services:

(Ajc, 2007) describes that commercial banks can use multiple ways to implement M-banking services this include.

SMS based application - In this technology, M-banking services provided to customer through short message services using mobile phones. People learn the phone number needs with the services send an SMS to this number with appropriate keywords and get back reply through

phones all phones can send and receive SMS; Low network requirements - SMS don't need high bandwidth; Low and predictable costs - the cost of sending SMS is clearly mentioned; free push mechanism - you receive the SMS free of charge.

However, there are some weaknesses associated with these services: -

a) Illiteracy of the population- to use these services people must know how to read and write; b) Limited input capability of mobile phone- mobile phone keypads are very limited to typing information preventing quick entry of important data;

c) Internationalization- only based on Latin characters, inputting and rendering non-Latin characters become a challenge;

d) Limited user interaction

e) Lack of standardization for application development.

Voice based technology – that facilitate users to make transaction verbally. You can take instructions from a preset easy to follow prerecorded instruction that assist you on what to do. Benefits of voice-based technology include- a) easy to use for illiterate people; b) easy input mechanism; c) Low and predictable cost; d) Low network requirements; e) Operator independence; f) Standardized application development. However, it has the following challenges - a) it is difficult to know of the existence of the services; b) Cost of application hosting is expensive; c) language barriers.

Web based technology - involve use of internet browsers to interact and make transactions. This require signing into your bank account you can access through website to enjoy the available banking services or you can use web site using a mobile phone or a personal digital assistant. Strengths of web-based technology - a) Operator independence; b) Easy development of services; c) Easy hosting and deployment; d) Good user interface. The Challenges of web-based technology include - a) Cost of data access might be expensive; b) Availability of high capacity network and high -end handsets; c) sometimes the services may be slow or unavailable.

1.4 Implementation of Mobile Banking Systems:

According to (Yeates, 2001) implementation of systems requires number of activities with the intention to exercise a new system in an organization. There are number of activities that include

Seeking approval from management to implement the new system - Before any new major system implemented, management approval is important as the managers hold the key to resources and even employees needed to implement the system. Their approval is required before the successful implementation of any new system. Managers can hinder the successful implementation of any system whenever they feel that the process does not involve them or even consider their input. Manager involvement and opinion needed at every stage of development.

Acquiring and setting in place the required hardware and software system - The purchase and installation fundamental hardware and software are necessary to implement the system. Procurement done through a competitive bidding process that welcome bids from possible supplier and selecting the supplier who fulfil our requirement in best manner. Successful bidders selected based on the suitability of the hardware and software provided to the organizations need one of the criteria to choose potential suppliers from amongst the many is financial consideration. In some cases, benchmark test conducted to

test the specifications and to analyze the achievements among number of potential hardware and software.

Testing the system – For any new system testing is vital activity to secure activity form errors or minimal acceptable error levels exist, of. Before a complete roll out. A system should be tested to ensure that it execute according to expectations and provide the accurate results. Any errors occur identified and cleared. Users should be involved in testing procedure, as their input is important to the testing process.

File conversion and database preparation - This involves ensuring that the files used in the new system are in an appropriate format of the new system. Existing files upgraded and filled with data in the format of the new system. New approach applied for file conversion organization can choose from straight file conversion or dummy file conversion.

Using the agents of change - These represent influential group of people and other leaders in the organization who enjoy power to easily influence members on matter relating to a new system. They are selected and being coached to spearhead the implementation of the new system Agents of change are people with integrity and a lot of influence, they may however not hold any position in the organization, and it is only their influence and drive which is important for successful system implementation

Selecting and training the user - To make sure that users are benefiting from currently available services there is strong need to educate user through proper guideline about new system. For this purpose, users will have trained on how to use and operate the system and on the business gains that the new system brings. There are several ways to conduct training for instance through practical and demonstration, lectures, and video shows. Adapting to a new system demands trained users and require documentation (user manuals) that educate them how to use the new system.

Launching the new system - Once one is confident that the system is operating accurately and without errors then the system introduced, and it rolled out for use this called going live. Several techniques used to change over, direct, parallel, phased or pilot changeover. After going live and the system faces many new challenges and errors might arise which need the support of the developers. Therefore, implementation support team can be set up to provide remedial action for such errors and problems.

(James O'Brien, 1993) describes implementation as doing what you planned to do. Therefore, implementation is an important activity in the deployment of IT to support an organization and its end users. O'Brien summarizes implementation activities as involving acquisition of hardware and software and services, software development or modification, end user training, system documentation and conversion. (Whitten and Bentley, 2000) define implementation as the delivery of a system into production i.e. day-to-day operation. They specify the following activities of implementation:

Conducting system test - This involves testing all software packages, custom built programs and any existing programs that comprise the new system. Analysts, owners, users and builders carry out testing; each playing a unique role the system analyst typically communicates testing problems and issues with the project team members. The system owners and users hold the ultimate authority on whether a system is operating correctly. System builders also included in system testing.

Testing is a repetitive process carried out using test data (data specifically designed to exercise a system with a view of finding errors) developed by analyst. If errors found, they corrected, and the system retested.

Prepare conversion plan - Once a successful system completed, we can begin preparation to place the new system into operation. A system analyst will develop a detailed conversion plan that includes identifying databases to be installed, end user

training and documentation that need to be developed and a strategy for converting from old to new system.

A variety of conversion techniques use such as direct, parallel, pilot, or phased. The conversion plan also typically includes a system acceptance test. A system acceptance test is a final system test performed by end users using real data over an extended time. An extensive test addresses three levels of acceptance testing.

Verification testing - That involves running a system in a simulated environment using simulated data. It is aim at looking for errors and omissions regarding end udders and design specification errors. Validation testing - Validation testing runs the system in a live environment using real data to test system performance (throughput and response time), peak working load performance, usability test and many more. Audit testing - It can be optional, but it involves certifying that the system is free of errors and is ready to be placed into operation

Install databases - This involves fully loading and populating the databases with existing data from the old system. System builders can write special programs that extract databases from existing databases and programs to populate the new database. The principal deliverables of this task are the restructures existing data has populated in the databases for the new system

Train users - Converting to a new system necessitates that system users be trained and provided with documentation (user manuals) that guides them through using the new system. Training done using a variety of methods and approaches depending on the type of system installed and end users must be involved because they will inherit the success and failures from this effort.

Convert to new system - Conversion to new system from the old system is a considerable challenge. After conversion, the ownership of the system officially transfers from the analyst and programmers to the end users. This task involves all stakeholders and the principal deliverable is an operational system that placed into production in the business.

(Iaudon and Laudon, 2005) state that the first step in implementing a system solution is to create detailed system design specifications. System designs show us how the chosen solution realized. It consists of all specification that addresses all the system solution. They specify that other implementation activities include hardware selection and acquisition, testing, training and documentation and production and maintenance.

1.5 Challenges of Implementing Mobile Banking:

(Cadle and Yeates, 2001) list the major challenges as including: -

a) Regulatory challenges - new industry and government regulations can affect considerably the implementation of new financial services such as M-banking

b) Lack of user involvement - users should be actively engaged to make sure the new system is adaptable and welcomed

c) Resistance to change - introducing a new system bring disturbance among people and they are reluctant to change that might cause failure for system

d) Skills and Technological challenges - new skills are requires for the implementation of the new system and this may not easily and readily procurable

e) Lack of change management program - an appropriate change management program will provide training to both the users and even the customers for the new system

f) Communication barriers - These occurs where the channels of communication followed are not up to date, stakeholders cannot make informed decision because right information is not available to them

g) Lack of proper risk management - any new system has its built-in risks that must considered, and corrective actions taken otherwise the system will fail

h) Security problems - these is where people access the system without authority and perform illegal activities such as fraud and sabotage

i) Lack of management support - the implementation of M-banking system is not possible without the support and full involvement of management

(Tiwari and Buse, 2007) state the challenges of mobile banking consist of: Interoperability - There is a lack of common technology standards for mobile banking. Many protocols used for mobile banking - HTML, Wireless Application Protocol WAP. Extensible markup language XML to name a few. Develop a mobile banking application that can connect multiple banks would be a wise idea for the vendor. There is strong need of either the development of application to support multiple protocols or use of a common and widely acceptable set of protocols for data exchange.

It is a big challenge for banks to provide mobile banking solution for each type of device since there are many different hand-held devices Some of these devices support java 2000 millennium edition J2ME and others support WAP browser or only SMS. The desire for functionality is largely dependent on the banks themselves, where java facilitate users with better security, easier to use and offer development of more complex transactions like that of internet banking while SMS is fundamental but becomes difficult to operate with transactions that are more difficult.

Security - Security of financial transaction, Mobile application developers, wireless network service providers and the bank's IT department jointly need to consider security of transaction made from some remote location and transmission of financial information over the air. The following factors need serious attention in order to provide financial transaction over wireless network: Physical security of the mobile phone device. If the bank is offering smart card-based security, the physical security of the device is more important. Security of the thick-client application running on the device. In case the device stolen, the hacker should need ID/Password to access the application. Authentication of the device with service provider before initiating a transaction. This would ensure that unauthorized devices not connected to perform financial transactions. User Password authentication of bank's customer.

Scalability & Reliability -Another challenge for the banks is to scale-up the mobile banking framework to handle expected growth of the customer base. Mobile banking enables the customer to access the banking facilities from wherever they want and hence banks need to ensure that the systems are functioning round the clock fashion. As customers will find mobile banking more and more useful, their expectations from the services will go up. Banks unable to meet the performance and reliability expectations may lose customer confidence.

Application distribution – It would be impossible for customers to go to their banks or visit the websites continually in order to update themselves. It expected that the mobile application itself review the upgrades and updates and download necessary patches. However, upgrade and synchronization of other dependent components are required to implement this approach

Personalization – There is hope that the mobile application would provide personalized offer such as: Preferred Language, Date / Time format. Amount format. Default transactions. Standard Beneficiary list and Alerts etc.

The research and market organization through their web site explains one of the major challenges faced by the banks. Many operators who have spent billions on third-generation mobile phone licenses are now eager to find ways of redeeming their money - and some specialist plan to apply for banking licenses in the future. The site defines that Immature Market - is another challenge as the mobile banking environment is still yet to evolve to a viable and sustainable market that can engage and support serious industry players such as big bank with large capital base. It is still not a profitable venture. Illiterate or older generation- pose a threat as they have difficulties that include language barriers and they need time to adopt the technology. Finally, they find out that Cost issues is also

involved in it such as whether the technology is affordable as normal banking services has tendency to hinder it quick growth.

