

Reviewing the Influence of Emerging Technological Developments on the Mobile Banking Industry

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Abstract: *The advancement of mobile and internet technologies has had a significant impact on the transformation of several industries, including specific economies. The increasing use of the internet and mobile phones has led to significant changes in various industries, including banking. Unlike traditional banking transactions, online banking, which can be conveniently conducted from home or the office using a computer, has faced challenges in establishing its position. "Portable banking" refers to the consolidation of information from mobile phones regarding the status of a bank account or a payment transaction within a brief period of time. Thanks to the aid of mobile phones, mobile banking has evolved to the point where it can now be used to make payments at any time and from any location. Consequently, cell phone manufacturers have had to meet the increasing demands of customers for banking transactions that are more uncomplicated and easier. The introduction of PDAs that incorporated contactless payment transactions marked a significant advancement in this industry. Banking responsibilities have been altered due to improvements in portable technologies, with the primary objective of providing new channels for the distribution of banking services. Financial institutions and mobile operators collaborated closely during the entire event. The number of individuals using mobile financial services is increasing in Serbia, as well as elsewhere.*

Keywords: Mobile banking, banking services, electronic payments

I. INTRODUCTION

The proliferation of the Internet and mobile technologies has revolutionized numerous sectors and economies. Mobile banking offers cost savings and enhances accessibility by allowing users to access services conveniently and at any time or place. The market's power and competition have seen significant transformations in various aspects. iTunes has revolutionized the music industry, rendering many large bookstores obsolete, Amazon has caused significant unemployment in the industry, Expedia has emerged as one of the largest global tourist companies, and so on. The Internet and mobile technologies provide a challenge to most industries.

Most company strategies today are at risk of becoming obsolete due to the emergence of the dot-com boom in 2000. The banking sector, along with various other industries, has undergone significant transformations due to the widespread adoption of mobile phones, the advancement of smart phones, and the increased accessibility and affordability of the Internet. Despite initial hesitations, online banking has proven to be a feasible alternative for conventional bank transactions.

Exchanges can be efficiently conducted from personal computers located at home or at the office. Regular monitoring of currency transactions allows customers to track the flow of their funds. Consequently, the need to travel between different parts of a town and endure queues at banks has been eliminated. Transactions can be efficiently and conveniently conducted 24/7 from any location worldwide. Individuals who engage in frequent travel and prioritize prompt access to their bank account information or the ability to conduct transactions are increasingly recognizing the significance of these activities. Rapid improvements in mobile technology allow us to perform these banking operations using smartphones. All of these activities can be categorized as "mobile banking." Mobile phone manufacturers also have to meet the increasing demands of customers for more convenient and efficient management of their bank

accounts and transactions. Mobile banking has evolved from basic account checking to the current ability to make instant payments in stores.

Apple, a prominent mobile device manufacturer, produced a groundbreaking innovation in smart phone production that compelled other manufacturers to emulate in order to compete in the market. Apple enables us to integrate electronic cards inside a device, allowing for contactless payments in stores by just moving the smartphone close to the point-of-sale (POS) terminal. Apple Pay is a form of payment. Samsung, the primary competitor of Apple, unveiled Samsung Pay, a comparable functionality for mobile devices. The banking industry has not only been compelled to regularly adjust to client demands and vie for new business against other industries, but also against closely associated industries. The field of banking known as versatile banking has been seeing gradual progress, with several additional advancements expected to emerge in this sector.

The concept of adaptable financial enhancement of existing advancements was one of the most significant contributors to the growth of the financial industry. Through the utilization of technology innovations, the banking sector successfully expanded its reach to previously inaccessible clientele with elevated demands, hence necessitating a reorientation and restructuring of the corporate landscape. When examining the evolution of the banking business, it becomes apparent that significant resources have been dedicated to the creation of novel communication channels capable of reaching all customers. The main goal has been to provide new channels for financial services and streamline the business process by moving away from the traditional banking model, encompassing phone banking, internet banking, and mobile banking (m-banking).

