"Customers satisfaction with digital banking channels: The case of the

Lebanese banking sector"

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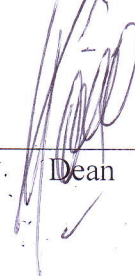|	
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DECLARATION

I hereby declare that this thesis is entirely my own work and that it has not been submitted as an exercise for a degree at any other university.

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ABSTRACT

Purpose:
The purpose of this research is to study the extent of adoption of DBCs, benefits of usage and service quality and their impact on the overall satisfaction with DBCs, in order to measure the satisfaction of digital technologies in the Lebanese banks, and to learn from this research if adopting digital channels would be beneficial or not for the Lebanese banks in different aspects.

Design/methodology/approach:
This research adopts a deductive approach, by using the data collected in statistical techniques to obtain significant results. The data was collected using a survey research strategy, the sample was selected using a random probability sampling method that represents the whole population ensuring a diverse sample of 315 participants.

Findings:
The findings show a positive relationship using Spearman's correlation with the extent of adoption of DBCs as MB (0.544), IB (0.533), CC (0.528), ATM (0.455) and E-branches (0.440). We also found, a positive impact using multiple linear regression from the benefits of using DBCs by 45.4% and service quality by 80.2% on overall satisfaction with DBCs, with supporting studies that align with our results in the literature review.

Research limitations:
The limitations encountered while conducting this research, are the economic crisis in Lebanon that impacted the banking sector, followed by a pandemic which affected the banking sector's activity. Also, the large volume of transactions and dependency on digital banking channels during the last year caused by multiple day closures of banks branches, have impacted the user experience for some bank customers while using the DBCs.

Practical implications:
The contribution in decision making on digitalization in the banking sector, serving as guidance to executives in banks, impacting banks strategies, and long-term goals. Finally, as an implication to the Lebanese banking sector, regulatory bodies and the Lebanese central bank should empower banks by providing a digital banking infrastructure, legalizing and regulating digitalization.

Originality/value:
This topic is one of the few studies conducted in the Lebanese banking sector, highlighting six digital banking channels offered by Lebanese banks. it will show how the industry is coping and embracing the dynamic changes of technology by measuring overall satisfaction with DBCs.

Keywords: Digitalization, Digital Banking Channel (DBC), Automated Teller Machine (ATM), Video Teller Machine(VTM), Internet banking(IB), Mobile banking(MB), E-branches, Call center(CC), Fully Digital Banks, Service quality(SERVQUAL), DBC adoption, Benefits of DBC, Satisfaction with DBCs, Lebanese banks.

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Chapter 1: INTRODUCTION

1.1 General Background

The approach of technology and alternative delivery channels to each part of human life and business has been obvious to the point that it became of extraordinary importance in managing almost everything particularly the banking system. Lebanese banks are one the most important and strongest institutions that compete on attaining higher levels of competitive and comparative advantage, more often Lebanese banks keep launching updated services and new features that keep the banking experience in constant improvement (Audi, et al., 2016).

The banking sector has undergone a lot of disruptions and instabilities such as recessions, economic recovery, presentation of new financial technologies, and a change in the patterns of individual banking needs, which is not going to stop evolving any time soon, these disruptions and mostly ones driven by technology and digitalization are poised to disrupt the banking industry in the near future (Forbes Finance Council, 2017).

According to a recent study, more than 50% of the respondents reported that video banking would help them better understand financial advice, and 63% want tablets in branches to help them choose banking products and services (McKay, 2017). Therefor with all this background, we aim to do this study to measure and explore the levels of satisfaction of using digital banking channels in the Lebanese banking sector from the perspective of adoption, benefits and service quality. The Lebanese banks are adopters of digital banking channels and are developing digitally to stay in the competition by offering new services, products and innovative customer experience (Arabnet, 2016).

The satisfaction with DBCs will be shown in this research while it is conducted in an unstable banking sector, an economic crisis and a worldwide pandemic, however we believe DBCs can play a positive part and affect customer satisfaction.

1.2 Need for the study

Financial technology, alternative delivery channels, digital banking and innovative solutions are reshaping the banking and financial institutions industry and disrupting normal operational models and processes. Banks are becoming more consumer friendly. In fact, a large-scale study revealed that bank customers want more freedom in where and when to conduct their business, while they still need the personal relationship with their banking advisors (Accenture, 2015). The new competitive environment of the changing consumers habits is forcing banks to digitalize and to treat the matter as an urgency, if not banks are to be left outside the competition (Cuesta, Ruesta, Tuesta, & Urbiola, The digital transformation of the banking industry, 2015).

Lebanese banks have started to adopt financial innovations, in this growing market of corporate and retail banking competition. The main factors for capturing a higher market share and yielding higher returns lie in differentiation and innovation (IDAL - Invest In Lebanon, 2019). The need for this study is to explore the results of the banks implementation of digital banking channels is successful on the customers satisfaction level, therefor we find there is a need the conduct this study where we have reached a good level of digitalization in the banking sector and it's a growing trend in the global and Lebanese market.

1.3 Purpose of the study

This study will provide knowledge in digital banking channels and in-depth information on the banking industry in Lebanon, its development and evolution and its digitalization, the purpose of this research is to study the service quality, extent of adoption and benefits of usage and their impact on the overall satisfaction with digital banking channels, we aim to gather primary data from customers of most of the Lebanese banks that have adopted digital banking channels, whereby we are considering six main DBCs being ATMs, Internet banking, mobile banking, VTMs, Call centers and E-branches, we will be targeting information regarding the extent of banks adoption of DBCs, and the benefits that drive these customers to use the DBCs instead or as a compliment to standard branch banking and finally we will gather information on the service quality using the SERVQUAL tool that consists of five dimensions being tangibility, reliability, responsiveness, assurance and empathy, we plan on conducting a quantitative study and to use statistical techniques after gathering the primary data to explore and test the research questions and hypotheses that we intend to formulate based on the findings in the coming chapters, in order to get the results that determine the satisfaction digital technologies in the Lebanese banks provide. So, the objective is to learn from this research if adopting digital channels would be beneficial or not for the Lebanese banks in different aspects, since this topic is one of the first studies to be conducted in the Lebanese banking sector, it will show how the industry is embracing the dynamic changes of technology by measuring overall satisfaction.

Moreover, this research can help Lebanese banks in a highly competitive market to understand and show whether the implications are significant or not for banks that implemented digitalization, they will also show if the banks are successful in the

digitalization and should further invest and develop their digital solutions. The practical implications of the research would make us understand if there are tangible values in adopting digital channels, and how is it reflected in the Lebanese banking sector.

1.4 Brief overview of all chapters

This thesis consists of five chapters, in the following four chapters we will show and discuss the importance and the details of this research; we will explain our perspective and contribute in researching the topic of DBCs. A brief overview of the coming chapters, Chapter 2 will highlight the importance of adopting digital banking channels, starting with its definition, the history and evolution, and will go through its benefits and drawbacks on banks, we will highlight some studies conducted globally including the MENA region and Lebanon about customer satisfaction with DBCs. Finally, we will derive the research questions and state the hypotheses. Chapter 3 will introduce the procedures and methodology that we will be using; we will discuss and choose the research philosophy, approach and design. We will explain the techniques we will be using to obtain a set of valid data, and how we will use it by stating the variables and how we will apply it in statistical techniques in order to obtain a meaningful outcome. Chapter 4 will explain the used statistical techniques outcomes, analyze the results and their significance to the stated hypotheses, and discuss the acceptance or rejection of the hypotheses after comparing our findings with past literatures. Chapter 5 will conclude the main ideas and findings from his research, highlight limitations and implications of this research, and finally give suggestions to future or further research about digital banking channels for foreign and Lebanese banks.

Chapter 2: REVIEW OF LITERATURE

2.1 Introduction

This chapter will introduce the concept of digital banking, specifically the alternative delivery channels also known as the DBCs which we will refer to as DBC. In the beginning of the chapter we will research the concept of DBCs as described by industry professionals, and by different international corporations and journals, we will also research the history and evolution of DBCs, starting with the basic services they offered to the new evolved and wide services these digital channels presently cover, we will go over the characteristics of digital banking and the diversity of the services and the implications on banks that have adopted DBCs on different levels and perspectives, as well as the challenges and barriers for banks to become digital, the main focus will be in terms of customer satisfaction and service quality.

As we go deeper in this chapter, we will highlight the importance of the banking industry in Lebanon and its key role in the Lebanese economy; and how Lebanese banks are embarking on the digitalization roadmap, while constantly innovating and expanding their digital services and enhancing operations and the high competition among Lebanese banks in offering better customer experience, increasing customer satisfaction levels and enhancing service quality.

We will also explore the SERVQUAL dimensions, which is a research instrument that measures or captures customers' expectations and experience in terms of service quality.

Finally, we will state our research questions and formulate the hypotheses that shows our position in relation to the research topic.

2.2 Definition of Digital Banking Channels

Digital banking is a broad concept under which many technologies, automations and seamless customer transactions are integrated in traditional banking, with a goal to create new offerings, a more pleasant customer experience, lower costs and efficient processes. The term digital banking is also referred to as internet banking, mobile banking and their derivatives and often confused as only being mobile and internet banking (Epstein, 2015). Digital banking is an inevitable disruption and an exciting investment opportunity in the financial institutions sector, because traditional banks can no longer provide a high service quality to their customers in the digital era (Lipton, Shrier, & Pentland, 2016).

Customers want easier access to their accounts and their banking needs after the banks closing hours, on holidays and with better proximity. Therefor banks must compete to address their customer needs, in order to keep their market share and eliminate the threat of substitution, customers around the world are adapting and adopting digital banking in a fast pace, banks who did not yet digitalize risk becoming obsolete otherwise they have a short period to adjust to this new reality (Broeders & Khanna, 2015).

DBCs comprise of a set of platforms that enable customers to substitute the visit of traditional bank branches with the usage of these channels to get their requests fulfilled, the offered services included such as:

- Money Deposits, Withdrawals, Local/International Transfers

- Current and Saving Account Management

- Lending products origination (Loans, overdrafts …)

- Loan managements / Paying bills / Bank Services.

Customers feel less the need to visit the bank to conduct such operations and services, traditional way of conducting business is no longer viable for bank, new reality implies for more integration in the banks customers lifestyle than it has been in the past (Digital Marketing team, ZRG International, 2017).
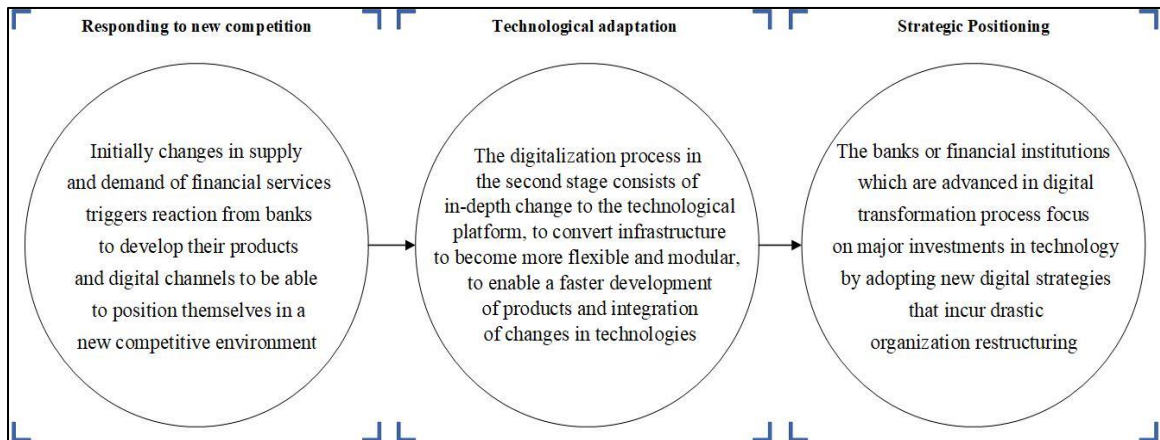
Figure 2.1:The process of transformation towards digital banking
Source:(Cuesta, Ruesta, Tuesta, & Urbiola, 2015)

The above figure represents the three phases of transformation towards digital banking and address issue of supply and demand distribution and sales of financial products and services through digital channels, using technology to better familiarize with customers and swiftly cater to their needs, and how traditional banks will commit to digital banking and undergo the digital transformation allowing them to position themselves within the new competitive ecosystem, while banks who are in a mature stage of digitalization should restructure their organizations to fit new digital strategies (Cuesta, Ruesta, Tuesta, & Urbiola, 2015).

2.3 The Lebanese banking sector

Over the Last 50 Years the Number of Lebanese banks was between 60 to 92. A mix of Lebanese privately owned banks, Public Banks, Regional and foreign banks.

Classification of Lebanese Banks is as follow:

- Alpha group banks with overall customer deposits over 2 Billion USD.

- Beta group banks with overall customer deposits of 500 Million to 2 Billion USD.

- Gamma group banks with overall customer deposits of 200 to 500 Million USD.

- Delta group banks with overall customer deposits under 200 Million USD.

Banks are of different types, as such the Lebanese banking sector includes:

- Retail Banks: A mass-market banking know as consumer banking. Consumers expect a wide range of products and basic services, such as checking accounts, savings accounts, consumer loans, facilities, mortgages, debit cards, credit cards, and CDs.

Retail banking is the one-stop-shop for as many services to individual retail clients (Majaski, 2019).

- Commercial Banks: are financial institutions that cater to individuals and small businesses, and offer services such as checking account, deposit accounts, loans, certificate of deposits (CD),commercial banks earn profit from loans which can include (car, personal, business loans and mortgages) and may specialize in a few types of loans (Kagan, 2019).

Islamic Banking: is the operation of banks that are compliant with the Sharia law.

The Sharia Law prohibits paying or earning interest or transactions allowing speculation.

- Islamic banking has spread far and wide and is followed in many countries. The business model that allowed Islamic banks to stay in business are three different branches.

o Partnership Based Mode: where customers are charged profit instead of interest.

o Trade Based Mode: the bank provides financing to the customer as a trading partner who purchases the products at a lower price and then sells them back at the correct price. Profits is considered as result of proceeds not as interest.

o Rental Based Mode: such as the bank purchases the asset for the customer and then lease it for a given period and close the sale with the customer (Juneja, 2020).

- Industrial banks: is a financial institution with a scope of services focused on one industry such as agriculture, construction, production... Industrial banks differ from commercial banks because they do not offer checking accounts however they offer industrial bank loans which can be secured by a third party acting as a guarantor, many industrial banks meet the needs of industrial workers who continue to want to borrow money but cannot be further served by traditional banks (Kagan, 2019).

- Private Banks: offer services that includes investment, wealth management, and other financial services to high net worth Individuals. The term 'private' refers to customer service that is more on a personal basis than in mass-market retail banking.

- Private banking services include protecting and growing assets, providing specialized financing solutions, wealth structuring, philanthropy, retirement and succession planning and family governance (Market Business Review, 2020).