Finally, (Laudon and Laudon, 2005) also argue that mobile banking includes the following weaknesses; cell phones have small keyboards and screens and are difficult to use. the data transfer speeds on 2G cellular network requires a lot of time compared to high speed internet connections for PCs. each second waiting for data to download costs the customer money, most internet enabled phones to have limited memory and power supplies most content for wireless devices is in the form of test with very little graphics.

1.6 Mobile Banking Adoption:

There are many perceived benefits of using m-banking define by (Dube, Njanike, Manomano and Chiriseri, 2011) such as convenience, availability, accessibility, reduced Costs, portability, wide customer reach and better security. According to (Chitungo and Munongo, 2013) there are a range of m-banking financial services functions, like bill-payments to utility service providers, payments to merchants, individual person to person (P2P) transfers, business to business (B2B) transfers, business to individual person (B2P) transfers and cross border remittances.

Many studies such as by (Brown et al., 2003; Lee et al., 2003; Suoranta, 2003; Luarn and Lin, 2005; Laukkanen and Lauronen, 2005) in different countries of the world, have been conducted to investigate the adoption of mobile banking. There is indication that the user is growing given the benefits that mobile banking offers, (Wessel and Drennan, 2010).

(Dineshwar R. & Steven M, 2013) carried out research using the Technology acceptance model and the Diffusion of Innovation Theory to find out the extent of m-banking adoption in Mauritius. Results shows that the rate of adoption was moderate as several consumers were not confident of the security levels of mobile banking channel. Studies made by (Hudson, 2008) reported that a survey conducted by Vodafone New Zealand Ltd

revealed that New Zealanders send messages using mobile phones at least 600 million times per month. This may be the reason why it has been easy for New Zealanders to use mobile banking, which is sms based. (Amin,Baba & Muhammad, 2010) study shows that mobile banking is still in its infancy and relatively new to the Malaysians.

The (ITU, 2011) reported that Nigeria has overtaken South Africa to become the continent's largest mobile market with now close to 100 million subscribers and market penetration at only 60% in early 2012. (Thulani, et al, 2009) reveal in his study that most Africans do not enjoy basic banking facilities, with only 20% of African families having bank accounts. For example, in 2007, only about 30% of households in Kenya had bank accounts. Benin, which has population of 7 million, had only 35 bank branches in 2007. (Abor, 2005) also pointed out that the limited access to financial services in Africa especially from deficient infrastructures, physical-geographical isolation or inaccessibility, financial illiteracy, all of which culminate into exceedingly high cost of providing banking services. Ethiopia, Uganda and Tanzania for instance, each have less than one bank branch per every100, 000 people compared to 10,000 in Spain. This ratio however shows a high gap across the continent, with Namibia having more than four, Zimbabwe more than three and Botswana nearly four bank branches per 100,000 people. Sub-Saharan Africa (SSA) has the lowest deposit institution penetration in the world standing at an average of 16.6% compared to 63.5%in other developing countries (Atemnkeng and Nzongang, 2006).

1.7 The Banking Sector in Azerbaijan:

Azerbaijan banking system was prospering during 2018. The year marked by stabilization of banks and increase in lending in the country. Restoration and tendency of staff increase in the banks was another significant factor. The days of traditional banking system expected to end in Azerbaijan soon. Even though Azerbaijan is a country of traditional banking system, experts believe that mobile banking will rule the world by 2030.The

development of digital sales channel, internet and mobile banking in Azerbaijan envisaged in the strategic roadmap for the development of financial services. It expected in 2020, because of digitalization, Azerbaijan's GDP would increase by 135 Manat. Digitalization will make it possible to increase the total income of bank in 2020 by 20%. At the same time, banks will need investments worth about 100 million Manats to carry out this work.

Over the past years, banks have actively started implementation digitalization. For example, Kapital bank began working on the creation of the country's first digital branch. The work on the development of digital sales channel helped banks to transfer most of their operation with Customers to digital form. For example, Unibank more than 70% of the total volume of transaction performed through digital channel, the bank plan to bring this figure to 90 percent.

Another example is the implementation of money transfer via bots in telegram and Facebook. Banks also began to work on the provision of mobile e-signature. Now capital bank also has this option. At the same time, the work has begun in Azerbaijan on introducing the possibility of mobile payments using Apple pay and Samsung pay.

CHAPTER TWO
RESEARCH METHODOLOGY

This chapter presents the chosen methods applied to conduct the research. It is consisting of research purpose, research approach, research design, data collection and data analysis.

2.1 Research Purpose:

Several studies have investigated the challenges that effect the customer approach of mobile banking such as researches published by (Reihaneh Bidar and Yucel Salman; 2014 Aijaz Shaikh, 2014). However, very few studies draw attention towards the challenges face by banking sector in providing mobile banking facility and no single study of this nature conducted in Azerbaijan.

The previous studies have analyzed the mobile banking services across the countries. This research is striving to provide information about the challenges in development of different mobile banking solution in Azerbaijan as well as overall perspective of challenges that influence this sector. This study not only helps the banks to understand their present situation, but they can also make progress by overcoming the current challenges.

Other factors that drive me into this research is the fact that using the financial service through mobile phone increased the economic activities and positively influenced the GDP (Economist; 2005). Mobile phone cuts down the transaction and transportation cost and ensure flexibility and time saving for customer moreover, it is easy to use by every common person (Economist; 2005). Furthermore (Jenifer Mull and Sharon Loane, 2017; Humphrey, 2000) study explains that mobile banking adoption has significant impact on bank efficiency by decreasing cost and increasing profitability.

2.2 Research Approach:

Research philosophy consider the approach of data collection, consists of belief assumption and perception, and affect the research design. There are two social sciences' philosophical approaches. The one called positivism and other is interpretivism. (Saunders, Lewis and Thornhill, 2009) define realizing and analyzing the complicated business situation is interpretivism whereas positivism test the theory and try to increase the anticipated perception of aspect.

(O'Leary and Saunders et al,2005) stated that in scientific research, the positivist view holds that experimental investigation and observations are the only source of substantial knowledge, current study adopts the positivist approach as quantitative measure of variable, hypothesis testing and drawing an inference according to (Saunders, Lewis and Thornhill, 2009) are requirement of positivist approach.

According to (Saunders, Lewis and Thornhill, 2009) there are approaches of three different styles of reasoning. These are inductive, deductive and abductive. Inductive is defined as observing a phenomenon and further developing a theory by analyzing and interpreting results, deductive is defined as the development and testing of theories and expect the outcomes of certain phenomena, which are then reworked or confirmed, and abductive involves combining developed theory with empirical findings, which allows the researcher to understand both empirical findings and theory. Since the direction and hypotheses of the proposed study known, it follows the deductive reasoning approach.

The research was approached at 'meso level' as defined by (Ducombe and Boateng; 2009) this means research focus would be on the service provider level such as financial institutions and network that provide mobile banking facilities. He interprets few researches at meso level use the primary data collection method. He further investigates

that if banks develop a new business setting it would be beneficial for mobile banking progress and banking sector as it reduces the cost of new branch soon.

(Ducombe and Boateng; 2009) also acknowledge that more in-depth research is require. However, this type of research needs more time and financial resources and human commitment to cover a wide geographical area for sample population. However, time and resources limitation did not allow my research to follow the detail approach.

2.3 Research Design:

Selection of appropriate design is necessary to get the authentic research. The research design provides the leading way on how the research question will answered and how the objectives of this study will be satisfied since the answer of the research question related to the selection of research strategy, collection techniques and the analysis procedures. (Saunders, Lewis & Thornhill, 2009) argue that research would be more convincing if research design focuses on reliability. It is significant for a study, that the research design emphasis validity and reliability, which in turn based on consistent findings (Saunders, Lewis & Thornhill, 2009). The purpose of this study is descriptive but includes parts of the explanatory research.

Proposed study uses of a quantitative research design. According to (Saunders et al, 2003), research designs divided into qualitative or quantitative design. As a rule, information comprehends qualitative in` nature if it cannot investigate by numerical techniques. According to (O'Leary, 2005) quantitative research, on the other hand, generally require gathering the primary data from persons with the objective of projecting the finding to a broader population.

The quantitative research design has its roots in science and is also recognize as the 'scientific method'. It requires the collection of facts and observable phenomena and scientists use these to make laws and develop relationships between variables. According

to the same writer, quantitative research describes, explains and tests relationships. This was one of the reasons for the choice of the quantitative research design mainly because the objective of the current study was descriptive.

Descriptive statistics were the foundation of this study; hence, quantitative methods with a quantitative research design had used. This means the research depends on numerical data as well as the numerical analysis of that data. Statistical methods used included the Pearson chi-square test of categorical data while other tests used encompasses correlations among others.

Both discrete (definite) and continuous data were sought after in the study although most of the data were discrete. Continuous data included amount the bank invested in mobile banking, percentage of customer using mobile banking services and estimated weekly sums of money transacted using the m-banking.

Since the study was descriptive, the positivist approach employed, measurement was very important. Categorical data was collected in the form of descriptive such as type of customer; type of services, area that bank planning to cove. Additional, quantitative data was collected using Likert's 5-point scale from very high to not at all to measure challenges in terms of regulation (financial, telecommunication and competition), technology and customer acceptance face by bank in providing mobile banking services.

2.4 Population of Study:

The population of study was comprised of banks who invested in mobile banking. Because of time constraint, top five banks selected to study, and considerable attention paid in selecting the banks, which play influential and leading role in banking industry of Azerbaijan. The banks are organizations that are involved in providing financial services to customers therefore; detailed intimacy would be beneficial for customers as well as banking institution. The entire population chosen to study, banks targeted for mobile

banking whether household, student, large companies, SME's or self –employed. Since only one questionnaire given to each bank, therefore five questionnaires expected to fill.

2.5 Research Instrument:

Survey research is a quantitative process of gathering data from a sample of existing population units with no dominance over factors that may affect the population aspects in the study. (Saunders et al, 2003) propose that the researcher should plan and perform the survey in a systematic manner. Surveys can be descriptive or explanatory. Current study conducts the survey research design, which entailed collecting data from banking institute in Baku.

According to (Saunders et al, 2003), the results can be generalized to the target population and this was one of the main reasons for the use of the survey research design. A survey design as defined by (Creswell, 2003) a design, which gives a quantitative or numeric explanation of the population through data collection. A procedure implicates asking people some questions. This study was a descriptive analysis of development and challenges of mobile banking face by banks in Azerbaijan.