Mobile banking enables consumers to have access to all their financial resources through mobile phones, smartphones, and personal digital assistants. One can employ mobile banking to achieve this.

1. Voice mail, sometimes referred to as Interactive Voice Response (IVR), is a communication channel that enables customers to interact with banks. When a client dials a specific number, they are presented with a menu of several alternatives to access information and retrieve messages.
2. Short Messaging Service (SMS) allows customers to send text messages with pre-determined content. The bank can then respond by sending another pre-determined text message containing the required information.
3. Remote access (Remote Access Convention) is a communication channel that operates similarly to internet banking, as it leverages the same WAP technology. Customers can utilize the WAP search engine on their mobile devices to access bank presentations and obtain the necessary information regarding banking goods and services.
4. Standalone Mobile Application Clients, also known as client-oriented mobile applications, are a distribution channel that allows clients to access enhanced banking services and perform secure and reliable modern-day transactions through mobile applications.

The range of options available for mobile banking has expanded due to the advancements in smartphones, 3G phones, and the introduction of new technologies for 4G. Screening the characteristic of modifying and working on the model of m-banking is highly significant. According to data framework professionals, it is considered a major advancement in mobile commerce (m-commerce) and therefore, a crucial element for future banking activities.

The most satisfactory meaning of portable banking has been given by : " Mobile banking is a novel approach to gaining access to banking services via a channel in which mobile devices (such as mobile phones or personal digital assistants) are used to communicate with the bank. Smartphones and tablets will soon become new hardware devices in everyday life, according to Deutsche Bank Research , driving a larger and more rapid supply of mobile solutions. Additionally, mobile device usage is rising in the Republic of Serbia, according to a domestic market analysis. Somewhere in the range of 2013 and 2014 there was critical development being used of cell phones in families of practically 4% (86.9 - 90.6%), though in the period 2014 and 2015 this development diminished by 0.3% (to 90.3%), and by 0.1% in 2016 (to 90.2%). These pointers don't show a few outrageous qualities until contrasted with the circumstance quite a while back when the utilization of cell phones in families was 71.2% (Utilization of data and correspondence advancements in the Republic of Serbia, RZS, 2007, 2014, 2016). This development of practically 20% being used of cell phones in families in the Republic of Serbia affirms the worldwide pattern.

A study conducted by the Statistical Office of the Republic of Serbia (RZS) found that 76.5% of respondents chose "a cell phone" as their preferred means of accessing the Internet. One of the applications that has emerged from mobile commerce (M-commerce) is m-banking, which is a channel through which banks engage with customers using mobile

phones in the most efficient manner. Customers receive real-time information from banks through m-banking or SMS services. Given the continuous progress in mobile communication technology, many authors propose that any financial transaction conducted through a wireless telecommunication network can be considered a form of communication.

It can be inferred that mobile financial services offer a wider range of practical options compared to online banking. For instance, users can utilize a versatile financial application to make a payment, whereas in web-based banking, an additional device is required to do so, or users have to receive a text message with a code, which involves the use of two devices instead of one.

The increasing number of internet-savvy users accessing services through mobile devices, particularly smartphones and tablets, has improved both the quality of life and ease of use. This has resulted in individuals having more time for other activities instead of wasting time in banks. Furthermore, applications have become less complicated, making payments simpler and faster. These advancements have a global presence, as demonstrated by examples such as Lloyds TSB bank offering contactless payments during the 2012 Olympic games, ING Direct enabling mobile payments through simple phone-to-phone contact, and American Express rewarding mobile users who "check in" at participating stores with discounts on their purchases.