According to the Banking Control Commission of Lebanon (BCCL), the number of operational banks till date is 65 banks. Lebanese banks have more than 1000 branches and employ more than 25,000 individuals. Annual profits reach around 1.8 Billion USD.

2.4 History and evolution of Digital Banking Channels

Beginning with the Automated Teller Machine (ATM) in the year 1967 at a branch of Barclays bank in London (REUTERS, 2017), which was the first channel to be introduced by banks. However, consumers did not quickly embrace this change, since trust and a machine operated activity did not align when it came to their money, during the 1970's It took a series of ad campaigns to make people feel at ease with using machines to handle their money and banking matters, ATMs reach around 2 million machines globally with added security, diversified services such as deposits, paying bills and others, even with the increasing reliance on credit and debit cards and the growing trend of a cashless world, ATMs remain a necessary part of a bank customer's life (Gilmore, 2018).

In 1983, Bank of Scotland implemented Internet banking in Nottingham building society, back then it had the ability to make money transfers and pay bills and it was based on television to display the interface of the internet banking platform and telephone line to connect the individual to his bank account. In 1994, the Internet banking concept developed to become a website-based service and a widely existing service (Lewis, 2012), to reach in 2017 a rate of 51% in Europe for individuals aged 16 to 17 (Eurostat, 2018).

Internet banking is so widespread today that bank customers expect it as a free service with their account, where also many banks today operate exclusively online (Sarreal, History of Online Banking: How Internet Banking Went Mainstream, 2019).

Mobile banking was first introduced in 1999 as SMS banking, a very different concept from what is available today, with the evolution of mobile devices, and android and apple

operating systems, and the growth of usage of smartphones with a better Internet connectivity. Between 2007 and 2010, the mobile banking industry has boomed significantly. Today mobile banking is even more used than Internet banking. The number of mobile banking users was estimated in 2019 at 2.6 billion globally.

Also, according to the same source, mobile banking users in the US reached around 61.3% of the US population in 2019 and was expected to reach 65.3% in 2022 (Statista, 2019).

The video teller machine (VTM) was first introduced in the Lebanese market by bank Audi in 2011, shortly after the introduction of VTMs around the world by various vendors, the VTMs are being adopted increasingly in banks around the world and in Lebanon. The solution evolved to become a channel that can serve customers outside branch working hours, and offer more than an ATM can offer as a complement to the ATM, this is due to the advisory role the VTMs play since trained bankers are operating the machine from a remote location which also leads to a bigger network expansion and a presence in rural areas where the machines are placed and operated from one hub that can service multiple locations (Pilcher, 2011).

Digital branches or E-branches are one of the DBCs that offer a nearly full bank branch experience unlike the VTM that only serves for transactions, E-branches cater to customers' needs during and after working hours by providing advisory and personal banking services, since some customers prefer to deal with people rather than machines in order to better understand the complex products that banks offer, banks are now integrating digital channels and video advisory in traditional bank branches or shifting to digital

branches, which combines the human presence and digital platforms, digital branches kept evolving from having only ATMs, and information stations to integrate nowadays live advisory and personal banking services (Baxter & Rigby, 2014).

Call centers are an essential DBC and provide a wide range of services such as phone banking, card management services and others, and are especially essential to bank customers who still lean forward towards conversations, in person or over the phone, although being comfortable with ATMs and other channels, when it comes about more complex services or transactions, a survey found that 81% of bank clients would prefer talking to a human representative, in comparison to 43% who are okay with talking to a machine operated phone call, another finding made by an AI-powered call tracking service in the US analyzed 50 million calls and found that 74% of these calls were to financial services companies and banks (Conkle, 2017).

Banks are launching digital assistants and chatbots to handle simple queries and replace some human roles since contact centers have traditionally been viewed as high cost, faster resolution of many issues could satisfy customers on the one hand while lower the cost of service on the other, Citigroup expects machines could handle as many as 30 common queries currently managed by its human contact center agents (Wadhwani, 2019).

Banks can use chatbots to reach millions of customers with smart conversations, at a very reduced cost in comparison to the costs of using human agents (Hales, 2019).

2.5 Digital Banking Channels Globally

In Europe, Digital banking services are fully integrated with consumers lives, research done by Mastercard examined 11 European regions and found that six out of seven people use digital banking solutions at least once per month and 38% use the services on a weekly or daily basis. Security was the most important factor for 67% of respondents and the convenience being time-saving 66% and easy-to-use 65% considered as the biggest advantage of DBCs (Brusnahan, 2019).

The European digital banking market is fragmented into retail and corporate banking, with the presence of several competitive dynamics in the market that are expected to change during the upcoming years, the digital banking market is a highly competitive market with the presence of major global market players which creates challenges for banks to gain a significant share of the digital banking market, therefore banks operating in the retail digital banking market are focusing on attracting customers by offering cutting edge solutions, and always keen to adopt new technologies to complete the task more efficiently without consuming time, as for corporate digital banking it is considered as a relationship-based service. Relationship-based service is more customer-oriented as there is communication between a business and its audience, banks are using digital innovation to reshape corporate banking and increase their profits since corporate customers are demanding more efficient operations, faster delivery of innovative products, and greater connectivity through advanced technologies such as Artificial Intelligence (AI), Internet of Things (IoT), and Chatbots (The Insight Partners, 2019).

A survey conducted by Morning Consult for the American Bankers Association in October 2019 on sample of 2,200 adults showed that 73 percent of Americans most often access their bank accounts through online and mobile platforms, which increased over last year from 72 percent, individuals who used online banking via laptop or PC as their first option fell to 37 percent from 42 percent in 2018, while mobile banking grew from 30 percent to 36 percent, only 17 percent still prefer to do their transactions in person at their bank's branch, 6% prefer using the ATM while telephone and email banking was only 4 percent. The breakdown of age groups showed that 62 percent of Americans aged 18-29 use mobile banking the most, while more than 50 percent of those aged 65 and older use mostly internet banking and with visiting the branch being the second most popular option being 26% for Americans above older than 65 in comparison to only 11 percent of those aged 18-44 (American Bankers Association, 2019).

In the US, after the launch of pure digital banks (branchless banks), only 3 % of millennials and 1.5% of Gen Xers, and 0.8% of Baby Boomers use it as their primary account provider, an Estimate based on a Q2 2019 survey of 2,506 US consumers shows that US Consumers don't want a digital only bank, the choice of banks would highly depend on product offerings, higher deposits interest rates and a better credit/debit card reward system, US Customers prefer benefits and reward systems than to consider using a branchless (Fully Digital Bank) where the human relationship is missing, which is a factor that affects trust, which in turn helps consumers invest or engage in banking products. However, the main determinant would still be location and convenience to be able to bank easily and within a close and easily reachable location (Shevlin, 2019).

2.6 Digital Banking Channels in the MENA region Banks

A study was conducted in 2018 on digital banking maturity in Europe, the Middle East and Africa (MEA) countries. The study grouped countries into four groups, champions, smart followers, adopters and latecomers. In the MEA region the biggest market achiever and the only to be considered a digital champion was Turkey. Qatar was the closest with a ranking in smart followers (Deloitte, 2018).

As for the rest of the MEA region, Saudi Arabia, Kuwait, UAE, Jordan and Lebanon, were all listed in the latecomer group mainly due to little local market pressure. When banks in these countries decided to adopt digital banking, they leverage it as a competitive market distinction (Deloitte, 2018).

UAE's Digital Banking takes the lead in adopting digital solutions, from launching separate digital-only banking platforms, to strengthening existing mobile banking services making the UAE a startup hub for the regional financial sector with about 30% of the region's fintech firms based in the UAE, Saudi Arabia a close second and has emerged as a front-runner in digital banking, a survey of regional banking customers by research firm Arab Net found that 76% of Saudi customers use digital platforms and 60% use online and mobile apps, both ranking highest in the region, elsewhere in the Middle East, Bahrain, Israel and Lebanon, banks are rapidly catching up to the trend (Fintech News, 2019).

Evolution of the financial sector in the middles east is rather slow, although mergers is widely thought across the region to be a priority, as most banks are small institutions, in the Middle Eastern banks one can still see long queues of customers on payday outside

branches, being that the financial sector has long been conservative and mostly owned by governments and powerful families, there is a sense of urgency that is new to the region's banking sector, for large and small banks in the region, customers are becoming more and more demanding in the digital space the Middle East, which in the past had long preferred brick-and-mortar thinking. The banks that will survive the next 10 years are the ones that will almost transform themselves into a fintech with a banking license (Holmey, 2019).

2.7 Digital Banking Channels in Lebanese Banks

Lebanese banks are challenged to develop and adopt digital technologies to keep pace with growing and changing customer demands. Nowadays, Lebanese banks are offering various digital banking services and channels that provide quick solutions and substitute a large part of the traditional branch transactions, such as Internet and mobile banking, smart ATMs, Electronic Branches Video Tellers, Phone banking services and expert advice such as chatbots and digital advisors (Arabnet, 2016).

Lebanon hosts 14% of the region's Fintech startups, in 2017, 54% of people with a bank account have adopted digital banking and was ranked in 2016, as second in the region for the percentage of people who only used mobile banking (IDAL - Invest In Lebanon, 2019). Most Lebanese banks have diversified DBCs, with very few banks only having ATMs as the only channel. In fact, a high number of banks have adopted Smart ATMs. However, Lebanese banks who are among the market leaders few have E-Branches and VTMs from the period of 2008 till 2017 (El-Zammar, 2019).

Banks in Lebanon are benefiting when customers use DBCs, cost savings comes in terms of money, time, and effort as per Philippe El Hajj, Deputy General Manager at Fransabank. Moreover, Lebanese banks are offering less fees as incentives to clients who use DBCs, as the incentives are covered by the large cost savings when clients use DBCs, around 80 percent of customer interactions with "Blom bank" online services are done through the mobile app said Antoine Lawandos, Assistant General Manager at BLOM Bank.

In April 2019, 1.3 million logins were recorded on their mobile banking application, an almost 40-percent increase compared with the previous year according to Raffy Karamanian, Head of Digital Banking at Bank Audi. Chairman of Bank of Beirut, Mr. Salim Sfeir said that they have invested more than $80 million into the bank's information technology infrastructure over the last three years, including digital banking solutions. Although the Lebanese banks still lack many technologies that are already adopted abroad, in recent years, there have been some notable advancements, such as Bank of Beirut Launching the Digital Service "DIGI" a digital service for opening and managing accounts and applying for loans, Bank Audi also launched in the last quarter of 2019 the mobile Application "My Novo" which connects the customer to a bank advisor in a video conference and offers a set of banking services that can substitute a branch visit.

Also, Saradar Bank launched a unique digital branch concept called "S17" which combines digital banking and the presence of banking advisor. The concept offers consumers with expert support at their disposal, as well as digital self-service channels (Nakhoul, 2019).

Digital Banking Channels Adoption dates	Internet banking	Mobile Banking	Smart ATM	E-branch	Video Teller Machine
Bank Audi SAL	2009	2011	2010	2011	2013
Bank of Beirut SAL	2012	2012	2013	2014	2014
Bank Med SAL	2010	2013	2013	2016	2016
Byblos Bank SAL	2011	2013	2015	2015	X
BLOM Bank SAL	2008	2012	2017	X	X
Frans bank SAL	2009	2012	2017	X	X
Société Générale de Banque au Liban SAL	2010	2013	2017	X	X
Banque Libano – Francaise SAL	2008	2011	2014	X	X
Credit Libanais SAL	2008	2013	2016	X	X
IBL Bank SAL	2011	2018	2016	X	X
BBAC SAL	2010	2016	2015	X	X
Credit Bank SAL	2012	2013	2016	X	X
First National Bank SAL	2011	2014	2014	X	X
Lebanese Swiss Bank SAL	2011	2014	2014	X	X
Federal Bank of Lebanon SAL	2011	2014	2014	X	X
AM Bank SAL	2012	2014	2014	X	X
Lebanon and Gulf Bank SAL	2011	2013	X	X	X

Table 2.1: Date of adoption of digital channels in some Lebanese Banks

Lebanese banks have embarked on the digitalization journey ever since 2008 as shown in Table 2.1, by launching the internet banking in a few banks such as BLF, Credit Libanais, Blom Bank, and all banks followed till 2012 where Lebanese banks were offering a transactional website as a DBC. Following the increase in usage and development of mobile phones, from 2011 until 2014 most Lebanese banks adopted Mobile banking as a new DBC, starting with Bank Audi and BLF. Smart ATMs, which offer cash deposits, check deposits, and other retails banking services started in 2010 with bank Audi, with most Lebanese banks adopting the Smart ATM, few large Lebanese banks adopted more advanced DBCs such as Video teller machines and E-branches.

2.8 Various studies about Digital Banking Channels in Lebanon

Several studies related to DBCs in Lebanon were made, and targeted several aspects, a research studied the factors that differentiate individuals with high appetite to use mobile banking in Lebanon. The result showed the fact that Lebanese consumers would use mobile banking if they found it practical and useful to their lifestyle. Therefore, mobile banking should be available at the same level of the technologies that are already available in Lebanon and with which the customers are using and feel adapted to (Koskal, 2016).

An exploratory study on the adoption of mobile and Internet banking on Lebanese banks' profits, and the impact on the number of branches, was conducted on a sample of 17 banks during a 10-year period, the results demonstrated the impact that Internet and mobile banking has on increasing revenues and remodeling the branch expansion in dynamic technological environment. According to the author Online banking has a positive effect on returns, although minimal, and a stronger effect on existing branch performance, Internet and Mobile banking channels seemed to be compliments to branches and increase the banks returns, considerably increasing deposits (Bechara, 2016).

Another research on the relationship between customers and digital banking services, resulted that online banking would be replaced by fully digital banks sectors where 90% of people in the survey answered that digital banking services are a major source of competition between banks, and 75% of bank employees stated that financial capacity in their banks can tolerate to adapt digital banking services, 65% of the individuals in the survey mentioned that digital banking services face security threats (Abdulkhalek & Jaber-Ismail, 2019).

2.9 Barriers to becoming a digital bank

Adoption of DBCs comes with great challenges for any traditional bank, the changes do not only include the setup and implementation of technologies, change in many aspects is to be made for a successful digitalization which for some banks can be very challenging, adopting digitalization would heavily rely on improving operations, products and services while relying on data, the first step is to optimize and refine the data for analysis and ability to be segregated and allocated to different teams and systems, historically many banks faced a lot of roadblocks with the heaps of data collected and stored in data warehouses, with limited usage and meaningfulness in their structure (Schaus, 2016). The toughest step is to mobilize and engage all bank employees not only front liners in becoming ambassadors of the digital transformation, being that banks over the past few years, allocated a high budget for digital transformation, in investments of up to hundreds of millions of dollars per year have not yet generated the projected profits, which is related to customer resistance to change that is based on a lack of trust in technology and a higher perceived risk, because only one third or half their customer base are enrolled in DBCs, and half of the enrolled clients do not use these channels regularly as an alternative mean to branch banking, the challenge is to mobilize clients to start using the DBCs, which can take years of financial and human resource dedication, especially older customers in comparison to millennials who might still not opt for digital channels such as they are less familiar with digital tools, therefor banks should start with softer measures such as communication campaigns, guaranteeing security, personalized interactions, rewards and incentives and continuous improvement on the digital offerings (Vater, Engelhardt, Fielding, & Hatherall, 2019).