2.6 Survey Questionnaire:

A structured questionnaire used in this study. (Leedy, 1992) states that a questionnaire is a formal approach to measuring characteristics, attitudes, motivations, and opinions as well as past, current and possible future behaviors. The information attain from a questionnaire can be used to explain, compare or forecast these facts. According to (White et.al, 2005) a questionnaire is a list of questions; each one has several alternative answers from which the respondent can choose.

The questions that made up the questionnaire designed on the basis to investigate the current situation and challenges bank faces in providing mobile banking. The

questionnaire divided into two sections, each covering a specific objective of this study. This means that each objective had a section in the questionnaire with questions corresponding to the objective. The survey questionnaire started with a short introductory paragraph, introducing the research topic and aim as well as assuring confidentiality to the respondent. Instructions then provided on how to complete the questionnaire. This followed by Section A of the questionnaire, which designed to collect information about the situation and contribution of banks in mobile banking. Sections B investigates the challenges face by bank in offering the mobile banking. Questionnaire was design in a way that support the respondent to answer it without any difficulties. Questions were well spaced, and this allowed the respondent to answer it clearly.

All the questions in the questionnaire closed ended in order to reduce the amount of time to complete it. Closed questions used on questions with straight forward answers for which options provide.

The respondents were bank managers. IT managers chosen given their role and position, which give them ability to response to most the questions. Beside IT, managers verse with the technological changes in the field of 1CT and are knowledgeable about new technologies such as mobile banking.

2.7 Pilot Study:

A pilot study done in order to test the questionnaire on ease of completion, timing, clarity moreover, understanding. The pilot test done on two banking institutions. However, strict care taken to make sure that pre-testing not done on the targeted respondents for the main data collection. This study then systematically selected the five respondents; banks in Baku. A few amendments made on the questionnaire to incorporate observations from the pilot study.

2.8 Variables:

Current study will observe the influence of independent variables on the dependent variable. Here the dependent variable is mobile banking adoption, and the independent variables are Understanding of current mobile banking situation, Bank's contribution in mobile banking and Challenges bank face in providing mobile banking.

2.9 Theoretical Framework:

This study investigates factors helpful for banks to determine mobile banking adoption that include; Understanding of current mobile banking situation, Bank's contribution in mobile banking and Challenges bank face in providing mobile banking. The relationship of variables in the model shows the impact of Banks's understanding of current situation, contribution and challenges on mobile banking adoption.

Bank's contribution

Understanding of current situation

Challenges

Mobile banking adoption

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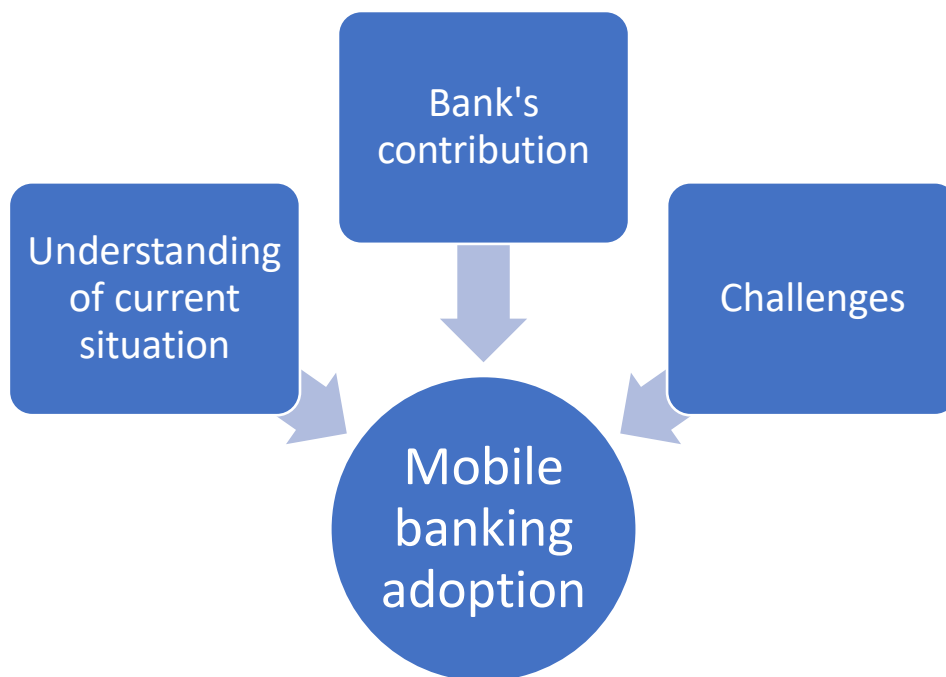
2.10 Hypothesis Development:

Depending on the theoretical framework and the objective of research, formulation of hypothesis will be:

According to (Charles Makanyeza and Jenifer Mulan; 2017) study who explore the relationship between bank's understanding of current situation and mobile banking adoption, it says that these variables have positive relationship. Therefore, current study supposes:

H1: there is positive relationship between Understanding of current mobile banking situation and mobile banking adoption

According to (Tiwari and Buse, 2007) study who explore the relationship between bank's contribution in mobile banking and mobile banking adoption, it says that these variables have positive relationship. Therefore, current study supposes:

H2: there is positive relationship between Bank's contribution in mobile banking and mobile banking adoption

According to (Cadle and Yeates, 2001) study who explore the relationship between increasing challenges in providing mobile banking and mobile banking adoption, it says that these variables have negative relationship. Therefore, current study supposes:

H3: there is negative relationship between increasing challenges in providing mobile banking and mobile banking adoption

2.11 Statistical Analysis:

The aim of this current study is to test the hypotheses, based upon the conceptual framework of this study. The collected data from the field edited and screened for errors and omissions, accuracy, uniformity and completeness and then tabulated before analysis carried out, (Cooper and Emory, 1995).

Given that this was a descriptive design, data analysis done using ratios, percentage and proportions to access the relative importance of various grouped factors. The basis of using descriptive measure was to give a basis for determining the weights of the variable under the study. A ranking based on Likert scale also used to help analyze the data closely. (Kibere, 2003) and (Ndole, 2006) have used the Likert scale in their studies successfully. Findings presented using s. pie charts, and bar graphs for easier interpretation.

CHAPTER THREE
RESEARCH FINDINGS AND DATA ANALYSIS

This chapter presents the detailed data analysis and findings of the study. Frequency distributions, pie charts, bar graphs and percentages used to analyze, summarize and present the data. Questionnaires satisfactorily filled from five banks and therefore, used in the analysis of data. These represented 71% response rate because the total number of respondents expected to be seven banks. (Ducombe and Boateng; 2009) also acknowledge that more in-depth research is require. However, this type of research needs more time and financial resources and human commitment to cover a wide geographical area for sample population. However, time and resources limitation did not allow my research to follow the detail approach.

First six questions in (Part 1) of the questionnaire are design to examine the understanding of banks

3.1 Bank's investment in mobile banking

Although mobile banking is relevantly new in Azerbaijan, but it has attracted attention of banking institution in the past few years. The development in digital sales channel including mobile banking represented through the amount of capital. Percentage bank invested in mobile banking ranges between 10% - 15% that is quite a large investment with hope to convert most of their customers to digital channel.

Table 1: Distribution of the amount invested in mobile banking

Mobile banking investment	Number	Proportion
Below 5%	0	0%
Between 5%-10%	2	40%
Between 10%-15%	3	60%
Between 15%-20%	0	0%
Between 20%-25%	0	0%
Above 25%	0	0%
Total	**5**	**100%**

Source: Research Survey Data

Figure I: Graph of showing distribution of the amount invested in mobile banking
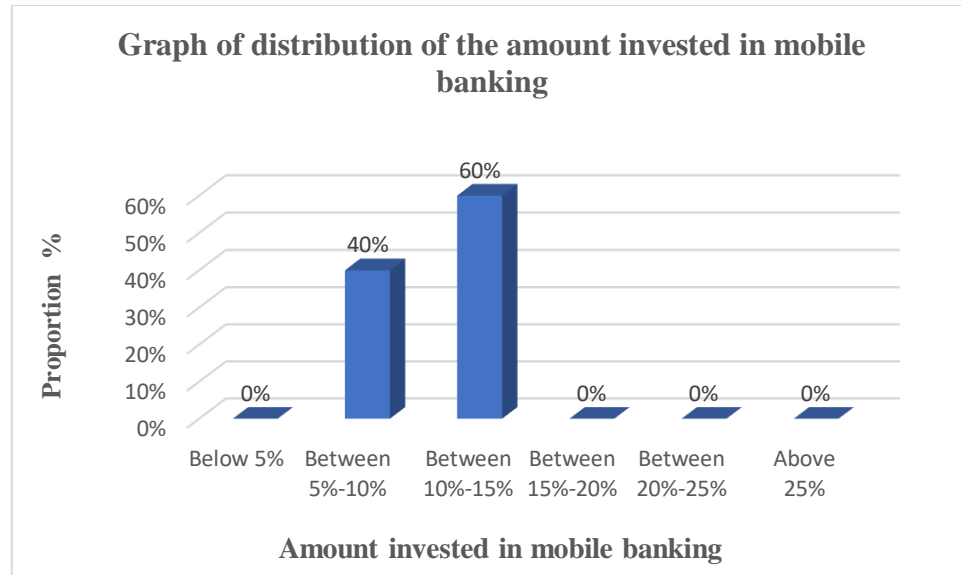
3.2 Bank's clientele base distribution

Mobile banking adoption is still in early stage in Azerbaijan as shown in the Table 2. Banks have very few mobile banking clienteles in comparison to the total no of clientele that the banks have. Percentage of customer using mobile banking services is between 10%-15%. This is an indication of the slow uptake of mobile banking services, making the managers to consider how to provide customer-based product and services in order to implement new system and increase adoption. Managers wants to enjoy the benefit of digitalization as they spend a lot of efforts and resources on mobile banking.