The term "mobile payments," also known as "M-payments," refers to all electronic payments made with mobile phones. Because they use electronic technology, they fall into the subcategory known as wireless payments, which are made with mobile phones and small portable computers. Mobile payments, like mobile commerce, are retail payments. On the one hand, they include payments made between individuals and businesses, on the other, as well as between individuals and businesses. In the case of paying with mobile phones at point-of-sale (POS) terminals, mobile phones can be used as a payment device when combined with other devices, or they can be used alone to make more complicated electronic payments. A growing number of people who use mobile devices have started the development of wireless technology, which is encouraging for the growth of mobile commerce. Portable business has turned into a cutting edge pattern of moving toward merchants to their clients and to build their portion available a few dealers permit clients to pay with PDAs. New forms of payment have emerged as a hot topic, and mobile technologies have become increasingly sophisticated. The phenomenon known as Near Field Communication (NFC) mobile payment enables users to turn their smart phones into digital wallets.

In the past, customers were limited to paying with cash or credit cards in stores. However, with the advent of NFC technology, they can now conveniently make payments using their mobile phones. Until recently, the telecommunications and financial industries operated separately, each with their own distinct domain and market. However, in order to offer new products and payment services, mobile operators and banks are increasingly collaborating. Recent advancements in NFC technology have made it possible to provide services for mobile phone payments.

An innovative mobile phone company:

Apple, after a progression of fruitful cell phones, sent off another help named Apple Pay in mid-October 2014. It is a payment method that was made only for Apple mobile devices like the iPhone 6 and iPhone 6 plus. At first, it was only available in the US market. This method of payment makes use of NFC technology in conjunction with an iOS-compatible application. The app called Wallet can be used on a mobile device as well as an Apple Watch, a multimedia watch that is worn on the wrist. After a positive involvement with the USA, Apple kept on venturing into new business sectors, empowering the utilization of this help in different nations. In July 2015, the service went live in Great Britain, followed by Switzerland, France, and Hong Kong a year later in July 2016. It is currently available for use in Singapore, China, Australia, Canada, Japan, New Zealand, and Russia. In its show of this help, Apple expresses that the help will be proposed to in excess of 1,000,000 stores across the USA. Additionally, this service will be utilized for payment processing in the applications designed specifically for that purpose.

Global adoption of mobile banking

Banks have shifted certain aspects of their operations away from traditional face-to-face interactions with clients due to the growing popularity of mobile banking. One of the key advantages of mobile banking, which banks extensively utilize to attract new customers, is its cost-effectiveness. Services in this realm of banking are more affordable as they require fewer personnel and can be accessed at any location and time.

The data depicted in the graph indicates that the Middle East has experienced the least amount of growth in these services, while the Asia/Pacific region has witnessed substantial growth in the number of users. This growth aligns with the demographic trend, economic development, and geographical configuration (including numerous islands) of the region. Another advantage of mobile banking is its potential for cost savings. According to Boyes, transaction costs are highest when conducted in a physical bank and lowest when conducted through online banking. These reduced expenses benefit both the clients and the bank.

According to a cost analysis conducted by KPMG (2015), transactions carried out in a bank are 43 times more expensive than those conducted through mobile banking distribution channels. KPMG also reports that the adoption rate of mobile banking is highly impressive. It predicts that the number of mobile banking users will increase to 1.8 billion by 2019, which is more than double the 0.8 billion users in 2014. Despite this growing trend and banks' attempts to reduce costs, clients are still hesitant to embrace mobile banking. This may be partly due to the age demographics of banking service users.

The preceding section of this paper examines the issue of accepting mobile banking, attributing the cause to the demographic or age composition of users. This categorization of the average age of mobile banking users worldwide is based on Forrester research. The typical age of mobile banking clients in America is 39 years, slightly higher in Europe, which aligns with segment trends. Analyzing the average age of users in Asian nations and Australia, India has the lowest average age at 30 years, which also aligns with demographic criteria. This study confirms the findings of other researchers who agree that mobile banking is predominantly used by individuals aged 26 to 60. Due to their frequent mobility for work, this method of bank-client interaction is well-suited for them.