2.10 Digital banking channels and service quality

DBCs are an innovative service offered by banks, and service quality should be up to customers' expectations to achieve its objective and increase customer satisfaction, service quality is linked to experience and expectations, service quality is a measure of how well the service level delivered matches customer expectations, the service can be considered as high, if the experience exceeds expectations, and regarded as good or adequate, if it matches the perceptions, bad or poor if the experience is less than expected, a scale for measuring service quality, was developed and is known as SERVQUAL, where this scale can compare the difference between expectations and perceptions, SERVQUAL was developed as early as 1985 with ten components namely Reliability, Responsiveness, Competence, Access, Courtesy, Communication, Credibility, Security, Understanding/Knowing the customer, and Tangibles to be later on merged into five dimensions in 1988 until date (UK Essays, 2018).
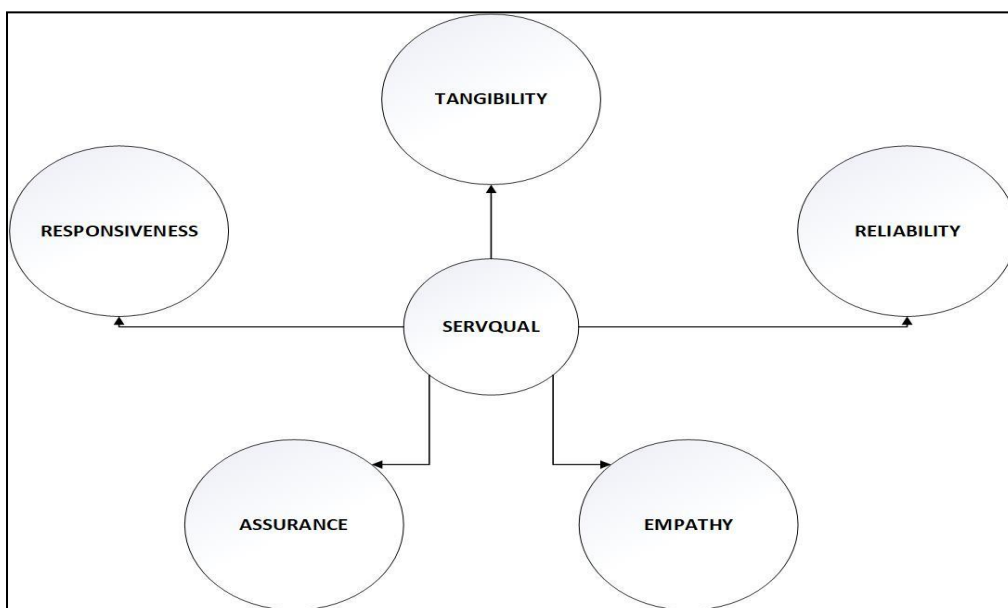
Table 2.2: Five dimensions of SERVQUAL
Source: (UK Essays, 2018)

- Reliability is the ability to perform the promised service accurately, when service providers keep their promises, particularly about the service outcomes and service attributes, banks need to be aware of customer expectation of reliability, and to remain always consistent and correct on the first time.

- Responsiveness is the willingness to support customers promptly, this dimension is about attentiveness in dealing with bank customer's requests, inquiries and problems, it is measured by length of time to help, answers and problem resolution.

- Assurance is to ensure trust and confidence, defined by the courtesy and ability of banks, this dimension is important for the services involving high risk and sensitive operations, assurance makes the success of any service interaction more likely.

- Empathy provides caring attention from the bank's representatives provided to customers, it is essential to show customers that the bank does its best to satisfy their needs, individualized approach can make for successful expectation and service delivery.

- Tangibility is the appearance of the physical facilities, equipment and personnel, customers derive their perception of service quality by comparing the tangibles associated with these services provided, this dimension should not be overlooked, as looks make the first impression of professionalism that contributes to the overall customer experience, and define the brand position, comfortable and attractive equipment contribute to the overall experience of service delivery (Castle, 2017).

2.11 Digital banking channels and customer satisfaction

Customer satisfaction in the banking sector is definitely a key success factor for banks, the impact of DBCs has greatly contributed and reshaped the scale of customer satisfaction in the digital era, a study of around 80,000 customers of 136 large U.S. banks over 12 years analyzed the factors that drive customer satisfaction, the customers especially Gen X and millennials, highly appreciate the use of digital channels, customer satisfaction is higher among those banks that link payment services to customers' accounts and successful problem resolution by solving problems online or via social media (Babrovich, 2017).

A research made on the factors affecting customer satisfaction with online banking services in Thailand examining a sample of 310 respondents show that customer expectations towards the quality and value of the service influence their satisfaction, the methodology shows a model used to test multiple hypotheses stating a positive relationship between customer expectation, perceived value, overall satisfaction, perceived quality that makes it possible to use those factors to develop and improve a bank's digital banking services, the results show that customer satisfaction is achieved from perceived quality, perceived value and emphasizing on service quality, its convenience, a wide range of services (Rompho & Unyathanakorn, 2014).

A study in Kenya researching influence of digital banking on customer satisfaction shows that digital banking was considered fast and reliable and the speed was considered satisfactory, customers were moreover confident that digital banking offers immeasurable

speed of processing transactions in comparison to traditional banking, the study concludes that speed of transactions has a positive influence of customer's satisfaction, and in terms of accessibility, responses show that the most accessible digital channel was mobile banking and that it could be accessed on a moderate extent. having the ability to bank anytime and anywhere and further check balances and access statements, the study thus concludes that the increase in accessibility leads to an increase in customer satisfaction, banks try to ensure customers can adapt by passing information on how to use digital banking and there is a significant relationship between adaptability of digital banking and customer's satisfaction (Muluka, 2015).

The adoption of e-banking and its impact in the Jordanian commercial banks, was researched to determine the factors which constitute e-banking functionality, to examine the effect of e-banking on customer satisfaction, the research population consisted of all the customers who have an account at any Jordanian commercial banks, the researchers collected 179 questionnaires and found that accessibility has a positive significant influence on customer satisfaction, convenience has a positive significant influence on customer satisfaction, security and accessibility has a positive significant influence on customer satisfaction, Privacy has a positive significant influence on customer satisfaction, content has a positive significant influence on customer satisfaction, design has a positive significant influence on customer satisfaction, the results of this research suggests that adoption of e- banking factors have a significant degree of influence on customer satisfaction (Khalaf Ahmad & Ali Al-Zu'bi, 2011).

Every bank should focus on understanding, creating and implementing quality digital services to their customers, customer experience and loyalty was researched in Finland, the concept of customer satisfaction level measurement on digital services of Finnish banks has created a need to conduct this study that defines the customer satisfaction's relation to digital banking channels, a sample of 190 respondents was enough to get 5% confidence level. The six hypotheses tested were related to customer satisfaction in digital banking services, such as expectancy of performance, effort, responsiveness, reliability, security, and personalization, five of the hypotheses were accepted as to have positive influence on customer satisfaction of digital banking channels services, only responsiveness was not able to meet the requirement for being acceptable (Miah, 2018).

A study in India where respondents of the survey represent the rural and urban population from all parts of India, measuring E-Service quality and customer satisfaction with Internet Banking in India, the researcher stated that the findings can be crucial for India and other Asian countries, the collected data was tested using multiple regression analysis and the results were positively supporting the service quality dimensions, the most important factors identified by the Indian banking customers were responsiveness which has the highest impact on customer satisfaction, followed by efficiency and perceived credibility, as a result customers expect banking channels to be available 24/7, with a good visual layout and the up-to-date information, continuous improvement of security measures, consistently informing and educating customers about security measures, policies, and new operations (Singh, 2019).

2.12 Research questions and hypotheses development

From the above literature review customer satisfaction in banks is a concept researched by many researchers and professionals around the world and is also a topic that is interesting in the Lebanese banking industry that has become digitalized and developed, therefor in this research we aim to state three hypotheses to answer three research questions and to develop the topic of the impact of DBCs on customer satisfaction.

RQ 1: Is the adoption of digital banking channels related to customer satisfaction?

As shown in the literature review, banks that offer convenient services attract a higher number of customers. Therefore, Lebanese banks that are developing and innovating in digital channels are expecting these costly expenditures to generate higher customer satisfaction and increase loyalty, where a large set of services can reduce customers' need to visit the bank branches which would affect many aspects in the operational model such as efficiency the number of branch employees and the branch size and other operational costs, as proven by many researchers. In addition, banks expect the successful adoption of DBCs to generate higher revenues through offering new services, which would attract new customers and retain old ones, especially a generation that is technology oriented. Digital banking channels are integrated in the banking system in a manner that reduces time and the risk of default of many transactions, thus higher customer satisfaction from the adoption of DBCs can be a determinant of the success or failure, therefor we intend to gather enough evidence to test and prove our first hypothesis.

H1: The adoption of Lebanese bank's digital banking channels is positively related to the overall satisfaction with DBCs.

RQ 2: Is there a positive impact of the benefits that encourage customers to use digital banking channels and the overall satisfaction?

Benefits and incentives that encourage people to use digital channels instead of traditional banking and visiting the branches, take many forms such as less fees and commissions, less waiting time, convenience of 24/7 access to accounts and services and quick and user friendly interface to check accounts and make transactions, such benefits contribute to increasing customer satisfaction as shown in the literature review, since few similar studies were made in Lebanon, we intend in this research to gather enough evidence from customer of Lebanese banks who use digital banking channels to prove our second hypothesis.

H2: The benefits of digital banking channels in the Lebanese banks positively impacts the overall satisfaction with DBCs.

RQ 3: Does service quality impact overall customer satisfaction with digital banking channels?

Service quality and its relation to customer satisfaction is a concept researched in many countries and as seen in the literature review, service quality dimensions are a measure to any service industry, the five dimensions of SERVQUAL comprising of "Tangibles, Reliability, Responsiveness, Assurance and Empathy" this tool in particular is used in many researches related to DBCs and customer satisfaction, from the literature review in many countries SERVQUAL was used to measure service quality of DBCs, where as in Lebanese banks we aim in the research to find results and support the third hypothesis.

H3: Service quality (SERVQUAL) of digital banking channels in the Lebanese banks positively impacts the overall satisfaction with DBCs.

2.13 Conclusion

We conclude from the above literature review that DBCs, are the new trend and future of banking, And after further research and Learning about Digital banking Channels and the components of a digitalized bank, we are certain that the evolution of digital banking channels is in constant development, ever since its foundation as a mere alternative to counter operations, with the Automated teller machine (ATM), all the way to having multiple digital channels and Artificial intelligence integration.

However, there are a lot of challenges for all banks wishing to embark on the digitalization journey, many researchers studied this topic in different perspectives, being from a customer satisfaction and loyalty perspective, profitability, efficiency, impact on the operating structure of banks, IT and security levels. These studies were conducted in several countries, however in the Lebanese market, very few studies were made on all digital banking channels, some studies as shown in the literature review did target internet banking and mobile banking but there was not study for other channels, since Lebanese banks have in recent years started innovating and adopting more technologies related to DBCs, and are competing in this area, especially top tier banks.

The research questions we set in this chapter will allow us to test our hypotheses upcoming chapters, we learned some very interesting concepts regarding digital banking namely, the customer satisfaction and loyalty impact, and the customer perspective and behavior towards digital banking. We are taking the opportunity while conducting this research to determine the impact of adoption of DBCs, benefits and the service quality on customer satisfaction, We are aiming with this research the develop and add more information

regarding digital banking channels, since this is the future of banking, and no research was one in the Lebanese banks industry on all the Digital banking channels adopted so far, we intend to answer the research questions we set in this chapter, and support the hypotheses through having enough evidence from the data we will collect, in the next chapter we will choose our research method, philosophy, approach and strategy.

Based on the above literature review, and all the information we learned and researched from other papers and theses, we are aiming to use this knowledge related to DBCs across the world and in the Lebanese banking sector, to study the impact of adoption of DBCs, service quality of DBCs and the benefits that encourage customers to use DBCs on the overall customer satisfaction, which will aid us in setting the framework of this study by gathering enough evidence from the customers of Lebanese banks to answer all three research questions and prove our hypotheses, and support our findings from the content of this chapter, while contributing and improving the information we found in the literature review especially the sections that include statistical and empirical findings, where we can understand the similarity or difference of the impact of different DBCs and technologies adopted in banks both local and global.

In the next chapter "Methodology" we will explain the tools and the framework we will be using for this research, we will rely on Empirical data which we will justify why and how it will be used, after collection of the data being primary or secondary, as for the choice of the variables will determine the type of the quantitative study that will be conducted, and as shown in this chapter, many researches and various studies in different countries overall indicate a high possibility that this research and the hypotheses stated can be valid.

Chapter 3: PROCEDURES AND METHODOLOGY

3.1 Introduction

As we concluded in the previous chapter about the literature review, the concept of digital banking is a growing and developing trend worldwide and it is the future of traditional banking. We learned that adopting digital banking has its history, its challenges, its benefits and impact, we also learned about the Lebanese banking sector and its characteristics, and we will be focusing on customer satisfaction and service quality in DBCs of Lebanese banks since very few studies were made on DBCs in Lebanon and being that Lebanese banks have been putting DBCs in usage in the recent years in order to explore the impact of the extent of adoption, benefits and service quality on Lebanese customers satisfaction. So, we are aiming in this chapter to set the procedures and research methodology to conduct an empirical study to answer the research questions derived from the literature review and to test the stated hypotheses to verify if the adoption, benefits and service quality of DBCs have a significant impact on Lebanese banks customers' satisfaction with DBCs.

This chapter will clarify to the readers the methodology and the procedures that will be used in this research, which include the research approach, the research design, philosophy and research method. In addition, it will highlight and justify the sample selected, for the choice of data, the selection of the variables and the type of quantitative and statistical techniques that will be used to provide the most accurate results. The analysis framework for assessing the data that will be collected for this study will show the readers the perspective, which we will be taking to be able to explain the obtained results to compare to other empirical studies and to use these results as evidence to support or reject our hypotheses and answer our research questions.