Table 2: Distribution of the banks' mobile banking clientele base

Mobile banking Clientele base	Number	Proportion
Below 5%	0	0%
Between 5%-10%	2	40%
Between 10%-15%	3	60%
Between 15%-20%	0	0%
Between 20%-25%	0	0%
Above 25%	0	0%
Total	**5**	**100%**

Source: Research Survey Data

Figure 2: Graph of showing distribution of banks' mobile banking clientele
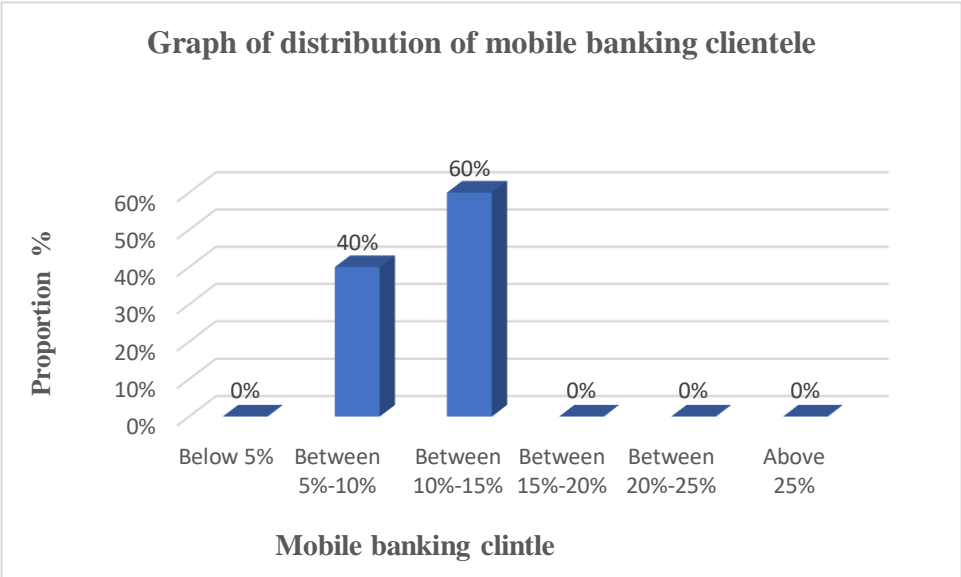
3.3 Active users of mobile banking services

Finding shows that customers who uses mobile banking services actively are employees. They are educated people and have busy life so, find it continent that they could check their account at any time, manage payment cards and transfer fund. Customers that use basic services change their usual banking channel to digital channel and as a result, the bank has a higher retention for these users. Large companies are second largest users and

very few numbers of transaction perform by household and students. Security issues, a perceived low value and expense were the primary reasons that customers do not switch to mobile banking. They are reluctant to try new banking services that are represented an extra cost and they are afraid of losing control of their finance.

Table 3: Distribution of the customers actively uses mobile banking services

Mobile banking user	Number	Proportion
Household	0	0%
Student	0	0%
Large companies	2	40%
SME's	0	0%
Eemployees	3	60%
Total	**5**	**100%**

Source: Research Survey Data

Figure 3: Graph of showing distribution of banks' customers actively uses mobile banking services
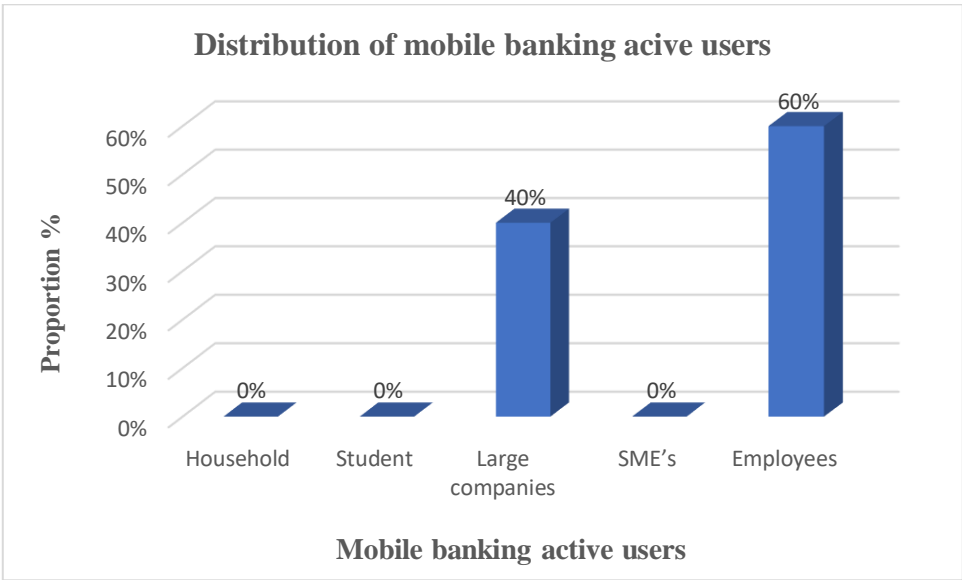
3.4 Social class using mobile banking services

The lower middle class is usually consisting of less educated people with lower incomes, while the upper middle class often made up of highly educated business and professional people with high incomes prefer technological solutions to bring ease in their lives. In Azerbaijan people belong to the high class are active users of mobile banking as they are highly educated and time constraint personals their main priority is to save time when performing banking services.

Table 4: Distribution of social Class using mobile banking services

Social Class using mobile banking services	Number	Proportion
Lower class	0	0%
Lower middle class	0	0%
Upper middle class	2	40%
High class	3	60%
Total	**5**	**100%**

Source: Research Survey Data

Figure 4: Graph of showing distribution of banks' customer's social Class using mobile banking services
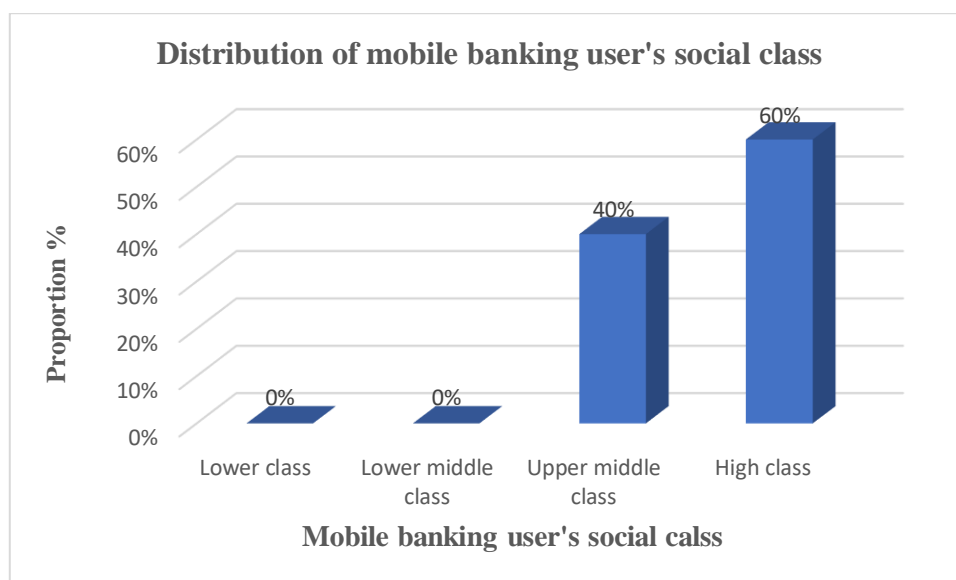
3.5 Regular services performed through mobile channel

Basic financial services including managing your current account and payment cards, payment of utility bills and transferring funds are performing by users through mobile channel. Mobile banking is the new banking transaction services, the rapid technological advancement in mobile-based technologies creating opportunities for banks in Azerbaijan who are trying to improve operations and reduce costs by introduced mobile banking system. Since mobile banking is in development process and do not gain the trust of social class people do not use mobile banking for lending money, insurance and investment purposes in Azerbaijan.

Table 5: Distribution of the mobile banking service performed by customer most often

Mobile banking services	Number	Proportion
Manage current account	5	100%
Manage payment cards	5	100%
Utilities payment	5	100%
Fund transfer	5	100%
Lending money	0	0%
Insurance	0	0%
Making investment	0	0%
Total	**5**	**100%**

Source: Research Survey Data

Figure 5: Graph of showing distribution of banks' mobile banking service performed by customer most often

Graph of the distribution of mobile banking regular services
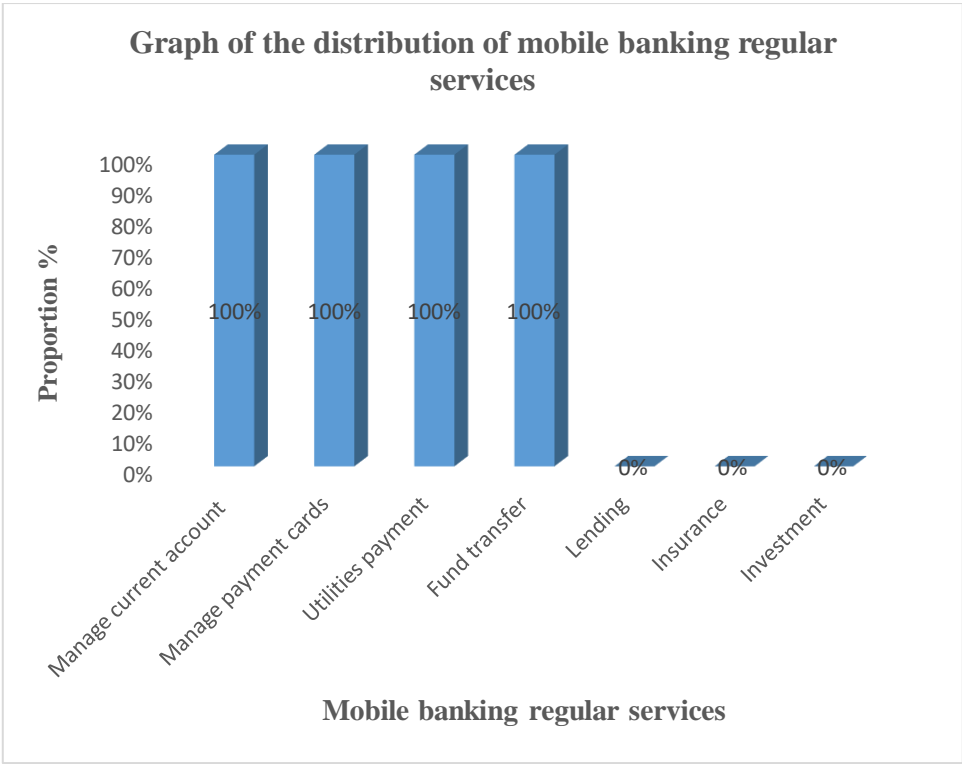
3.6 Frequency of using mobile banking services

During the survey period, it was found that two out of five banks explains that customers access mobile banking services daily, consumers are incline to the ease and convenience offered by mobile banking, In particular, there is a strong correlation between mobile banking usage, debit and credit card transactions and ATM usage. About the same percentage use services 2-3 times per week It is quite satisfactory for banks that although mobile banking does not have large clientele base, but current customers use the available service frequently.