Consequently, banks have customized their offerings to meet the needs of this customer segment by providing a range of mobile banking products and services. This has resolved issues related to time-sensitive transactions that previously required human intervention. By hiring remote administrators through online platforms, banks have improved the accessibility of customer support. Social networks have also facilitated new forms of assistance, making it easier to resolve complex problems across various domains. These specific service channels have increased customer loyalty towards banks. The speed and efficiency of day-to-day tasks, such as bill payments and other online transactions, have enhanced customer satisfaction. However, banks have the potential to gain a deeper understanding of their customers' behaviors. By offering highly personalized banking services, each customer can select a specific set of services that they will utilize.

According to Sandader, the most advanced mobile banking systems are found in the nations of North America, Europe, and Australia. JPMorgan Chase Bank of the United States has established itself as the leading bank in this market. They have developed the most innovative PDA applications for versatile banking, including web presentations and two-way text messaging. The availability of mobile banking applications on any mobile device in France, Belgium, Denmark, Poland, and Russia is evidence of the growth of mobile banking. This has resulted in an increase in the number of bank clients and transactions within the banking system. Denmark is a leader in this field, with 93% of the adult population using some form of mobile phone, and 71% of them having active mobile banking applications. Mobile banking is the most popular method of communication with banks throughout the entire Scandinavian region. Regarding the data saved on operating systems used for these processes, there is a specific aspect related to the usage of mobile banking.

Mobile banking is susceptible to security vulnerabilities

In order to retain their customers, banks had to adapt to the advancements in mobile devices and offer more personalized and interactive services. However, this also increased the risks of misuse and fraud. To address these concerns, banks implemented authentication measures such as requiring a PIN code or linking touch ID with the application. These security measures have largely eliminated the concerns of elderly individuals regarding poor application security and the risk of losing their device.

Phishing messages and POS Trojans continue to pose a significant risk to users. Unlike POS Trojans, phishing email attacks are associated with the user and cannot be controlled by banks. Unwanted emails are commonly categorized as spam. Spam encompasses various types, including classic spam, malware spam programs, and phishing emails. Typically, spam is transmitted through compromised servers, infected client operating systems, or authorized email accounts that have been programmed to send spam. A botnet refers to a network of interconnected systems used for this purpose.

Cybercriminals are currently advertising a botnet as a service. They commonly employ traditional spam methods to promote various services, financial securities, or goods. Phishing emails are used to deceive recipients by presenting them with an invoice for a specific product. However, when users click on the link provided in the email, they are directed to a fraudulent website where they are prompted to enter their personal information. This information is then captured by hackers. Instead of accessing the legitimate online store or bank portal, users unknowingly access the phishing email. In addition to fraudulent offers, phishing messages may also include false claims about adjustments to account balances or winning money in a sweepstakes, among other things.

POS malware refers to Trojans that employ keyloggers to illicitly obtain credit card numbers and PIN codes. These Trojans collect data from clients and transmit it to programmers, similar to spam. They pose a threat not only to POS terminals but also to mobile operating systems. In response, certain banks and financial institutions have implemented a "selfie" photo verification method to expedite authentication. However, cybercriminals quickly developed Acecard, a POS Trojan specifically designed for Android mobile devices, which they exploit for their own purposes. Acecard typically disguises itself as a video codec, video module, or adult applications, and is exclusively downloaded from unofficial sources for Android applications.

II. CONCLUSION

Progress in cell phones improvement, and a cooperative energy of three parts - cell phones, telecom organizations and monetary administrations - have prompted a developing number of versatile financial clients. Banks can offer their services to customers at a lower cost and in a timelier manner thanks to this growing trend. Mobile banking's potential security flaws have been minimized and are due to user error. When starting up, almost all mobile banking applications use a PIN code; It is created by the user and is required for mobile device transactions, enhancing mobile banking security. Cryptograms applied by Apple gadgets that demand the unique mark (Contact ID) customize the utilization of the gadget, or at least, just a single clients can get to the gadget. All of the aforementioned factors, in addition to a faster lifestyle and the availability of information at any time through the use of mobile devices, encourage all aspects of mobile banking and service providers to continuously improve.

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