3.2 Research Philosophy

Research philosophy defines the nature development and source of knowledge it is the belief about the procedure of which data about a phenomenon must be gathered and studied. This research follows the positivist paradigm, which is based on an empirical study that will highlight the impact of adoption, benefits and service quality of DBCs on customer satisfaction of the Lebanese banking sector, a quantifiable method being as a survey-based questionnaire will be used, from which we will be analyzing the data collected in later chapters to reach a factual knowledge. Positivism as a philosophy, relies only on "Factual" knowledge, which is realized through observation and measurable experiences, where in positivists studies, our role is limited to data collection and objective interpretation, and the research findings are mostly observable and quantifiable, positivists depend on the quantifiable observations that can lead to statistical analyses, positivism as a philosophy is in accordance with empiricism that is "knowledge stems from human experience", it is an atomistic, ontological view of the world, as being discrete, observable elements and events interacting in an determined, regular and observable manner (Collins, 2010). In addition, positivist researchers are independent from the study and there are no biases or human interests within the study. Generally, positivist studies adopt deductive reasoning, whereas a phenomenology study adopts inductive reasoning approach. Moreover, positivism relates to the perspective that the researcher should concentrate on facts, whereas phenomenology relates to a perspective on the meaning and has provision for human interest (Lancaster, 2004). Positivism is associated with some disadvantages such as relying on experience whereas factors such as cause, time and space are not. Research findings in positivism studies are only descriptive, thus they lack insight into in-depth issues (Dudovskiy, 2018).

3.3 Research Approach

Research approach is an important part of any scientific study, in all research areas. There are several types of approaches being inductive, deductive and abductive.

To choose a research approach, we should base it on a deductive, inductive or abductive reasoning, in deductive reasoning that is informally called a "top-down" approach, researchers narrow down a theory about a certain topic to more specific hypotheses that can be tested with specific data, and observations that are collected to address these hypotheses (Trochim, 2020). Inductive reasoning differs from deductive and abductive reasoning. In fact, Inductive reasoning is the opposite of deductive which make broad generalizations from defined observations, when there is data following a conclusion drawn from it, researchers use it to form theories and hypotheses; whereas in abductive reasoning researchers usually starts with incomplete set of observations and assume the most likely possible explanation, hypotheses are tested using the best information available (Bradford, 2017). The aim of the research is to study the effect of adoption, benefits and service quality of DBCs on customer satisfaction with DBCs, on the Lebanese banks, thus, a good understanding of data and figures helps in building a relationship between variables, leading to a strong model and a conclusion. We will build on the topic from the literature review that describes DBCs and their impact on customer satisfaction and focus on the banks chosen as a sample for this study. We will then conduct statistical tests to analyze the results to support or reject the hypotheses. Adopting a deductive approach, the hypotheses will be tested using a regression model by using the data collected to obtain significant results.

3.4 Research Design

A research design has three layers: research strategies, selection of sample and time horizons, the choice of research strategy will be determined by the research questions, where collection techniques and the time horizon, will serve as a general plan for answering the research questions, the research design turns research questions into a research project which is categorized as exploratory, descriptive or explanatory; explanatory studies look for relationships between variables, testing the hypotheses proves the existence of a relationship (Saunders, Lewis, & Thornhill, 2009). This research emphasizes on studying the causal relationships between variables of DBCs, service quality and customer satisfaction of Lebanese banks, therefore, an explanatory study will be our research design.

3.4.1 Strategy

Research strategies are about what ways to conduct a research in order to answer research questions. Using secondary data can be more straightforward, however, for primary data that we intend to collect, many research strategies can be valid, some of the most common research strategies are survey, experiment, action research, case study, archival research, ethnography, or grounded theory (Rodrigo, 2017).

This thesis will be following a survey research strategy, which is frequently related to the deductive approach and is frequently used in social science research. Survey based questionnaires are used to gather quantitative data but can also gather qualitative information through open-ended questions. Surveys are very flexible and can be used to collect different types of data from small or large numbers of people from a selected population through the administration of a questionnaire and can be used for descriptive and exploratory research (Rodrigo, 2017).

3.4.2 Sample Selection

Sample selection is very important for any research to obtain data that can accurately be representative of a population for a specific time to be used in social science research. Surveying the entire populations is rarely possible, usually researchers study samples selected from populations, using a sampling frame which is a list of the population from which the sample is drawn, in order to determine the number of participants, and factors such as variables, the type of the statistic, the research design, the variability of the data and the size of the effect (Evans & Rooney, 2013).

When choosing a sample, there are two sampling methods:

- Probability sampling allows the researcher to make statistical inferences about a whole group meaning that every member of the population has a chance of being selected and is mainly used in quantitative research with four main types: Simple random sampling, systematic sampling, stratified sampling, cluster sampling.

- Non-probability sampling involves non-random selection based on convenience, it is often appropriate for researching a small population, and serves for exploratory and qualitative research with four main types: Convenience sampling, voluntary response sampling, purposive sampling, snowball sampling (McCombes, 2019).

In this research we will be selecting our sample using a probability sampling method, specifically simple random sampling type, since our targeted sample should represent the whole population which is customers of all Lebanese retail banks who use digital banking channels, we will randomly select participants to ensure a diverse sample with a size of 315 participants that potentially represents the whole population (Rompho & Unyathanakorn, 2014).

3.4.3 Time Horizon

In social research, the time horizon of data is very important for the accuracy of a study during a certain period or at certain point in time, the two approaches are cross-sectional studies and longitudinal studies, the topic of the research and hypotheses generally determine the type time horizon of the study. Cross-sectional studies compare different population groups at a single point in time. Findings are drawn from what fits the frame, but it may not provide definite information about cause-and-effect relationships.

In a longitudinal study, researchers conduct several observations of the same subjects over a certain period; researchers are able to detect developments or changes in the characteristics of the target population (IWH, 2015). In this study we will follow a cross sectional type, as we will be comparing different individuals input concerning the adoption, benefits and service quality of DBCs and customers satisfaction in a single period in the year 2020 to develop an up to date study about DBCs in Lebanon.

3.5 Hypotheses

> Hypothesis 1: The adoption of Lebanese bank's digital banking channels is positively related to the overall satisfaction with DBCs.

Lebanese banks are developing and innovating digital channels, where these expenditures are expected to generate higher customer satisfaction, where the adoption of the DBCs can reduce customers' need to visit the bank branches, studies show that banks with DBCs provides the ability to bank anytime and anywhere (Muluka, 2015), higher customer satisfaction from the usage of DBCs can be a determinant of the success or failure of DBCs adoption (Babrovich, 2017).

➢ Hypothesis 2: The benefits of using DBCs in the Lebanese banks positively impacts
the overall satisfaction with DBCs.

Benefits and incentives encourage people to use digital channels instead of traditional banking, such as less fees and commissions that are used as an incentive in Lebanese banks to promote the usage of DBCs as an alternative to branch banking (Nakhoul, 2019), less waiting time, convenience of 24/7 access to accounts and services and quick and user friendly interface to check accounts and make transactions. Such benefits can have an impact on increasing customer satisfaction with DBCs in the Lebanese banks, as proven similarly in a study in India where 24/7 availability, user friendly visuals, informing customer about new operations positively impacted customer satisfaction (Singh, 2019).

➢ Hypothesis 3: Service quality (SERVQUAL) of DBCs in the Lebanese banks
positively impacts the overall satisfaction with DBCs.

Service quality dimensions are used as a measure in service industries such as banks. The five dimensions of SERVQUAL "Tangibility, Reliability, Responsiveness, Assurance and Empathy" can be used to measure the impact of service quality of DBCs on customer satisfaction in Lebanese banks. As proven in a research in Finland, performance, effort, reliability, security, and personalization have a positive influence on customer satisfaction (Miah, 2018). Also, in India, the results of a study showed that E-Service quality dimensions, responsiveness, efficiency, perceived credibility were positively supporting customer satisfaction (Singh, 2019).

3.6 Selection of Variables

As seen in the previous parts of this chapter, for a quantitative study, data is collected to be able to draw results that will be analyzed to either validate or reject the researcher's hypotheses, the choice of variables is a very important factor for a quantitative study, and the selection of variables is based on the research design and Hypotheses.

Variable(s)	Definition
SATISFACT	Overall customer satisfaction with DBCs
ADOPT	Adoption of DBCs
BENEFIT	Benefits encouraging customers to use DBCs
TANGIB	Tangibility as a service quality(SERVQUAL) dimension
RELIAB	Reliability as a service quality(SERVQUAL) dimension
RESPONS	Responsiveness as a service quality(SERVQUAL) dimension
ASSUR	Assurance as a service quality(SERVQUAL) dimension
EMPATH	Empathy as a service quality(SERVQUAL) dimension

Table 3.1:Definition of Variables

Dependent variable (DV):

SATISFACT: Lebanese bank customer's overall satisfaction from using DBCs

Independent variables (IV):

ADOPT: Lebanese Banks adoption of DBCs
- $ADOPT_1$: ATM
- $ADOPT_2$: VTM
- $ADOPT_3$: Transactional call center
- $ADOPT_4$: Mobile banking
- $ADOPT_5$: Internet banking
- $ADOPT_6$: E-branches/advisory rooms

BENEFIT: Benefits and factors that encourage customers to use DBCs
- $BENEFIT_1$: Cost effectiveness (less commissions and fees)
- $BENEFIT_2$: Ease of use (user-friendly platform/layout)
- $BENEFIT_3$: Avoiding waiting in the branch

SERVQUAL Dimensions:
- $TANGIB_1$: Up to date equipment & technology
- $TANGIB_2$: Sufficient number location of DBCs(ATMs, VTMs, E-branches)
- $TANGIB_3$: DBCs have a friendly user interface

- RELIAB$_1$: Wide range of services transactions provided on DBCs
- RELIAB$_2$: Fast performing digital banking machines software
- RELIAB$_3$: Reliable services transactions process on DBCs

- RESPONS$_1$: Fast call center, E-branch advisors and video tellers service
- RESPONS$_2$: Resolution of claims/disputes raised through DBCs is satisfactory
- RESPONS$_3$: DBCs offer solutions/advice promptly

- ASSUR$_1$: High security and fraud protection on digital channels
- ASSUR$_2$: The collection of personal information is handled with care
- ASSUR$_3$: Error free services transactions made on DBCs

- EMPATH$_1$: Help desks/call centers are empathetic
- EMPATH$_2$: Understanding of specific needs is satisfactory
- EMPATH$_3$: Educating customers on the usage of digital banking channels

3.7 Methodology used

Data Type: We will be relying on primary data to use in the quantitative model of this thesis; we will collect it using a survey strategy as shown in research design (section 3.4).

Instrumentation: Out of the many instruments that can be used in a survey we will be distributing an online questionnaire (Appendix A), it will be shared through a website link with potential participants; we will distribute the link via email and social media targeting random individuals that are bank customers, these individuals are personal contacts who will participate and share the questionnaire, to ensure a diverse sample.

Statistical package: We will be using "SPSS" as a statistical software, which is widely used for statistical analysis in social sciences, also used by market researchers, health researchers, government, education researchers, data miners, and others.

Statistical Techniques and Analysis Framework:

Statistical techniques are a type of mathematical analysis using quantifiable models. These models represent real-life studies or experimental data that enable researchers to analyze and draw conclusions. The statistical techniques we will use in this study are:

- <u>Descriptive statistics</u> describe the features of a specific data set by giving short summaries about the sample characteristics and measures of the data. The most recognized types of descriptive statistics are measures of the mean, median, range, Skewness and Kurtosis (Kenton, Descriptive statistics, 2019).

- <u>Spearman's correlation</u> is a statistical measure of the strength of the relationship between data, without the requirement of normality as it is a nonparametric test, having values of $-1 \leq r \leq 1$ it is computed as follows: $rR = 1 - [(6\Sigma^n_i d_i^2)/(n(n^2-1))]$

-n = the number of data points of the two variables

-di = the difference in ranks of *ith* element of each variable considered. (Sage, 2015).

- <u>Regressions</u> are used to identify the strength of the effect that the independent variable(s) have on a dependent variable, and are used to forecast effects or impact of changes, as well as to predict trends and future values (Statistics Solutions, 2013).

Multiple linear regression: $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots + \beta_t X_t + \varepsilon$

Y=DV | X=IV | α=Intercept | β=Slope | ε=Residuals "Errors"

This study considers two regression models for hypothesis 2 and hypothesis 3 respectively:

- <u>Model 2</u>**:** $SATISFACT = \alpha + \beta BENEFIT_1 + \ldots + \beta BENEFIT_3 + \varepsilon$

- <u>Model 3</u>**:** $SATISFACT = \alpha + \beta TANGIB_1 + \beta TANGIB_2 + \beta TANGIB_3 + \beta RELIAB_1 + \beta RELIAB_2 + \beta RELIAB_3 + \beta RESPONS_1 + \beta RESPONS_2 + \beta RESPONS_3 + \beta ASSUR_1 + \beta ASSUR_2 + \beta ASSUR_3 + \beta EMPATH_1 + \beta EMPATH_2 + \beta EMPATH_3 + \varepsilon.$

To successfully use these statistical techniques, we performed a pilot test on a smaller set of data during the data gathering process and determined that the results of the pilot test are promising for the analysis of the full sample data using the above techniques.

Reliability of the data

To determine the reliabilty of the data we will use Cronbach's Alpha test which measures internal consistency of the data and is used to determine multiple-question survey's reliability, Cronbach's Alpha measures unobservable or hidden variables which identifies if the testing design accurately measures the variable of interest, the maximum value of the test is 1, values less than 0.7 are not acceptable (Glen, 2014).

The test results of the data that will be used as variables for each of the three hypotheses in this research show very good results and that we have a reliable set of data, being:

-Cronbach's Alpha for all the data is 0.832 shown in Table 4.2 (Appendix C)

-Cronbach's Alpha for the data of Hypothesis 2 is 0.824 shown in Table 4.4 (Appendix D)

-Cronbach's Alpha for the data of Hypothesis 3 is 0.933 shown in Table 4.9 (Appendix E)

-Cronbach's Alpha for all the data is 0.964

3.8 Ethical Considerations

While conducting a research, many ethical concerns are to be observed and respected. In a quantitative research, the purpose of the data is to be used moderately and legitimately for the project. These data are gathered in a way to avoid subjective selectivity and without omitting any figures. Honesty is an important characteristic used to report and analyze the results in order to maintain objectivity.

Following informed-consent rules individuals are voluntarily participating in the research while knowing all relevant risks and benefits; APA's Ethics Code states that researchers should inform participants on the research's purpose, expected duration and procedures (Smith, 2003). Where in this paper the time to fill this questionnaire will be around 10 minutes, participants have the right to decline and to withdraw from the research once it

has started. Factors that may influence their willingness to participate, such as potential risks or discomfort, limits of confidentiality, sharing and archiving were all considered in this research. In fact, all responses will be anonymous and kept confidential without disclosing personal information; the questionnaire is anonymous, and no disclosure of responses would place participants at risk of criminal or civil liability or reputation. Participants have the freedom to choose how much information about themselves they will reveal, and they are informed about how their data will be used. In addition, confidential records are stored in a secure area with limited access (Smith, 2003).