Table 6: Distribution of the frequency of using mobile banking services

Frequency of usage	Number	Proportion
Daily	2	40%
2-3 times per week	2	40%
Once per week	1	20%
Once per month	0	0%
Total	**5**	**100%**

Source: Research Survey Data

Figure 6: Graph of showing distribution of the frequency of using mobile banking service
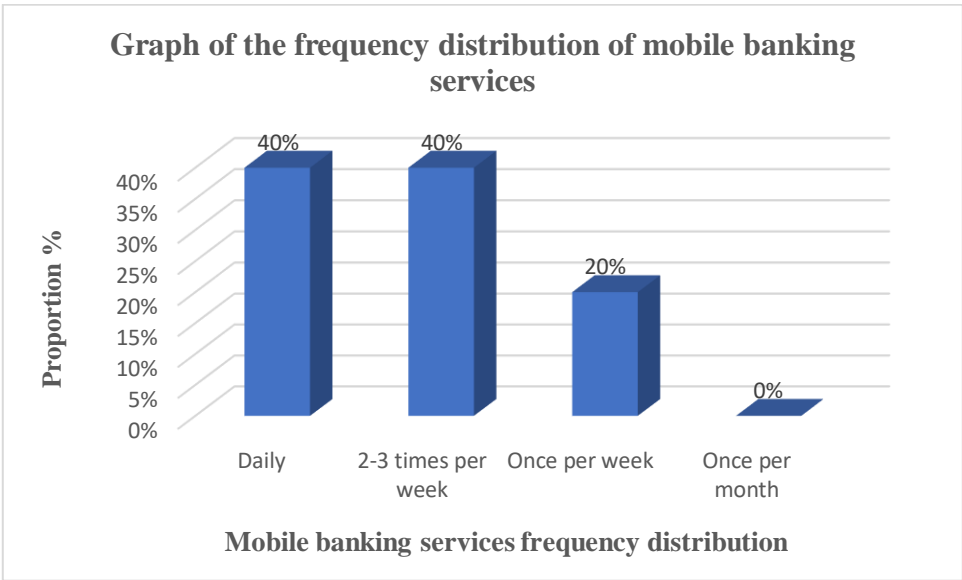
Remaining five questions in Part (1) designed to investigate the bank's contribution in mobile banking area. Banks start offering the special services in order to capture and retain customers.

3.7 Types of mobile banking services

Banks offering mobile access to many financial services including; managing your current account, payment cards, transferring funds and payment of utilities. The other way to categorize the mobile banking services is by the nature of the service. Through survey, we

find out that bank mostly provides two kind of services transaction based and enquiry based. A request for your bank statement is an enquiry-based service and a request for your fund's transfer to some other account is a transaction-based service. Majority of banks also provide lending services however; no bank is currently offering Insurance and Investment services.

Table 7: Distribution of mobile banking services

Types of Mobile Banking Services	Number	Proportion
Manage current account	5	100%
Manage payment cards	5	100%
Utilities payment	5	100%
Fund transfer	5	100%
Lending	4	80%
Insurance	0	0%
Investment	0	0%
Total	**5**	**100%**

Source: Research Survey Data

Figure 7: Graph of showing distribution of mobile banking services
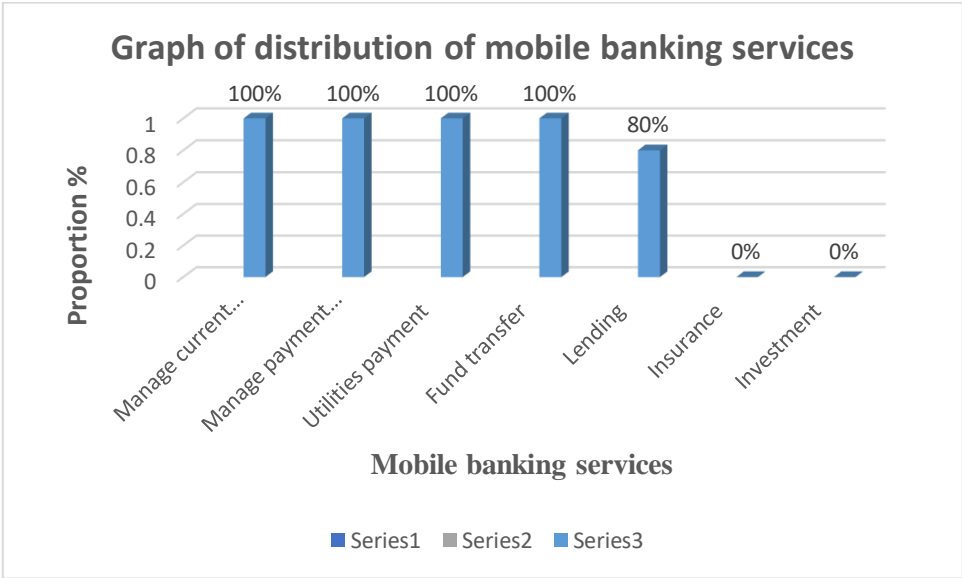
3.8 Special services provision

Even though Azerbaijan is a country of traditional banking system, the development of digital sales channel is prospering as banks become aware of the fact that digitalization will make it possible to increase the efficiency and total income of bank. Three out of five banks provide special services to their target customers in order to engage them and know them in more detail. Digital channel also offers some opportunities for banks to improve the way they perceived, by helping them to improve the overall customer experience. For banks, looking to delight their customers, provide excellent experiences and make people's lives easier is perhaps the best to provide special services to their special customers.

Table 8: Distribution of mobile banking special services

Special Services Provision	Number	Proportion
Yes	3	60%
No	2	40%
Total	**5**	**100%**

Source: Research Survey Data

Figure 8: Graph of showing distribution of mobile banking special services
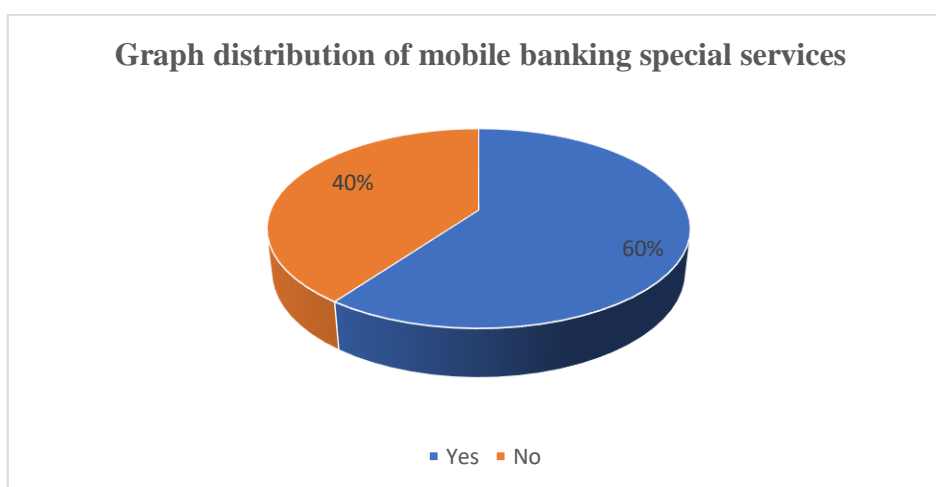
3.9 Area of special services provision

Since the mobile banking is in its early stage in Azerbaijan, so bank's focus area to provide the special services is basic, three out of five banks provides basic account services that include managing current account, managing payment card, payment of utilities and transferring funds. Since banks know mobile banking future importance, they try to cover more area; almost half of the banks also provide the lending facilities.

Table 9: Distribution of area of mobile banking special services

Special Services Provision	Number	Proportion
Basic account services	3	60%
Insurance	0	0%
Lending	2	40%
Investment	0	0%
Total	**5**	**100%**

Source: Research Survey Data

Figure 9: Graph of showing distribution of mobile banking special services area
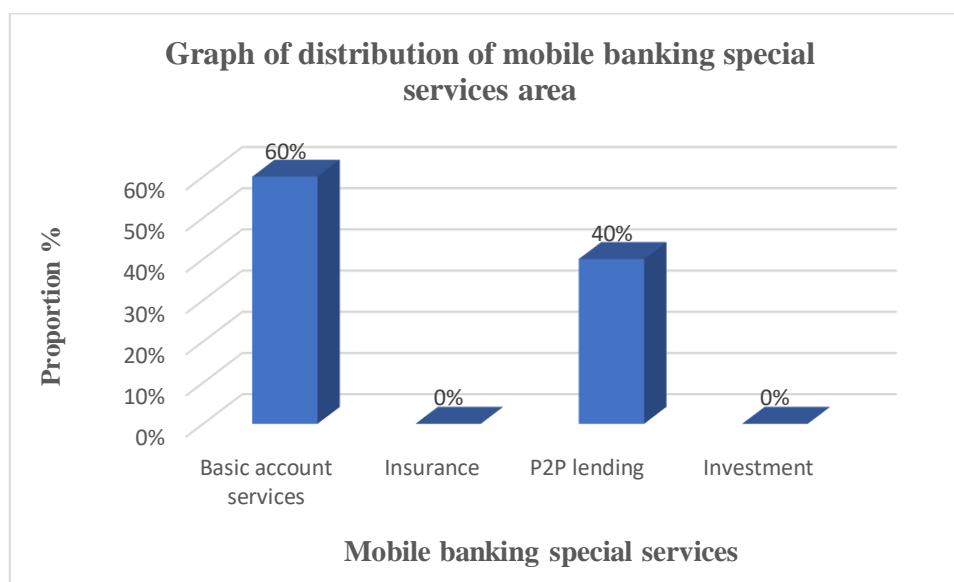
3.10 Bank's future area of mobile banking services

Banks in Azerbaijan aims to provide the basic service in future with more secure, convenient and cost effective way although current users use basic services more frequently but clientele base is very small compare to total number of users and consist of high class so in the near future banks want lower middle and lower class to benefit from digitalization. Three out of five banks want to provide basic services in near future while two out of five banks aim to provide lending services as well.

Table 10: Distribution of area of mobile banking future services

Special Services Provision	Number	Proportion
Basic account services	2	60%
Insurance	0	0%
P2P lending	3	40%
Investment	0	0%
Total	**5**	**100%**

Source: Research Data

Figure 10: Graph of showing distribution of mobile banking future services area
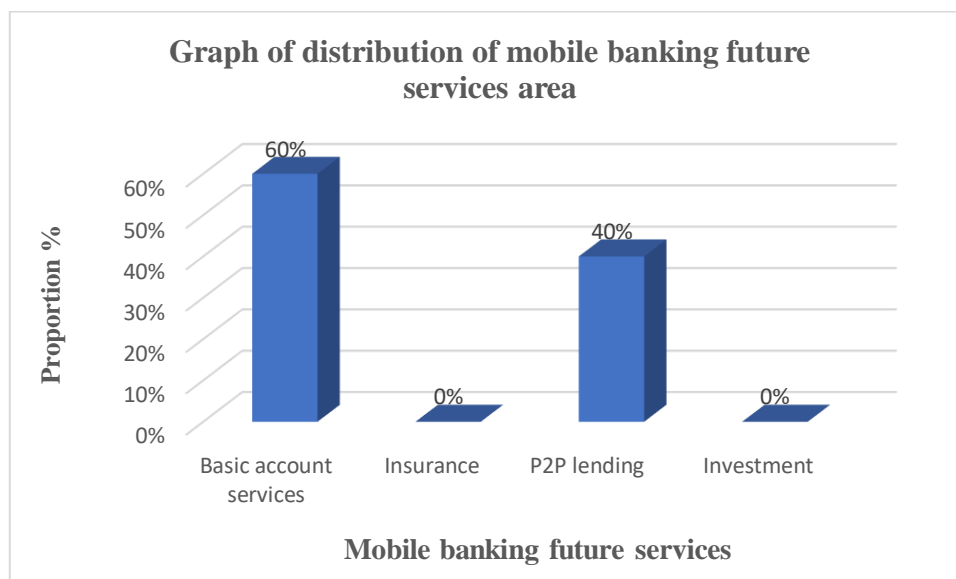
3.11 Usage instruction of new financial product

Banks seem to be satisfied with the guidance they provide to customers regarding the new services. Four out of the total bank explains that usage instruction is clear and easy to access. Customers can access the website that provide 24/7 help and there are toll free numbers as well. All the necessary information requires to perform the service are available easily that encourage the customers to benefit from mobile banking.

Table 11: Distribution of usage instruction of new financial product

Special Services Provision	Number	Proportion
Not at all	0	0%
Little	0	0%
Normal	1	20%
High	4	80%
Very high	0	0%
Total	**5**	**100%**

Source: Research Survey Data

Figure 11: Graph showing distribution of the usage instruction of new financial product
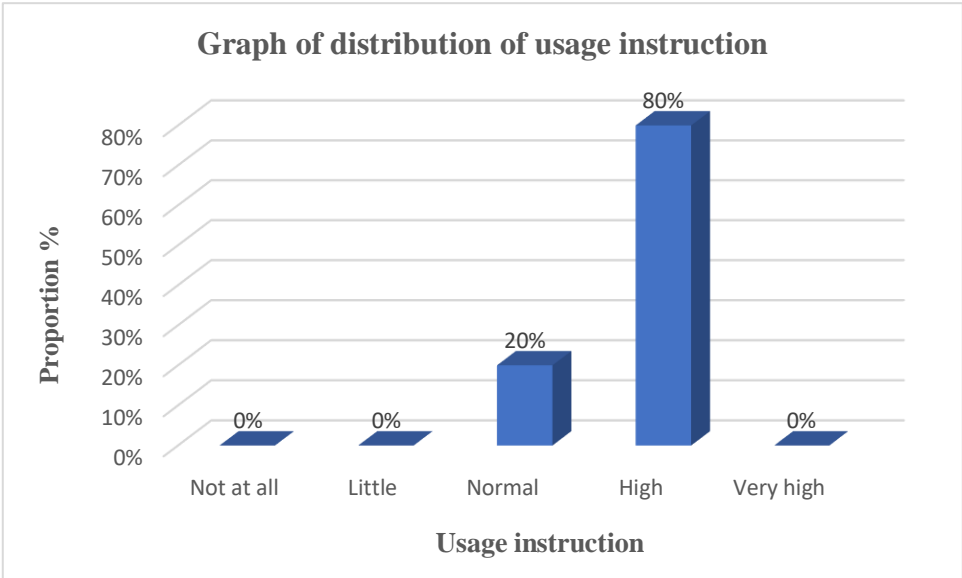
Second part of questionnaire analyze the challenges bank faces in providing the mobile banking services. Several factors pose challenge to the implementation, the successful implementation of mobile banking is crucial for provision and adoption of mobile banking services. Challenges classified in terms of regulation (financial, telecommunication and competition), technology (in terms of constantly improving the services and in terms of developing new services) and customer acceptance. It is necessary to be aware of the nature of challenge in order to cure it for the successful implementation of mobile banking.

3.12 Security challenges

The Likert scale indicates that security is a challenge to implementation of mobile banking. Security presents itself as one of the main challenges in the implementation of mobile banking information system three out of five banks have the view that it is a serious challenge compared to about two banks who do not see this as serious and consider it a normal challenge. The major security fears are that there are no proper controls; fear of fraud and that mobile banking system are not secure.

Table 12: Level of security challenges in providing mobile banking services

Security Challenges	Number	Proportion
Not at all	0	0%
Little	0	0%
Normal	2	40%
High	3	60%
Very high	0	0%
Total	**5**	**100%**

Source: Research Survey Data

Figure 12: Graph of showing distribution of security challenges
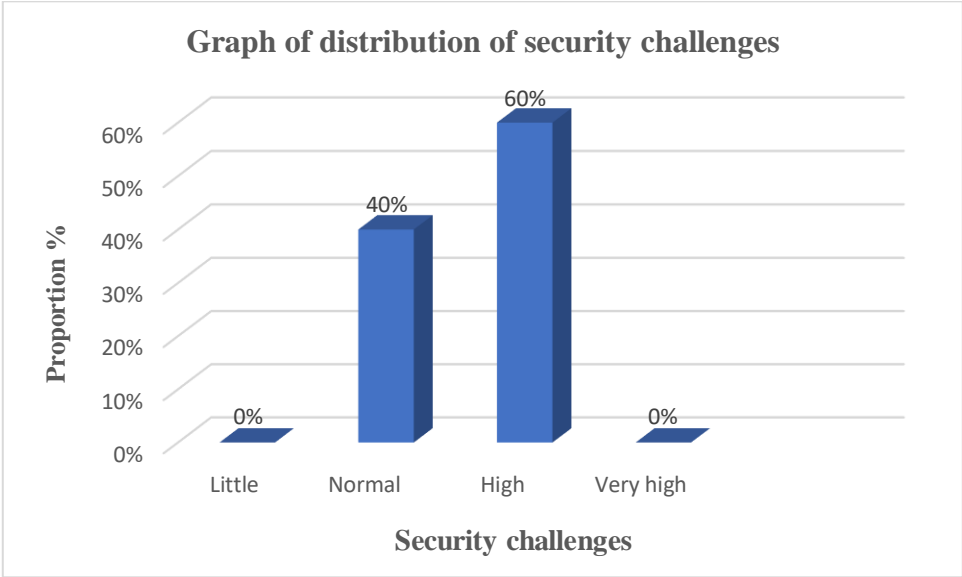
3.13 Telecommunication challenges

Telecommunication challenge is a main challenge to the implementation of mobile banking information system. The proportion on the Likert scale support this fact. There is lack of regulation to banks jurisdiction not clearly defined in implementing mobile banking. Other challenges include the fact that FIMSA does not facilitate the license process, three out of five banks support this fact that they find license process highly complicated whereas two banks consider it very high complicated.

Table 13: Level of telecommunication challenges in providing mobile banking services

Telecommunication Challenges	Number	Proportion
Not at all	0	0%
Little	0	0%
Normal	0	40%
High	3	60%
Very high	2	0%
Total	**5**	**100%**

Source: Research Survey Data

Figure 13: Graph of showing distribution of telecommunication challenges

Graph of distribution of telecommunication challenges
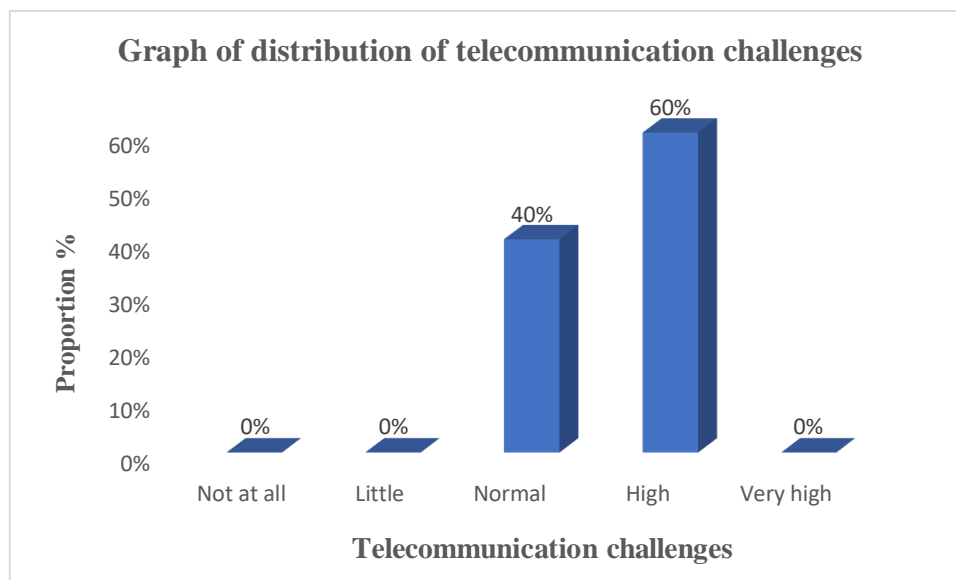
3.14 Competition challenges

Telecommunication companies and digital wallet platform like Google pay and Samsung pay using software to provide financial services. The increasing popularity of online payment system is disrupting the way traditional banking has done. This creates a big challenge for traditional banks because they are not able to adjust quickly to the changes not just in technology, but also in operations, culture, and other facets of the industry. According to respondent's government support, these digital platforms at normal level and some consider support is little.