After obtaining the IRB (Institutional review board) at Notre Dame University- Louaize (NDU), and stating all the details, purpose and procedures of this research and the data that we intend to collect, it was approved that the collected data from this questionnaire will remain stored and will not be given to any other researcher. Data collected will be stored in a password-protected database, which is accessible only to the concerned individuals in this research.

3.9 Conclusion

This research follows the positivist paradigm, based on an empirical study that will highlight the impact of the adoption, benefits and service quality of DBCs on customer satisfaction with DBCs in the Lebanese banking sector. The research will be highly objective without bias, as the research approach will be based on deductive reasoning informally called a "top-down" approach. Accordingly, we will narrow down a theory to more specific hypotheses that can be tested with the data collected. The research design is explanatory and looks for relationships between variables. A probability simple random

sampling type will be used on a sample that represents the whole population of all Lebanese retail banks customer who use digital banking channels, and the time horizon will be a cross sectional type for a single period in the year 2020. We will be relying on primary data from an online questionnaire as a data collection instrument, and SPSS will be used as a statistical package. The statistical techniques that will be used are Spearman's correlation and multiple linear regression. Moreover, no major risks, safety issues or privacy concerns were detected as we used an anonymous questionnaire.

This chapter introduced to us the framework to study if the adoption, benefits and service quality of DBCs have a significant impact on Lebanese customers' satisfaction with DBCs. After clarifying all the procedures and methodology that we will be using in this research, and explaining the perspective that we will be taking to be able to explain the obtained results we defined the variables for each of the three hypotheses related to extent of adoption, benefits, service quality and satisfaction with DBCs, the data gathered will be used as variables to be tested using the statistical techniques we chose for this research, in order to answer the research questions we formulated in chapter 2, which highlights the importance of the literature review for this topic that we relied on to formulate the framework that will enable us to analyze the data, compare and further contribute to the literature review.

In the next chapter, we will apply the statistical techniques that we selected in this chapter, and we will display the data collected, in figures and tables to highlight the characteristics of the sample and the statistics results, in order to prove or reject our hypotheses, and we will attempt to contribute with the findings to generate more knowledge and information on the topic of digital banking channels in Lebanese banks and customers satisfaction.

Chapter 4: FINDINGS

4.1 Introduction

As we learned from the previous chapter "Research Methodology" about research philosophy, research approach, design and sample characteristics, we followed in this research a positivist empirical study based on deductive reasoning. We narrowed down a theory to specific hypotheses, defined variables and a framework to test our hypotheses with the data collected. We clarified the methodology that we are using in this research, as well the perspective we are taking to analyze the results.

The primary data was collected using a survey-based questionnaire with 315 participants after filtering all responses. We used "SPSS" statistical software to apply the statistical techniques that we selected for this study, the data collected is displayed in figures and tables of this chapter to highlight the characteristics of the sample and the results obtained from the statistical techniques. We analyzed the results of Spearman's correlation and multiple linear regressions, to define meaningful outcomes to prove the stated hypotheses.

The aim of this chapter is analyzing and discussing the findings, thereby answering the research questions. Using the statistical techniques adopted in this study, the findings analysis showed the relationship between the dependent variable being customer satisfaction with DBCs and the independent variables being banks adoption extent of DBCs, impact of benefits that encourage usage of DBCs, and service quality (SERVQUAL) of DBCs. Finally, discussion of results and findings is compared and linked to past literatures and similar research on the topic of DBCs.

4.2 Characteristics of the obtained sample

A diverse sample of 315 was obtained after filtering invalid or incomplete questionnaires, as initially targeted in the methodology chapter. The obtained sample that represents the population of Lebanese DBCs users has several characteristics, such as gender composition 57.78% male respondents and 42.22% female respondents as shown in figure 4.1 (Appendix B) where we can say that in terms of gender it is a good distribution. The age range of our sample varies from 18 to above 60 years old as shown in figure 4.2 (Appendix B). The concentration of respondents age fall in two brackets, being 37.5% between 26 and 30 years old and 34% between 31 and 40 years old, we assume this distribution is due to individuals in these age brackets are the most fluent in digital technologies and the main users of digital banking channels. The types of account held by the respondents are distributed as 65.1% current accounts, 56.2% payroll accounts 55.6% savings account and 20% loan accounts as shown in figure 4.3 (Appendix B). The usage time of DBCs is concentrated around, 1 to 5 years and 5 to 10 years being 44.44% and 32.38% respectively as shown in figure 4.4 (Appendix B), this is mainly due to the increasing availability and offerings of DBCs over the years and related to the age range of the respondents. The results on the main bank respondents' deal with cover almost all Lebanese banks who adopted DBCs, which is a very desirable outcome for our study as shown in figure 4.5 (Appendix B). Being, Bank Audi 29.84%, Bank Byblos 17.46%, Blom Bank 14.29% and Bank of Beirut 6.98%, not surprisingly the concentration is around Lebanon's biggest banks which is implied by their higher customer base. As for usage of DBCs as shown in figure 4.6 (Appendix B) considering responses of 4 and 5 on the five point metric scale used to collect the data, 84% ATMs, 83% MB, 46% IB, 42% CC, 21% E-branch and 19%

VTM, which is normal considering ATMs, MB, IB and CC were highly used at the time the data was collected and are mainly used by bank customers as shown in the literature review, as for E-branches and VTMs the percentages are understandable considering not all Lebanese banks adopted these DBCs implicating a low usage extent by the respondents. The sample is random and diversified, which ensures there are no biases or clusters but rather represent the whole population that is Lebanese bank customers who use DBCs.

4.3 Spearman's correlation assumptions

Spearman's correlation measures the relationship between two non-parametric variables. Coefficients range from -1 to +1, whereby 0 indicates that correlation does not exists, the closer the coefficient is to +1, the stronger the relationship, consequently a perfectly positive relationship means that two variables increase in value equally and a perfectly negative relationship means that as one of the variables increases in value, the other decreases at an equal rate. The rule of thumb used for correlations:

• between −0.3 and +0.3 = weak correlation

• less than −0.7 or greater than +0.7 = strong correlation

• between −0.3 and −0.7 or + 0.3 and +0.7 = moderate correlation (Sage, 2015).

4.4 Multiple linear regression assumptions

Multiple linear regression is used to determine a mathematical relationship among several random variables. In other terms, it allows us to examine how multiple independent variables are related to one dependent variable, used to create an accurate prediction on the level of effect they have on the outcome variable (Kenton, 2020).

Multiple linear regression is a parametric type of statistical test, so in order to use a parametric test the condition of normality of the data must be met, which means the data has a skewness between -1 and 1, and a kurtosis between -3 and 3, if nonnormality has been identified as shown in table 4.15 (Appendix F) it can be solved using log transformation, after transformation data normality is ensured as shown in table 4.16 (Appendix F), researchers can proceed with whichever normality-based method.

To compute negatively skewed data: NewX=LG10(K-X) (Fidell & Tabachnik, 2012).

NewX: Transformed variable |LG10: Logarithmic (Log 10) |K: highest data value +1 |X: variable

After transforming the existing variables, we renamed the new variables:

Variable(s)	Trasformed variables
SATISFACT	SAT
BENEFIT	BEN
TANGIB	TA
RELIAB	REL
RESPONS	RES
ASSUR	AS
EMPATH	EM

Table 4.1: Transformed variables

Adjusting the regression models for Hypothesis 2 and 3 respectively:

- <u>Model 2</u>**:** $SAT = \alpha + \beta BEN_1 + \beta BEN_2 + \beta BEN_3 + \varepsilon$

- <u>Model 3</u>**:** $SAT = \alpha + \beta TA_1 + \beta TA_2 + \beta TA_3 + \beta REL_1 + \beta REL_2 + \beta REL_3 + \beta RES_1 + \beta RES_2 + \beta RES_3 + \beta AS_1 + \beta AS_2 + \beta AS_3 + \beta EM_1 + \beta EM_2 + \beta EM_3 + \varepsilon$

<u>-Pearson correlation</u>

Used to check for relationships between variables used and for possible multicollinearity, each of the variables in multiple regressions that are independent variables will be analyzed; the Pearson correlation coefficients should not be high since it can lead to multicollinearity, which causes problems with the analysis and interpretation. Coefficients

for correlations have a value of -1 ≤ V ≤ 1, whereas values of 0.8 or above suggest a strong relationship and therefor the two independent variables must not be used in the regression in order to avoid multicollinearity (Marshall, 2020).

-Explanatory power of the model

The R-squared (R^2) is a statistical measure that determines the variation of a dependent variable that is explained by the independent variable(s) in a regression. The value of (R^2) ranges from 0 to 1 and is expressed as a percentage, a value of 1 is 100%. However in multiple regressions, there are several independent variables we should use the adjusted R-squared where the addition of independent variables is compensated if the additional independent variables enhance the model not only increases the R-squared by chance (Hayes, 2020). For a correlation to be considered meaningful, it depends on the discipline, in our case being a study of social sciences: $-0.6 > R > 0.6$ & $R2 > 0.35$ (Jost, 2017).

R-squared gives an estimate of the relationship between movements of a dependent variable based on an independent variable's movements. However high or low R-squared doesn't determine if the chosen model is good or bad, as it doesn't explain the reliability of the model, a low R-squared can be shown in the model summary and still be a good model, as well as a high R-squared in a poorly fitted model (Hayes, 2020).

-Durbin-Watson statistic

Used as a test for serial correlation in the residuals (errors), also known as autocorrelation when conducting a regression analysis. The DW test has a value between 0 and 4, where a value of 2 means that there is no autocorrelation detected, values from 0 to less than 2 mean there is a positive autocorrelation and values greater than 2 reaching to 4 mean negative autocorrelations. The optimal results of DW statistic are around 2 and can range between

1.5 to 2.5 and are considered relatively normal, whereas values outside this range could be a cause for concern (Kenton, Descriptive Statistics, 2019).

-ANOVA of the Model

A method to statistically experiment the difference between means of multiple variables, computed by dividing the sum of squares of variables by their degrees of freedom **df** These degrees of freedom are associated with the sources of variance:

- Total variance has N-1 **df**, N being the total sample

- The model **df** is the number of predictors (K) including the intercept minus 1 (K-1)

- The Residual **df** is the Total **df** minus the **df** model

In most cases, confidence interval is set to 95% and α is set at 0.05, which indicates that a probability of 5% to make a wrong decision is tolerated. The F in the ANOVA table is the outcome of the F-test, which is the Mean Square Regression, divided by the Mean Square Residual, reveals the overall significance represented by the model, the validity of the F-Test is determined by the associated P-value (Sig.). The implication is that the lower the P-value is from 0.05, the higher is the significance of the model, and a P-value that is higher than 0.05 would mean the independent variables do not have a statistically significant relationship to the dependent variable (UCLA, 2016).

-Beta values

The standardized coefficients, obtained if all the variables in the regression, including the dependent and all the independent variables are standardized, where standardization is achieved if all the variables were on the same scale. Therefor the magnitude of the coefficients can be compared to see which one has more of an effect; usually larger betas are associated with larger t-values (Bruin, 2011).

-Std. Error

Associated with the coefficients, used for testing whether the parameter (unstandardized coefficients B) is significantly different from 0 by dividing the parameter estimate by the standard error to obtain a t-value (Bruin, 2011).

-Collinearity statistics

Used to measure the relationship between multiple variables, where the tolerance values indicate the percent of variance in the predictor that cannot be accounted for by the other predictors meaning that very small values indicate redundancy. As for The VIF (variance inflation factor) it is computed as 1 / tolerance and should be close to 1 and should not exceed 5 with a minimum tolerance of 0.2, also a value of 10 and above indicates that the variable is not needed (Bruin, 2011).

4.5 Hypothesis 1 statistics

Adoption of DBCs by Lebanese banks showed a non normal distribution of data, due to the extent of adoption such as number of machines/solutions available in Lebanese banks. Therefore, we were not able do a parametric test to identify the impact on satisfaction. However, we obtained satisfactory results by analyzing Spearman's correlations in table 4.3 (Appendix C), show moderate positive correlation values between +0.3 and +0.7 for the adoption of five of the DBCs in relation the overall Satisfaction, being the highest correlation is in mobile banking (0.544), internet banking(0.533), transactional call center(0.528) followed by ATM(0.455) and E-branches/advisory rooms(0.440). Only the video teller machine (VTM) shows a weak positive correlation of (0.245) which is less than 0.3 in relation the overall Satisfaction with DBCs.

4.6 Hypothesis 2 statistics

Regression model 2: $SAT = \alpha + \beta BEN1 + \beta BEN2 + \beta BEN3 + \varepsilon$

- Pearson correlations in Model 2, as shown in table 4.5 (Appendix D), show acceptable results below 0.8 for all variables, although there are some correlations but are not considered high enough to affect the analysis of the model.

- The adjusted R-squared was chosen for the analysis since it is a multiple regression; it has a value of 0.454 as shown in table 4.6 (Appendix D). The adjusted R-squared implies that 45.4% of the variance can be explained by the impact of the benefits of DBCs on the overall satisfaction with DBCs. For social sciences values > 35% are accepted as a positive linear association. The Durbin-Watson statistic for Model 2 is 1.735 meaning there is a slight positive serial correlation but within an acceptable range between 1.5 to 2.5, where the optimal result is 2 if there is no positive or negative autocorrelation in the residuals.

- The ANOVA table of Model 2 as show in table 4.7 (Appendix D) shows a P-value of "0" which falls below "0.05" suggesting a strong significance between the (IVs) and the (DV), the chosen predictors in the regression analysis are meaningful in expressing the impact of the benefits of DBCs on the overall satisfaction with DBCs.

- In the coefficients of table 4.8 (Appendix D), the independent variables: BEN1 (Cost effectiveness), BEN2 (Ease of use-user-friendly platform/layout) and BEN3 (Avoiding waiting in the branch) has shown a significant relationship, the Beta coefficients has a

positive sign, which implies a positive relationship between the latter and the chosen

dependent variable SATISFACT (Lebanese bank customer's overall satisfaction from

using DBCs), this outcome implies that a 1% change in IVs: BEN1, BEN2 and BEN3 have

a positive impact on Satisfaction with DBCs by 0.252%, 0.287 and 0278% respectively,

the result of the chosen variables related to the benefits that encourage customers to use

DBCs has a significant effect on the dependent variable. On the collinearity statistics part

of the table all the VIFs are less than 5 and tolerance above 0.2, showing an acceptable

minimal collinearity between independent variables.

4.7 Hypothesis 3 statistics

After running the multiple regression with the 15 IVs representing SERVQUAL

instrument, some variables showed very little significance having a P value above 0.05, we

iterated non-significant IVs manually and excluded the variables shown in table 4.14

(Appendix E) in order to keep a significant model, representing SERVQUAL's impact on

satisfaction with DBCs.

Regression Model 3: $SATISFACT = \alpha + \beta TA_1 + \beta TA_2 + \beta REL_1 + \beta RES_1 + \beta RES_{3+} \beta EM_2 + \varepsilon$

- Pearson correlations in Model 3, as shown in table 4.10 (Appendix E), show acceptable

results below 0.8 for all variables, although there are some correlations but are not

considered high enough to affect the analysis of the model.

- The adjusted R-squared was chosen for the analysis since it is a multiple regression; it

has a value of 0.802 as shown in table 4.11 (Appendix E). The adjusted R-squared implies

that 80.2% of the variance can be explained by the impact of the service quality of DBCs on the overall satisfaction with DBCs, which means there is a high linear association. The Durbin-Watson statistic for model 3 is 1.967 and is almost an optimal result where a DW result of 2 means no positive or negative autocorrelation in the residuals.

- The ANOVA table of Model 3 as show in table 4.12 (Appendix E) shows a P-value of "0" which falls below "0.05" suggesting a strong significance between the (IVs) and the (DV), the chosen predictors in the regression analysis are meaningful in expressing the impact of the benefits of DBCs on the overall satisfaction with DBCs.

- In the of coefficients table 4.13 (Appendix E), the selected independent variables' Beta values: TA1 (Up to date equipment & technology), TA2 (Bank has sufficient number/location of machines (ATM/ITM/E-branches and others), REL1 (Wide range of services transactions provided on DBCs), RES1 (Fast call center, E-branch advisors and video tellers service), RES3 (Bank's digital channels offer solutions/advice promptly), EM2 (Bank's understanding of specific needs is satisfactory) have shown a significant relationship, the Beta coefficients has a positive sign, which implies a positive relationship between the latter and the chosen dependent variable SATISFACT (Lebanese bank customer's overall satisfaction from using DBCs), this outcome implies that a 1% change in IVs: TA1, TA2, REL1, RES1, RES3 and EM2, have a positive impact on Satisfaction with DBCs by 0.151%, 0.096%, 0.225%, 0.207%, 0.147% and 0.245% respectively. On the collinearity statistics part of the table all the VIFs are less than 5 and tolerance above 0.2, meaning that the collinearity between IVs is minimal and acceptable.

4.8 Discussion of results

> Hypothesis 1: The adoption of digital banking channels offered by the Lebanese banks is positively related to the customer satisfaction with DBCs.

This hypothesis answers the first research question, we accept this hypothesis, since our analysis prove that extent of adoption of DBCs is positively related to overall satisfaction with DBCs. Our findings concerning mobile and internet banking as the most positively related to satisfaction align with the literature review in a survey made in the US in 2019 showing that 73% of Americans most often access their bank accounts through online and mobile platforms, with an increasing shift from internet to mobile banking. As for ATM and transactional call center our findings oppose this study, where only 6% prefer using the ATM while telephone and email banking was only 4 percent (American Bankers Association, 2019). Our analysis and perspective in the results of this research are that indeed mobile banking and internet banking are one of the most used channels in Lebanon, especially at the period of data collection, where banks closures occurred and Lebanese customers were relying heavily on mobile and internet banking, which also justifies the high results concerning ATMs and transactional call centers. As for E-branches/advisory rooms being the least moderately positively related and video teller machines weakly positive related to overall satisfaction. Our findings show that digital platforms do not show a high positive relation because of the limited availability in locations and in some Lebanese banks, also being that these digital platforms are not as developed as in other countries, and services were limited on DBCs at the period of data collection, such as loans, credit cards, withdrawal limits and others which defeats the purpose of VTM usage and can explain the obtained results

➢ Hypothesis 2: The benefits of using DBCs in the Lebanese banks positively impact the overall satisfaction with DBCs.

This hypothesis answers the second research question, we accept this hypothesis, since our analysis prove that benefits impact satisfaction with DBCs by 45.4%, and there is a positive impact on the overall satisfaction with DBCs shown in the Benefits:" Avoiding waiting in the branch", "Cost effectiveness" and "Ease of use-user-friendly platform/layout" which aligns with the findings in the literature review where a study on Middle Eastern banks one can still see long queues of customers on payday outside branches and customers are becoming more and more demanding in the digital space the Middle East (Holmey, 2019), as well a study on Indian banking customers where results show that customers expect banking channels to be available 24/7, with a good visual layout and the up-to-date information and others whereby if these factors were met customer satisfaction would be positively affected (Singh, 2019), Lebanese banks are offering less fees as incentives to clients who use DBCs, as the incentives are covered by the large cost savings when clients use DBCs (Nakhoul, 2019), other studies in Europe, found that 65% of respondents stated that ease-of-use is one of the most important factors of DBCs (Brusnahan, 2019).

The direct implication of this hypothesis suggests that Lebanese banks should maintain and enhance these analyzed benefits, as well should develop different benefits with existing or newer DBCs, since the positive impact contributes to the success of banks investing and adopting DBCs.

➢ Hypothesis 3: Service quality (SERVQUAL) of DBCs in the Lebanese banks positively impacts the overall satisfaction with DBCs.

This hypothesis answers the third research question, we accept this hypothesis, since our analysis prove that service quality(SERVQUAL) impacts satisfaction with DBCs by 80.2%, and there is a positive impact on the overall satisfaction with DBCs shown in TA1 (Up to date equipment & technology), TA2 (Bank has sufficient number/location of machines (ATM/ITM/E-branches and others), REL1 (Wide range of services transactions provided on DBCs), RES1 (Fast call center, E-branch advisors and video tellers service), RES3 (Bank's digital channels offer solutions/advice promptly), EM2 (Bank's understanding of specific needs is satisfactory), which aligns with the findings in the literature review, such as a study on Finnish bank customers about the relation of customer satisfaction was performance of DBCs and equipment, and the hypothesis was accepted as to have a positive influence of customer satisfaction of digital banking channels services (Miah, 2018). Another research made on the benefits affecting customer satisfaction with online banking services in Thailand show that customer satisfaction is achieved from offering a wide range of services (Rompho & Unyathanakorn, 2014). A study in the US on 136 banks proved that customer satisfaction is higher in banks that successfully resolve problems via DBCs (Babrovich, 2017). We assume that EM2 (Bank's understanding of specific needs is satisfactory) has the highest impact on satisfaction justified by the highest beta value due to customers experiencing many restrictions and changes in banking procedures during the period of data collection, and banks communicating and dynamically catering to customers questions and demands through digital channels while applying new procedures and regulations. As for the non-significant variables that we excluded in the

statistical test, we assume while considering the period of data collection was a time of crisis and banks closure caused by quarantine, being: TA3 (DBCs have a friendly user interface) some banks might have applied restrictions and new procedures on DBCs without considering user experience, REL2 (Fast performing digital banking machines software) the high dependency on DBCs might have slowed some banks' DBCs, REL3 (Reliable services transactions process on DBCs) the restrictions and limitation of certain transactions has caused a decrease in satisfaction, RES2 (Resolution of claims/disputes raised through DBCs is satisfactory) the drastic increase in the number of claims and complaints was not addressed and catered for by banks, AS1 (High security and fraud protection on digital channels) some banks might not be offering satisfactory security on their DBCs such as OTPs, two factor authentication or others, AS2 (The collection of personal information is handled with care) due to some channels being in locations without satisfactory privacy measures, AS3 (Error free services transactions made on DBCs) the high load on DBCs and banks operating at low capacity might have had higher incidents and system problems that affected the DBC services, EM1 (Help desks/call centers are empathetic) the strict limitations and regulations could have led to leaving unsolved claims and requests received at banks' call centers, EM3 (Educating customers on the usage of digital banking channels) we assume that the fast changes on DBCs might not always be straight forward to customers on new or modified features.

The direct implication of this hypothesis suggests that service quality of DBCs in Lebanese banks is of high importance to the overall satisfaction with DBCs in the elements analyzed, therefor banks should maintain a high service quality and enhance their other SERVQUAL dimensions elements to reach higher levels of satisfaction with DBCs.

4.9 Conclusion

In this chapter we followed a framework that enabled us to use the data gathered form customers of different Lebanese banks to test our hypotheses and analyze our results, based on deductive reasoning since our research is an empirical study following the positivist paradigm, we used Spearman's correlation, descriptive statistics and multiple regressions on the primary data to test the hypotheses, we analyzed Spearman and Pearson correlations, the explanatory power of the model to study the variation caused by the selected (IVs), the Durbin-Watson statistic, the beta coefficients and p values.

We found that there is a positive relationship in the first hypothesis and positive impact in the second and third hypotheses, which we failed to reject, and answered the research questions of this thesis. Our findings were compared with past literatures and researches, and concluded that:

- The adoption of DBCs in the Lebanese banks has a moderate positive relation with overall satisfaction with DBCs, which corresponds to research in the US.

- The benefits of using DBCs in the Lebanese banks had a positive impact the overall satisfaction with DBCs, aligning with the findings in the literature review on studies made in the Middle Eastern banks, Indian banks and other European banks.

- Service quality (SERVQUAL) of DBCs in the Lebanese banks had a positive impact on the overall satisfaction with DBCs, aligning with the findings in the literature review on studies made on Finnish banks, banks in Thailand and US banks.

These results have successfully reached the targeted objective we set at the beginning of this study, which is to show the implications of adopting DBCs for banks to induce satisfaction. Therefore, the obtained results allowed us to answer our research questions and prove the related hypotheses, where these results align with most of the findings in other research and other countries that we highlighted in the literature review.

Our contribution and the added value of the findings in this research, being that the reliance on DBCs was very high at the time the primary data was gathered, is that the results show specifically which DBCs are highly related to satisfaction and which elements of the service quality and the benefits that are mostly satisfying Lebanese customers with DBCs. The implications of the results of this analysis on a managerial level, can contribute in decision making to adopt digitalization in the banking sector, or to enhance the existing DBCs within a bank using the above results representing some of the factors that impact the overall satisfaction of the Lebanese banks clients towards DBCs.

Chapter 5: Conclusions and Recommendations

5.1 General conclusion

In conclusion and as we learned from all sources and research made on this topic, we have successfully achieved the purpose of this study, which is to explore service quality, adoption extent and benefits that encourage the usage of DBCs and their impact on the overall satisfaction with digital banking channels, to understand their benefits for Lebanese banks in a highly competitive market and the implications and recommendations we will be discussing in this chapter.

We considered six main DBCs being ATMs, Internet banking, mobile banking, ITMs, Call centers and E-branches, we targeted information regarding the extent of banks adoption of each channel, and the benefits that drive these customers to use the DBCs instead or as a compliment to standard branch banking and on the service quality using the SERVQUAL tool, we concluded from the literature review that DBCs, are the new trend and future of banking, we also learned that the evolution of digital banking channels is in constant development, we set our research questions and hypotheses to determine the impact of adoption of DBCs, the benefits of DBCs and the service quality on customer satisfaction, with the aim to develop and add more information regarding digital banking channels in the Lebanese market, we followed a framework for this study that enabled us to gather enough evidence from the customers of Lebanese banks to prove our hypotheses and to support our findings from the literature review, our research followed the positivist paradigm, as was based on an empirical study that is based on deductive reasoning and an explanatory research design that made it possible to understand the relationships between

variables, primary data was gathered from an online questionnaire and finally to answer our research questions and hypotheses we analyzed and discussed the findings:

-The extent of adoption of DBCs is positively related to overall satisfaction with DBCs, mobile banking, internet banking, ATM, transactional call center and E-branches, which we compared with findings in the literature review on studies in the US.

-The benefits of using DBCs in the Lebanese banks had a positive impact the overall satisfaction with DBCs 24/7 access to accounts and transactions, cost effectiveness (less commissions and fees), ease of use (user-friendly platform/layout), avoiding waiting in the branch, which is aligned with the findings in the literature review on studies made in the Middle Eastern banks, Indian banks and other European banks.

-Service quality (SERVQUAL) of DBCs in the Lebanese banks had a positive impact on the overall satisfaction with DBCs in up to date equipment & technology, sufficient number and location of DBCs, wide range of services transactions provided on DBCs, fast call center, E-branch advisors and video tellers service, bank's digital channels offer solutions and advice promptly, bank's understanding of specific needs, which was aligned with the findings in the literature review on studies made on Finnish banks, banks in Thailand and US banks.

5.2 Implication of the study

The managerial implications of this research is the potential contribution in decision making on the adoption of digitalization in the banking sector, it might not be the only determinant for bank managers and decision makers but it can be a major indicator since the results of this research show the impact of showcasing the benefits of digital banking channels and improving their quality on customer satisfaction. It serves as guidance for executives in banks that have not yet implemented or developed their existing digital banking channels. This research can impact banks' strategies, and long-term vision considering future expansion, and provides important information for banks and Fintech companies who develop digital banking solutions, in terms of improving their new services, based on the service quality dimensions, the benefits and extent of adoption, especially when considering the results that we found the most significant. On another perspective, banks and Fintech companies can use the outcomes of this research to develop and enhance their products and digital offerings considering the results that we found as less significant, in a way to make the investments in DBCs more beneficial to banks if that overall satisfaction levels with DBCs in Lebanese banks can be increased.

Another implication of this research, is that satisfaction can induce shifting branch operations in banks, however challenges faced by some Lebanese bank customers will diminish with time since people are constantly exposed to new technology in their daily lives, thus, if banks can increase customer satisfaction which induces higher willingness to use DBCs, banks can cater to most of customers' needs through DBCs. Lebanese banks are not able to provide a fully digital bank service presently but might as well develop

DBCs to shift most of its regular branch operations, being a complement for branches before being a substitute.

As an implication to the Lebanese banking sector on the need to digitalize and develop DBCs, regulatory bodies and the Lebanese central bank should empower banks by providing a digital banking infrastructure, legalizing and regulating digitalization and DBCs by developing control mechanisms and policies, government inclusion and initiatives in this matter might lead to encouraging more people to use DBCs feeling reassured that it is a secure and regulated service, thus encouraging banks to fulfill the growing demand of DBCs.

Finally, the implications for bank customers and bank employees of further developments of DBCs is the change in the operational model of banks, whereby the adaptation to new technologies and process would enforce adaptation to the ongoing development and innovation of digital banking channels as part of financial technologies which as literature review shows it is the future trend of the banking sector.

This research has theoretical value as it explores satisfaction with DBCs in a region that was not explored previously and confirms the linkage between the benefits and quality of DBCs and customer satisfaction with them. Researchers can base new research on DBCs or digital banking from this study or use the findings of our study to support their findings.

5.3 Limitations of the study

During the conduction of this research, several limitations were encountered, especially since this research was made between 2019 and 2020 in Lebanon where an economic crisis impacted the banking sector followed by a pandemic which also hindered the banking sector's activity, however, this wasn't an obstacle to complete this research with acceptable results, but may have impacted the data collection as participants may have been somewhat biased and sensitive to participate in a satisfaction level survey related to the banking sector after experiencing multiple restrictions and new rules and procedures in the Lebanese banking system. Also, the large volume of transactions and dependency on digital banking channels during this period of multiple day closures of banks branches, have impacted the user experience for some bank customers while using the DBCs, however some banks with developed digital channels were able to meet this demand when others banks services were unsatisfactory.