Table 14: Level of Competition challenges in providing mobile banking services

Competition Challenges	Number	Proportion
Not at all	0	0%
Little	2	40%
Normal	3	60%
High	0	0%
Very high	0	0%
Total	**5**	**100%**

Source: Research Survey Data

Figure 14: Graph of showing distribution of competition challenges

Graph of distribution of competition challenges
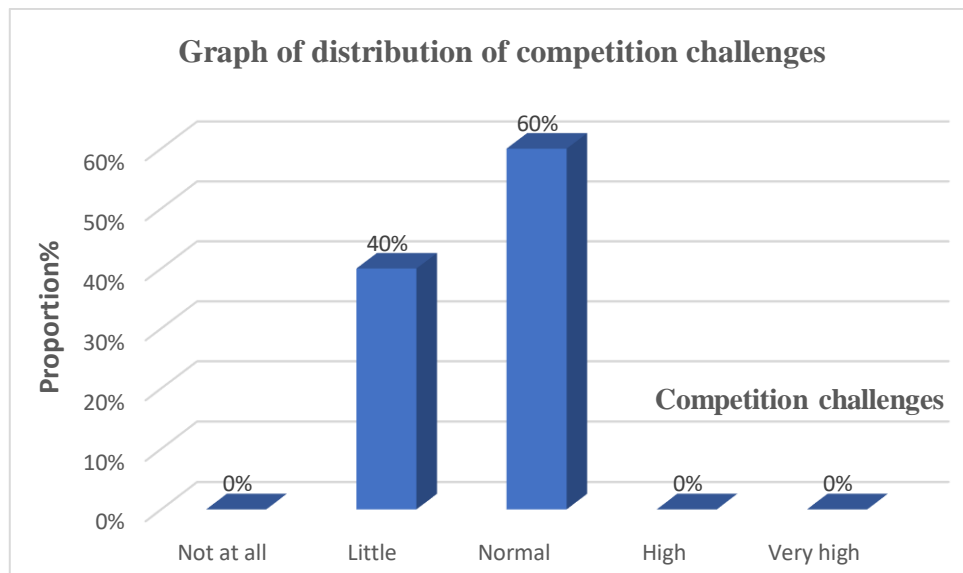
3.15 Technological challenges in terms of improving services

Overall it can be said that banks have the necessary capability to improve the financial services provide from mobile channel, which in the Likert scale of 3-4 means that majority of the respondents agreed that technology was not a challenge to mobile banking implementation. The proportions indicated that three out of five banks agree that it is not a challenge whereas two out of five banks feel that it is an important challenge and find it hard to improve the services continual level.

Table 15: Level of technological challenges in terms of improving services

| Technological Challenges in Terms of Improving Services	Number	Proportion
Not at all	0	0%
Little	0	0%
Normal	3	60%
High	2	40%
Very high	0	0%
Total	**5**	**100%**

Source: Research Survey Data

Figure 15: Graph of showing distribution of technological challenges in terms of improving services

Graph of distribution of technological challenges in terms of improving services
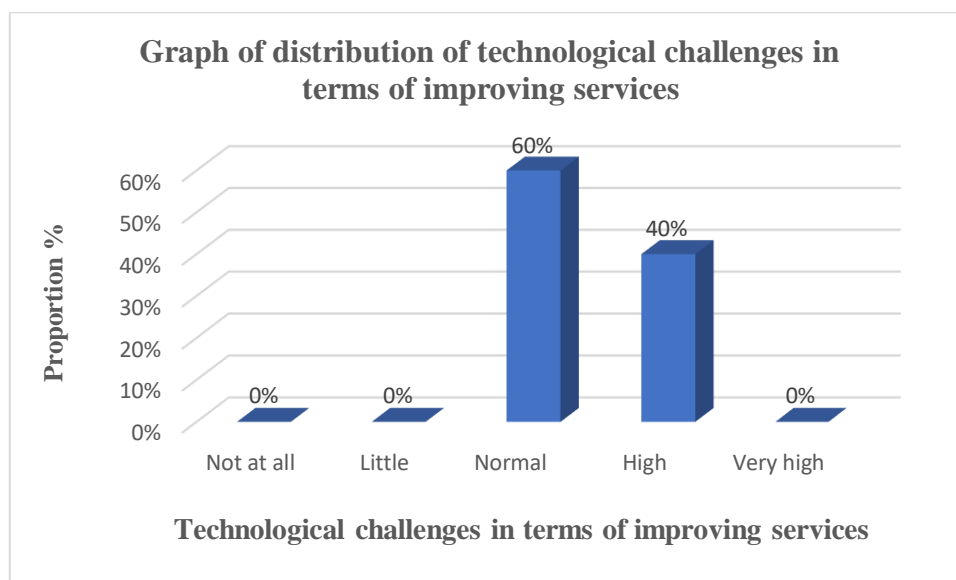
3.16 Technological challenges in terms of developing services

Development of services is a challenge to the implementation of mobile banking information system. The Likert scale of four banks support this fact means that majority of the respondents feel that providing new services like lending, insurance and investments through digital platform are highly challenging and require huge investment in technology.

Table 16: Level of technological challenges in terms of developing services

Technological Challenges in Terms of Developing Services	Number	Proportion
Not at all	0	0%
Little	0	0%
Normal	1	20%
High	4	80%
Very high	0	0%
Total	**5**	**100%**

Source: Research Survey Data

**Figure 16:** Graph of showing distribution of technological challenges in terms of developing services

Graph of distribution of technological challenges in terms of developing services
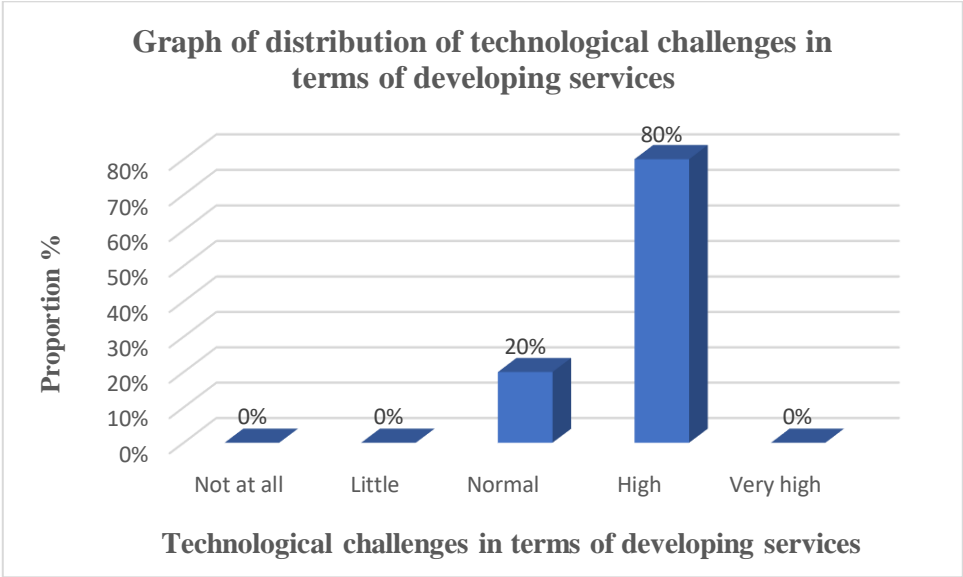
3.17 Collaboration challenges

Evidence from across the world suggest that bank collaborating with fin-tech bring many benefits for banks however many developing countries banks like Azerbaijan do not consider this as important factor in digital growth. Finding of this survey shows that banks do not have clear understanding of this challenge almost half of the respondent consider this as high challenging while for others it is normal and only one bank think that this challenge is minor.

Table 17: Level of collaboration challenges in providing mobile banking services

Collaboration Challenges	Number	Proportion
Not at all	0	0%
Little	1	20%
Normal	2	40%
High	2	40%
Very high	0	0%
Total	**5**	**100%**

Source: Research Survey Data

Figure 17: Graph of showing distribution of collaboration challenges

Graph of distribution of collaboration challenges
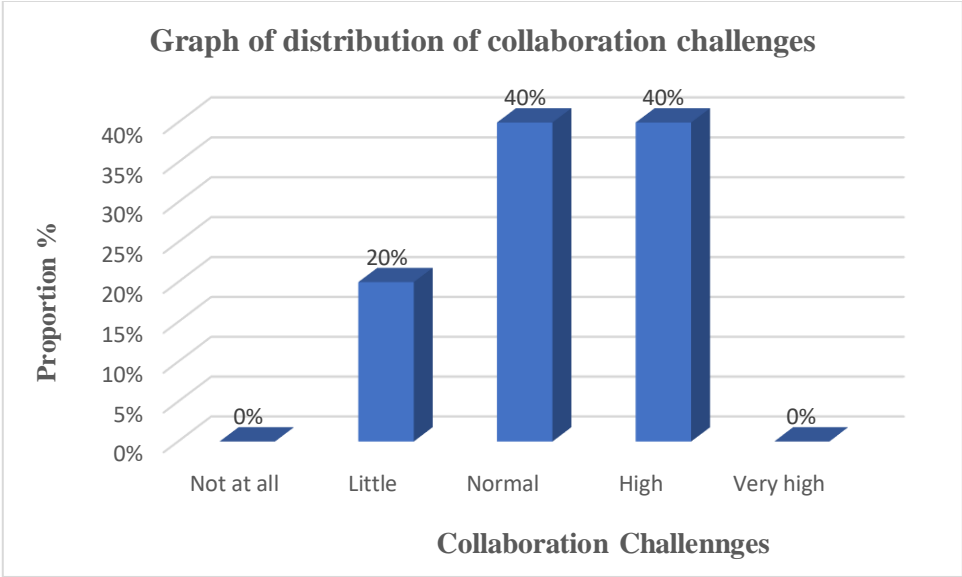
3.18 Customer's acceptance challenges

Users support also support successful implementation of mobile banking information systems this fact supported by proportion on the Likert scale. Although the mobile banking system will eventually benefit them, the users seem to be one of the main challenges in the successful implementation of mobile banking systems, in fact up to four out of five respondents feel that they are a normal challenge compared to only one bank who feel otherwise. They are apprehensive of the services; slow in up taking the services, illiteracy is also a factor affect user adoption of this technology making them become implementation barrier. The aged seem not to like new technology compared to young people.