5.4 Suggestions for Further Research

There are many reasons for banks to adopt digitalization and digital banking channels, as we can draw from our findings and all the literature and research we made in this paper about this broad topic, a lot can be further researched with different sets of data and different perspectives such as the financial benefits for the banks adopting DBCs, the improvements of operations of digitalized banks and others that can cover the general topic of digitalization in the banking sector. Since it is a continuously developing concept and there is not a lot of practical studies nor diversified research approaches in some countries including Lebanon, we can suggest several topics for future research:

1- Customer's satisfaction with digital only banks in comparison to banks having both traditional and digital operational models.

2- The advantages of digitalized Lebanese banks in times of crisis and pandemics.

3- The advantage of banks collaborating with Fintech companies compared to banks who are not collaborating with Fintech companies.

4- Impact of adopting digital banking channels on improving profitability and efficiency levels.

5- Blockchain technologies in the Lebanese banking sector: Promises and challenges

These topics can be researched in regional and international markets where digitalization in banks in more developed, as for the Lebanese banking sector, some of these topics are valid and interesting to be researched, but not all the topics can be researched presently since the technologies and concepts are not yet available or fully implemented, but will be very interesting and important to be researched in the future.

5.5 Recommendations

Our recommendations for industry professionals, in the field on financial technologies and digital banking, both in Lebanon and abroad, is to focus on enhancing the offerings and maintaining the service of existing digital banking channels by using this research to target the elements that affect customer satisfaction, while considering the application of innovative and future trends, by making sure it increases customer satisfaction and experience, as it can be a determinant of the success or failure of digital banking channels. In fact, these expenditures in terms of staff training, expenditure, and operational costs can be high and may not generate a good return on investment or increase efficiency if customers' expectations are not met.

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Appendices

Appendix A: Survey questionnaire

Introduction

-The objective of this questionnaire is to identify and analyze the factors influencing customer satisfaction on the adoption of digital banking channels in Lebanon and is part of my research as a graduate student at Notre Dame University-Louaize.

-Please answer based on your satisfaction experience using digital banking channels not on the overall banking experience.

-Please be assured that your responses will be strictly confidential and can be provided upon request (mhyazbeck@ndu.edu.lb).

-By Clicking on the Next button, you agree to the below terms:
Being informed that any particular treatment or procedure may involve risks which are currently unforeseeable; I, (Participant name), state hereby that my participation in the research study is voluntary. Any refusal to participate will involve no penalty or loss of benefits to which I am entitled. I may as well discontinue participation at any time without penalty or loss of benefits to which I am entitled.

Start of the questionnaire

1. Name of the main bank you deal with:

2. Gender:
    A. Male
    B. Female

3. Age:
    A. 18 - 25 years
    B. 26 - 30 years
    C. 31 – 40 years
    D. 41 – 50 years
    E. 51 – 60 years
    F. Above 60 years

4. Type of account(s) held at your main bank
☐ Current/checking account
☐ Payroll account
☐ Deposit/saving account
☐ Overdraft/loan facility

5. How long have you been using digital banking channels? (Smart ATMs, video teller machines, E-branches, mobile banking, internet banking, contact center and others)
   A. Never
   B. Less than 1 year
   C. 1 – 5 years
   D. 5 – 10 years
   E. Above 10 years

Specific Questions

1- On a scale of 1 to 5, to what extent is your bank currently adopting the following digital banking channels? (1=not at all, 5= very much)

    A. ATM cash deposit/withdrawal

    ●————————●————————●————————●————————●
    1   2   3   4   5

    B. Video teller machine (various counter operations)

    ●————————●————————●————————●————————●
    1   2   3   4   5

    C. Transactional call center (card services, inquiries, transactions and others)

    ●————————●————————●————————●————————●
    1   2   3   4   5

    D. Mobile banking application

    ●————————●————————●————————●————————●
    1   2   3   4   5

    E. Internet banking website

    ●————————●————————●————————●————————●
    1   2   3   4   5

    F. E-branch/advisory room

    ●————————●————————●————————●————————●
    1   2   3   4   5

2- On a scale of 1 to 5, to what extent are you currently using the following digital banking channels? (1=not at all, 5=very much)

    A. ATM cash deposit/withdrawal

    ●————————●————————●————————●————————●
    1   2   3   4   5

    B. Video teller machine (various counter operations)

    ●————————●————————●————————●————————●
    1   2   3   4   5

    C. Transactional call center (card services, inquiries, transactions and others)

    ●————————●————————●————————●————————●
    1   2   3   4   5

    D. Mobile banking application

    ●————————●————————●————————●————————●
    1   2   3   4   5

E. Internet banking website

```
●————————————●————————————●————————————●————————————●
1            2            3            4            5
```

F. E-branch/advisory room

```
●————————————●————————————●————————————●————————————●
1            2            3            4            5
```
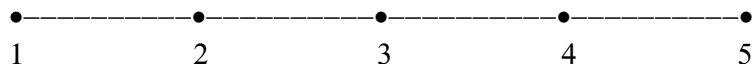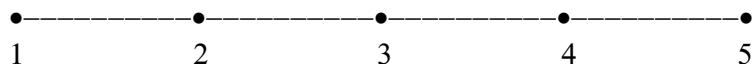
3- On a scale of 1 to 5, to what extent do the following benefits encourage you to use your bank's digital channels? (1= not at all, 5=very much)

A. Cost effectiveness (less commissions and fees)

```
●————————————●————————————●————————————●————————————●
1            2            3            4            5
```

B. Ease of use (user-friendly platform/layout)

```
●————————————●————————————●————————————●————————————●
1            2            3            4            5
```

C. Avoiding long waiting queues in the branch

```
●————————————●————————————●————————————●————————————●
1            2            3            4            5
```

4. On a scale of 1 to 5, how satisfied are you with the overall digital banking channels experience offered by your bank? (1= not at all, 5=very much)

```
●————————————●————————————●————————————●————————————●
1            2            3            4            5
```
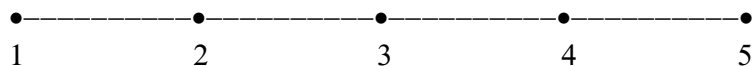
Digital banking channels satisfaction levels using the SERVQUAL instrument

Rate your agreement with the following statements (1=not at all, 5=very much)

1. Tangibility

A. My bank has up - to - date equipment & technology

```
●————————————●————————————●————————————●————————————●
1            2            3            4            5
```
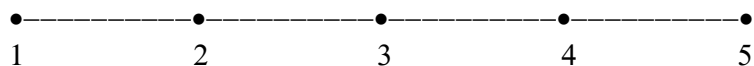
B. My bank has sufficient number/location of machines (ATM/ITM/E-branches and others)

```
●————————————●————————————●————————————●————————————●
1            2            3            4            5
```
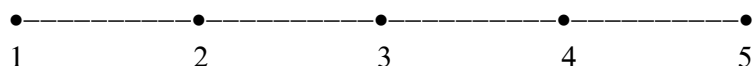
C. My bank's digital channels have a friendly user interface

```
●————————————●————————————●————————————●————————————●
1            2            3            4            5
```
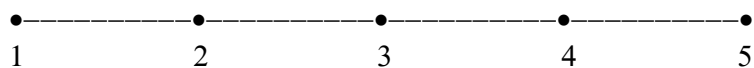
2. Reliability

A. My bank has a wide range of services/transactions provided (24/7) on digital channels

●————————●————————●————————●————————●
1   2   3   4   5

B. My bank has fast performing digital banking machines/software

●————————●————————●————————●————————●
1   2   3   4   5

C. My bank has a reliable services/transactions process on digital channels

●————————●————————●————————●————————●
1   2   3   4   5

3. Responsiveness

A. My bank has a fast call center/E-branch advisors/video tellers service

●————————●————————●————————●————————●
1   2   3   4   5

B. My bank's resolution of claims/disputes raised through digital channels is satisfactory

●————————●————————●————————●————————●
1   2   3   4   5

C. My bank's digital channels offer solutions/advice promptly

●————————●————————●————————●————————●
1   2   3   4   5

4. Assurance

A. My bank has high security and fraud protection on digital channels

●————————●————————●————————●————————●
1   2   3   4   5

B. My bank handles the collection of personal information with care

●————————●————————●————————●————————●
1   2   3   4   5

C. My bank has error-free services/transactions made on digital banking channels

●————————●————————●————————●————————●
1   2   3   4   5

5. Empathy

A. My bank's help desks, call centers are empathetic

●————————●————————●————————●————————●
1   2   3   4   5

B. My bank's understanding of specific needs is satisfactory

●————————●————————●————————●————————●
1   2   3   4   5

C. My bank is helpful in educating customers on the usage of digital banking channels

●————————●————————●————————●————————●
1   2   3   4   5

Thank you for taking the time to complete this questionnaire!

Appendix B: Sample characteristics
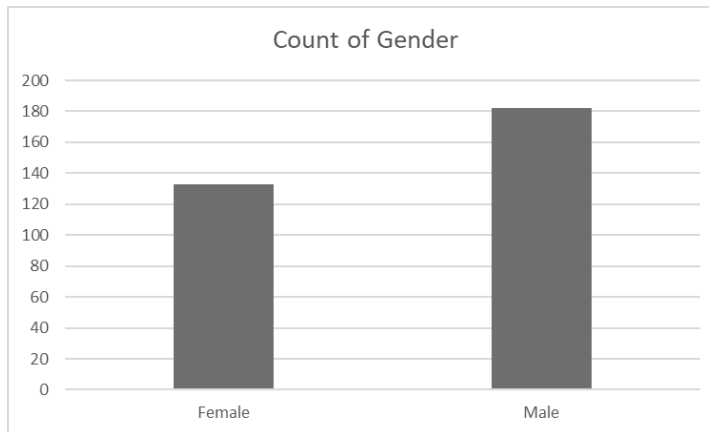

Figure 4.1:Respondents gender distribution
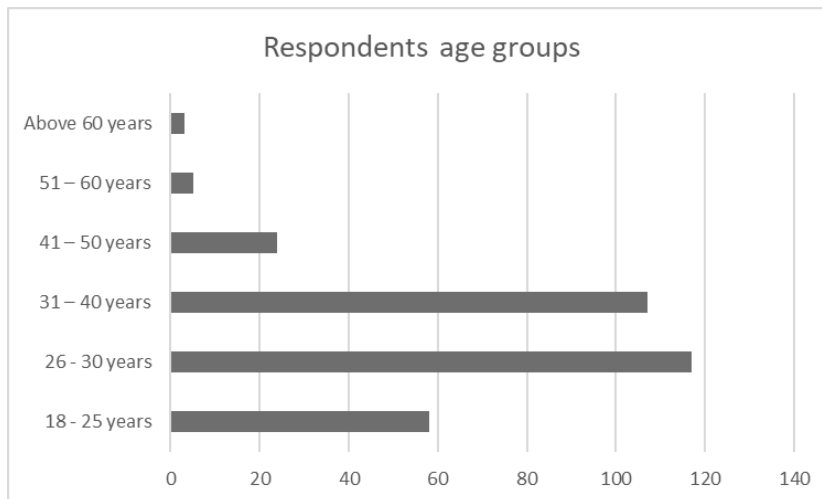
Figure 4.2:Respondents age groups
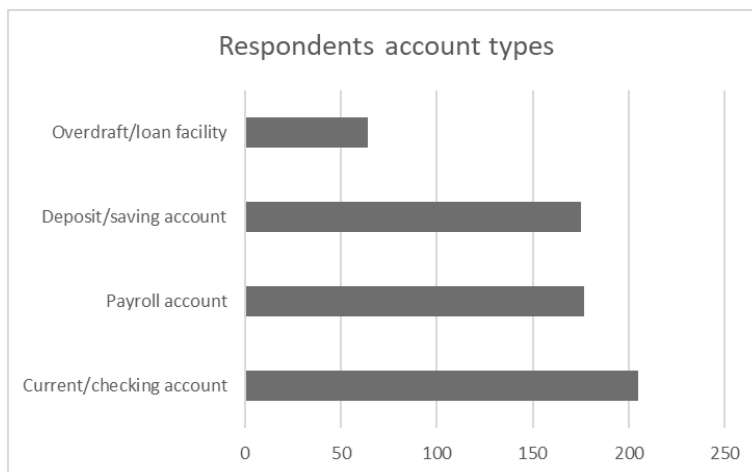
Figure 4.3:Respondents account types
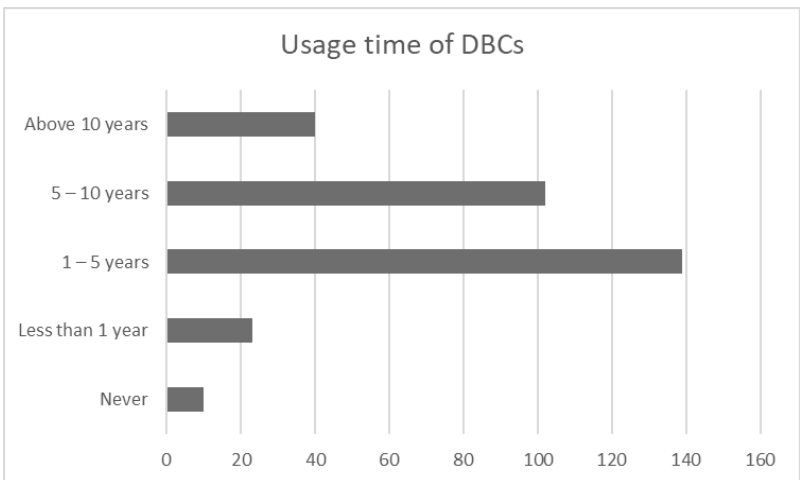
Figure 4.4:Usage time of DBCs
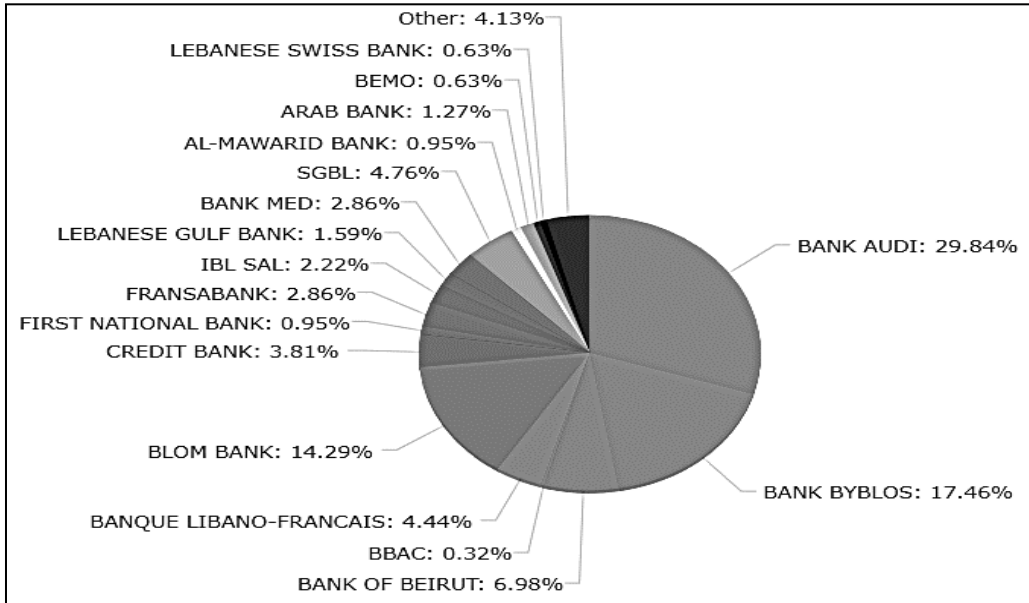
Figure 4.5:Respondents banks distribution
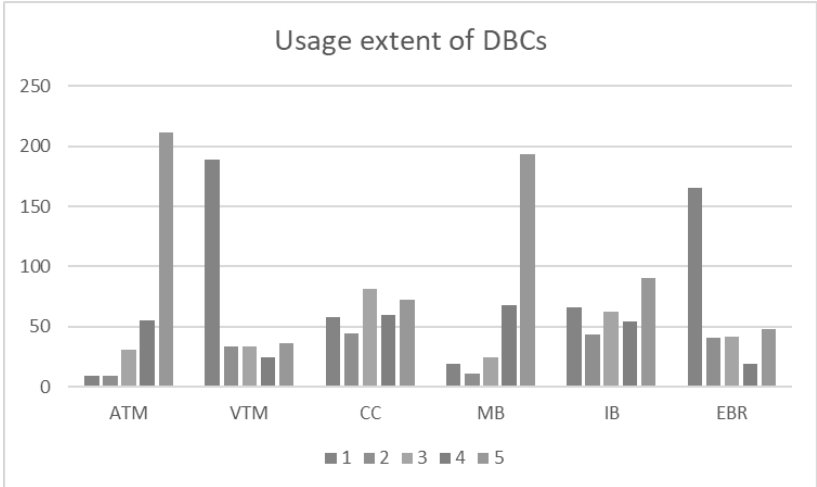
Figure 4.6: Respondents usage extent of DBCs