Table 18: Level of customer's acceptance challenges in providing mobile banking service

Customer's Acceptance Challenges	Number	Proportion
Not at all	0	0%
Little	1	20%
Normal	4	80%
High	0	0%
Very high	0	0%
Total	**5**	**100%**

Source: Research Survey Data

Figure 18: Graph of showing distribution of customer's acceptance challenges
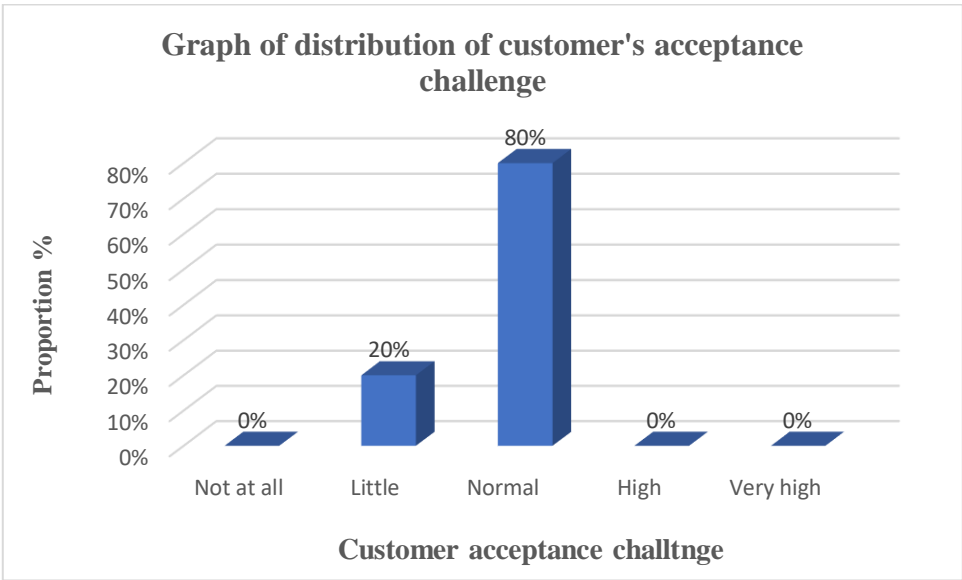
CONCLUSION AND RECOMMEDATION

Discussion and Conclusion:

There are five banks take part in current survey, three out of the five respondents spend 10-15% of their capital in mobile banking that represent quite a large amount, but mobile banking uptake is still at infancy and most commercial banks have very few mobile banking clienteles in comparison to the total no of clientele that the banks have. Majority of commercial banks are having about 30.000 mobile banking customers compared to about 300,000 total number of customers (a ratio of 1:10) this is an indication of the slow uptake of mobile banking information services by consumers. Users of mobile banking services belong to high class and are employees of companies and large companies itself. Transaction they perform through mobile channel are basic services including managing current account and payment cards, transferring funds and paying the utilities. Frequency of using the services are daily or 2-3 times a day that is quite high and satisfactory.

Since the banks perceive mobile as useful and rapidly embracing device, therefore, banks start to consider mobile as important channel to offer their financial services and aim to contribute in this area at significant level. Currently bank offer basic services and provide the lending platform to its users through mobile channel. In order to engage many customers many banks provide the special services covering basic services essentially. Banks aim to cover basic service area in the near future, with more secure, convenient and cost effective way although current users use basic services more frequently but clientele base is very small compare to total number of users and consist of high class, so in the near future banks want lower middle and lower class to benefit from digitalization. Upper middle and high class is mostly high-educated business and professional people with high incomes who adapt to technological solution very quickly and welcome new changes compare to lower class who prefer the traditional ways of living so in order to

facilitate low class there is high level of usage instruction services. All the necessary information requires to perform the service are available easily through website that provide 24/7 help and there are toll free numbers as well.

The successful implementation of mobile banking is crucial for provision and adoption of mobile banking services. Several factors pose challenge to the implementation, these factors include regulation (financial, telecommunication and competition), technology and customer acceptance challenges. In security there is a strong feeling that mobile banking systems are not secure and reliable, and that financial institution are not doing enough to address these fears and challenges. The legislation that govern use and operation of mobile banking systems is still not clearly defined and that banks are not regulated on the way they can offer such services, however many banks that implement the system have in place measures to protect against fraud and loss of customers money. Regulation challenges include telecommunication challenges many banks feels that FIMSA does not facilitate the license process. Another challenge is competition challenge, the increasing popularity of online payment system creates a big challenge for traditional banks however, and banks do not consider this as big threat and agree that these new digital systems do not enjoy the high government support. One of the most important challenge bank face in digitalization is technology challenge banks feel they possess enough technology to improving services as per customer requirement however developing the new service in new area require large budget. Like many other developing countries banks in Azerbaijan do not consider collaboration challenge as important factor in digital growth. Finding of this survey shows that banks do not have clear understanding of this challenge almost half of the respondent consider this as normal while for others it is high challenging whereas one bank think that this challenge is minor. It seems that users have not been keen on adopting mobile banking services this might because of security fears and the fact that they are still accustomed to the normal banking systems, another challenge posed by users is the fact that they are slow in adopting the new technology.

However, the study overall noted that the following factors do not pose a challenge to the implementation and adoption of mobile banking information systems;

- Competition challenge
- Collaboration challenge
- Technological challenge in terms of improving services

Other significant challenges banks face in mobile banking area are

- Technological challenge in terms of improving services
- Security
- Regulation
- Customer's acceptance

However, technological challenge considered as great challenge when developing new services in new areas as it requires huge investment and expertise field moreover security challenge specifically high jacking phones, anti-various protection, safe internet connection and password problems are a challenge to successful implementation of mobile banking. In regulation, lack of proper government support in providing license is a serious challenge. They do not fully support or participate in the implementation of mobile banking systems posing a challenge. Finally, the fact that mobile banking systems are expensive and require many resources, commercial banks are struggling to possess the capability to provide secure, high tech and cheaper services to increase mobile banking services adoption.

Limitation of the Study:

Only five banks invited to take part in survey and to collect the data and banks were very reluctant to provide information citing many questionnaires they receive from various student and research organization and fear that their competitors can use the information provided. There are also not many academics involved in mobile banking in Azerbaijan.

The limited number of respondents make it somewhat difficult to validate the observation made. A large sample size would need to use in order to have made more robust finding. Although the methodology used is replicable, the finding is mostly limited to the Azerbaijan context since several non-stable variables such as culture; country regulation and mobile phone penetration are country specific. It would therefore not be appropriate to try to explore the findings and hypothesis put forward to other developing countries.

Another limitation of this study has to do with the data collection. Care has taken to review relevant past research that looked at the developing countries cases particularly. However, it is likely that not all the past relevant research studies have been covered and as such the extraction of data from past research might not complete. Similarly, not all the services provider has been interviewed and questionnaire are not qualitative as a result some interesting may have been lost

Time is also a constraint as a lot expected within a short period. Moreover, the study is conducted in capital city geographical region may also effect finding of study. Mobile banking is still a new technology and getting literature material is a difficult task hence heavily reliance on internet material.

Recommendation for Further Research:

The study addresses only one of the gaps there are several other research areas that should address in this field. One of the areas that I think should address in priority is research involving end users. Through this study it has become known that there are many assumptions being made on what the end users and specifically the 'unbanked' need from mobile banking services.

(Marsden, 2009) argues that it might be a wrong assumption to think that the unbanked population need mobile banking. He raised several questions on the actual model of the services offered and its usefulness:

- Is the unbanked population in need of traditional banking services?

- Will mobile banking help the low-income market financially or merely make use of this new market?

There may thus be further avenues of research in looking at the usefulness of the current business models why type of model would be more useful for different type of customers. Finally, an important future research would be to test the validity of the challenges proposed in this study in context of large population and different geographical region. There may be case for testing these challenges through more elaborate surveys with end users, service providers and regulation. The challenges formulated as hypothesis and qualitative study designed to validate these hypotheses.

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APPENDIX

Questionnaire:

Welcome to the "Development and challenges of mobile banking in Azerbaijan" survey.

Thank you for agreeing to take part in this important academic survey examine bank's development in the mobile banking and challenges faces in this regard. This study conducted through Khazar University. Today the valuable information provided by you prepare your bank to overcome the current and future challenges face in the adoption of mobile banking. Be ensured that your information kept in the strictest confidentiality.

(Part 1) Bank's current situation of mobile banking and its contribution:

Name of the bank: _____

1. What amount of capital bank invested in mobile banking?

(a) Below 5% (b) 5%-10%   (c) 10%-15%   (d) 15%-20%   (e) 20%-25%   (f) Above 25%

2. Percentage of customer using mobile banking services?

(a) Below 5% (b) 5%-10%   (c) 10%-15%   (d) 15%-20%   (e) 20%-25%   (f) Above 25%

3. Which type of customer uses mobile banking services actively?

(a) Household   (b) Student   (c) Large companies   (d) SME's   (e) Self employed

4. Which social class uses mobile banking services actively?

(a) Lower class   (b) Lower middle class   (c) Upper middle class   (d) High class

5. Which type of service offers by bank through mobile channel?

(a) Manage current account   (b) Manage payment cards   (c) Utilities payment

(d) Fund transfer   (e) Lending   (f) Insurance   (g) Investment

(1) (a, b, c, d)   (2) Option 1 and e   (3) Option 1 and f   (4) Option 1 and g   (5) (a, b, c, d, e, f, g)

6. Which type of service performed by customer most often?

(a) Manage current account   (b) Manage payment cards   (c) Utilities payment

(d) Fund transfer   (e) Lending   (f) Insurance   (g) Investment

(1) (a, b, c, d)   (2) Option 1 and e   (3) Option 1 and f   (4) Option 1 and g

7. How often services performed by customer through mobile channel on average?

(a) Daily   (b) 2-3 times per week   (c) Once per week   (d) Once per month

8. Does bank introduce special service through mobile channel?

(a) Yes   (b) NO

9. Which area bank introduce special mobile banking service?

(a) Basic account services   (b) Insurance   (c) P2P lending   (e) Investment

10. Which areas bank are planning to cover through mobile channel in near future?

(a) Basic account services   (b) Insurance   (c) P2P lending   (e) Investment

11. How much bank educate the customer to use the new financial product.

(a) Very high   (b) High   (c) Normal   (d) Little   (e) Not at all

(Part 2) Challenges in terms of regulation (financial, telecommunication and competition), technology and customer acceptance face by bank in providing mobile banking services:

12. What extent bank faces challenge of customer security cost in pricing of services?

(a) Very high   (b) High   (c) Normal   (d) Low   (e) Not at all

13. What extent FIMSA facilitate the license procedure with telecommunication provider?

(a) Very high   (b) High   (c) Normal   (d) Low   (e) Not at all

14. What extent government supports the new entrants in the industry?

(a) Very high   (b) High   (c) Normal   (d) Low   (e) Not at all

15. What extent bank faces cost challenge of continues improvement in the mobile application with pricing of services?

(a) Very high   (b) High   (c) Normal   (d) Low   (e) Not at all

16. What extent bank faces cost challenge of developing new financial product and services?

(a) Very high   (b) High   (c) Normal   (d) Low   (e) Not at all

17. What extent bank faces challenge with collaboration with fin-tech companies for improving mobile banking services?

(a) Very high   (b) High   (c) Normal   (d) Low   (e) Not at all

18. What is level of customer acceptance towards the mobile banking?

(a) Very high   (b) High   (c) Normal   (d) Low   (e) Not at all