Appendix C: Hypotheses 1 Tables

Reliability Statistics	
Cronbach's Alpha	N of Items
.832	7

Table 4.2: Cronbach's alpha for hypothesis 1 data

Correlations			Bank adoption of ATM	Bank adoption of VTM	Bank adoption of CC	Bank adoption of MB	Bank adoption of IB	Bank adoption of AR	SATISFAC TION
Spearman's rho	SATISFAC TION	Correlation Coefficient	.455**	.245**	.528**	.544**	.533**	.440**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
		N	315	315	315	315	315	315	315

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.3: Model 1 coefficients

Appendix D: Hypotheses 2 Tables

Reliability Statistics	
Cronbach's Alpha	N of Items
.824	4

Table 4.4: Cronbach's alpha for hypothesis 2 data

Correlations		SAT	BEN1	BEN2	BEN3
Pearson Correlation	SAT	1.000	.529	.591	.564
	BEN1	.529	1.000	.536	.441
	BEN2	.591	.536	1.000	.607
	BEN3	.564	.441	.607	1.000

Table 4.5: Pearson correlations Model 2

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.678[a]	.460	.454	.14916	1.735
a. Predictors: (Constant), BEN3, BEN1, BEN2					
b. Dependent Variable: SAT					

Table 4.6: Model 2 summary

ANOVA[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.884	3	1.961	88.155	.000[b]
	Residual	6.920	311	.022		
	Total	12.804	314			
a. Dependent Variable: SAT						
b. Predictors: (Constant), BEN3, BEN1, BEN2						

Table 4.7: Model 2 ANOVA

Coefficients[a]		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.093	.013		7.165	.000		
	BEN1	.213	.042	.252	5.036	.000	.692	1.445
	BEN2	.263	.052	.287	5.065	.000	.542	1.844
	BEN3	.251	.048	.278	5.220	.000	.612	1.633
a. Dependent Variable: SAT								

Table 4.8: Model 2 coefficients

Appendix E: Hypotheses 3 Tables

Reliability Statistics

Cronbach's Alpha	N of Items
0.933	7

Table 4.9: Cronbach's alpha for hypothesis 3 data

Correlations

		SAT	TA1	TA2	REL1	RES1	RES3	EM2
Pearson Correlation	SAT	1.000	.765	.688	.782	.746	.752	.750
	TA1	.765	1.000	.673	.721	.647	.667	.634
	TA2	.688	.673	1.000	.677	.576	.557	.557
	REL1	.782	.721	.677	1.000	.635	.683	.618
	RES1	.746	.647	.576	.635	1.000	.672	.589
	RES3	.752	.667	.557	.683	.672	1.000	.644
	EM2	.750	.634	.557	.618	.589	.644	1.000

Table 4.10: Pearson correlations Model 3

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.898[a]	.806	.802	.08977	1.967

a. Predictors: (Constant), EM2, TA2, RES1, RES3, TA1, REL1

b. Dependent Variable: SAT

Table 4.11: Model 3 summary

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.322	6	1.720	213.498	.000[b]
	Residual	2.482	308	.008		
	Total	12.804	314			

a. Dependent Variable: SAT

b. Predictors: (Constant), EM2, TA2, RES1, RES3, TA1, REL1

Table 4.12: Model 3 ANOVA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.012	.009		-1.351	.178		
	TA1	.136	.038	.151	3.568	.000	.353	2.831
	TA2	.088	.034	.096	2.587	.010	.455	2.196
	REL1	.204	.038	.225	5.322	.000	.351	2.845
	RES1	.193	.035	.207	5.504	.000	.445	2.246
	RES3	.136	.037	.147	3.670	.000	.390	2.565
	EM2	.246	.036	.245	6.753	.000	.479	2.086

a. Dependent Variable: SAT

Table 4.13: Model 3 coefficients

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	TA3	.024[g]	.589	.556	.034	.367	2.728	.345
	REL2	.012[g]	.278	.781	.016	.364	2.746	.324
	REL3	.047[g]	.975	.330	.056	.274	3.646	.274
	RES2	.031[g]	.650	.516	.037	.282	3.542	.282
	AS1	.042[g]	1.033	.302	.059	.373	2.684	.343
	AS2	.044[g]	1.193	.234	.068	.461	2.171	.346
	AS3	.045[g]	1.215	.225	.069	.468	2.138	.347
	EM1	.005[g]	.117	.907	.007	.349	2.863	.349
	EM3	.055[g]	1.301	.194	.074	.356	2.808	.345

a. Dependent Variable: SAT

b. Predictors in the Model: (Constant), REL1, EM2, RES1, TA1, RES3, TA2

Table 4.14: Excluded Variables

Appendix F: Descriptive statistics

Descriptive Statistics									
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
BENEFIT1	315	1	5	3.86	1.167	-.741	.137	-.325	.274
BENEFIT3	315	1	5	4.20	1.008	-1.224	.137	1.067	.274
BENEFIT4	315	1	5	4.27	1.026	-1.315	.137	1.027	.274
SATISFACTION	315	1	5	4.04	.923	-.969	.137	.925	.274
TANGIB1	315	1	5	3.99	1.062	-.919	.137	.244	.274
TANGIB2	315	1	5	4.10	1.015	-1.039	.137	.505	.274
TANGIB3	315	1	5	4.00	1.059	-.956	.137	.391	.274
RELIAB1	315	1	5	4.00	1.063	-.966	.137	.322	.274
RELIAB2	315	1	5	3.96	.994	-.954	.137	.662	.274
RELIAB3	315	1	5	3.98	1.008	-.907	.137	.483	.274
RESPONS1	315	1	5	3.92	1.021	-.781	.137	.187	.274
RESPONS2	315	1	5	3.82	.999	-.685	.137	.241	.274
RESPONS3	315	1	5	3.86	1.048	-.692	.137	-.104	.274
ASSUR1	315	1	5	4.22	.919	-1.358	.137	2.087	.274
ASSUR2	315	1	5	4.10	.947	-1.072	.137	.950	.274
ASSUR3	315	1	5	3.86	1.030	-.815	.137	.311	.274
EMPATH1	315	1	5	3.93	.973	-.688	.137	.069	.274
EMPATH2	315	1	5	3.94	.952	-.942	.137	.945	.274
EMPATH3	315	1	5	3.85	1.073	-.765	.137	.045	.274
Valid N (listwise)	315								

Table 4.15: Descriptive statistics – original variables

Descriptive Statistics									
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
BEN1	315	0.00	.70	.2655	.23915	.119	.137	-1.423	.274
BEN2	315	0.00	.70	.1953	.22025	.542	.137	-1.110	.274
BEN3	315	0.00	.70	.1742	.22362	.752	.137	-.954	.274
SAT	315	0.00	.70	.2447	.20193	.076	.137	-1.055	.274
TA1	315	0.00	.70	.2443	.22421	.205	.137	-1.273	.274
TA2	315	0.00	.70	.2206	.21968	.347	.137	-1.216	.274
TA3	315	0.00	.70	.2433	.22336	.213	.137	-1.246	.274
REL1	315	0.00	.70	.2423	.22344	.236	.137	-1.224	.274
REL2	315	0.00	.70	.2602	.20905	.064	.137	-1.034	.274
REL3	315	0.00	.70	.2518	.21481	.104	.137	-1.188	.274
RES1	315	0.00	.70	.2655	.21622	.007	.137	-1.224	.274
RES2	315	0.00	.70	.2920	.20780	-.187	.137	-1.020	.274
RES3	315	0.00	.70	.2761	.21948	-.043	.137	-1.249	.274
AS1	315	0.00	.70	.2014	.20398	.429	.137	-.933	.274
AS2	315	0.00	.70	.2275	.20743	.239	.137	-1.096	.274
AS3	315	0.00	.70	.2791	.21276	-.045	.137	-1.072	.274
EM1	315	0.00	.70	.2676	.21009	-.069	.137	-1.213	.274
EM2	315	0.00	.70	.2693	.20084	-.043	.137	-.902	.274
EM3	315	0.00	.70	.2769	.22124	-.010	.137	-1.210	.274
Valid N (listwise)	315								

Table 4.16: Descriptive statistics – Transformed variables
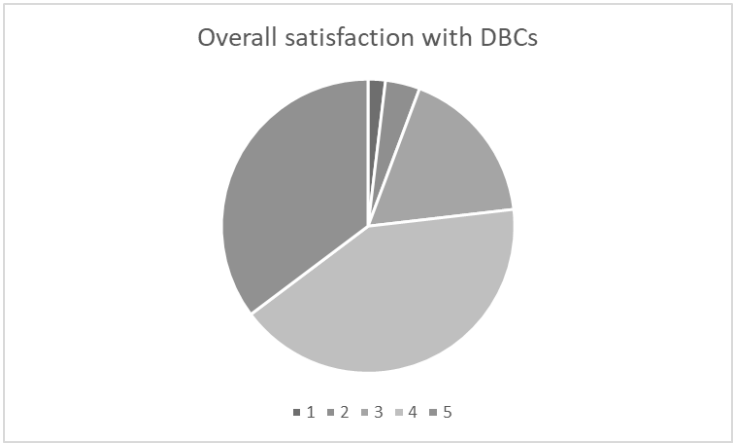
Appendix G: Primary data figures

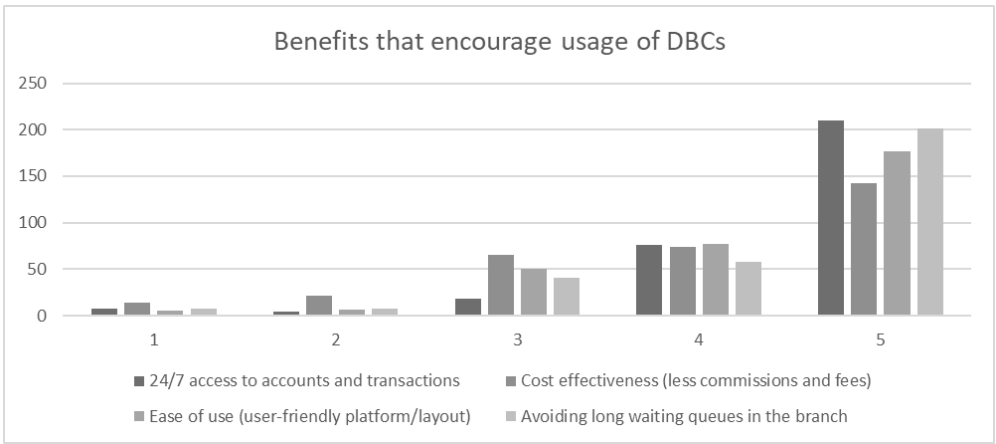Figure 4.7: Overall satisfaction with DBCs

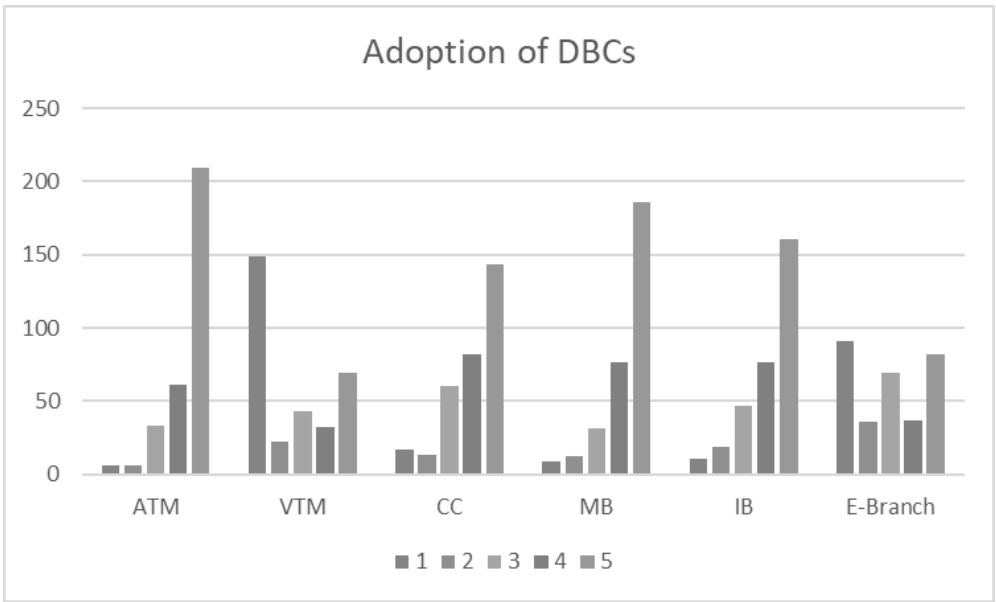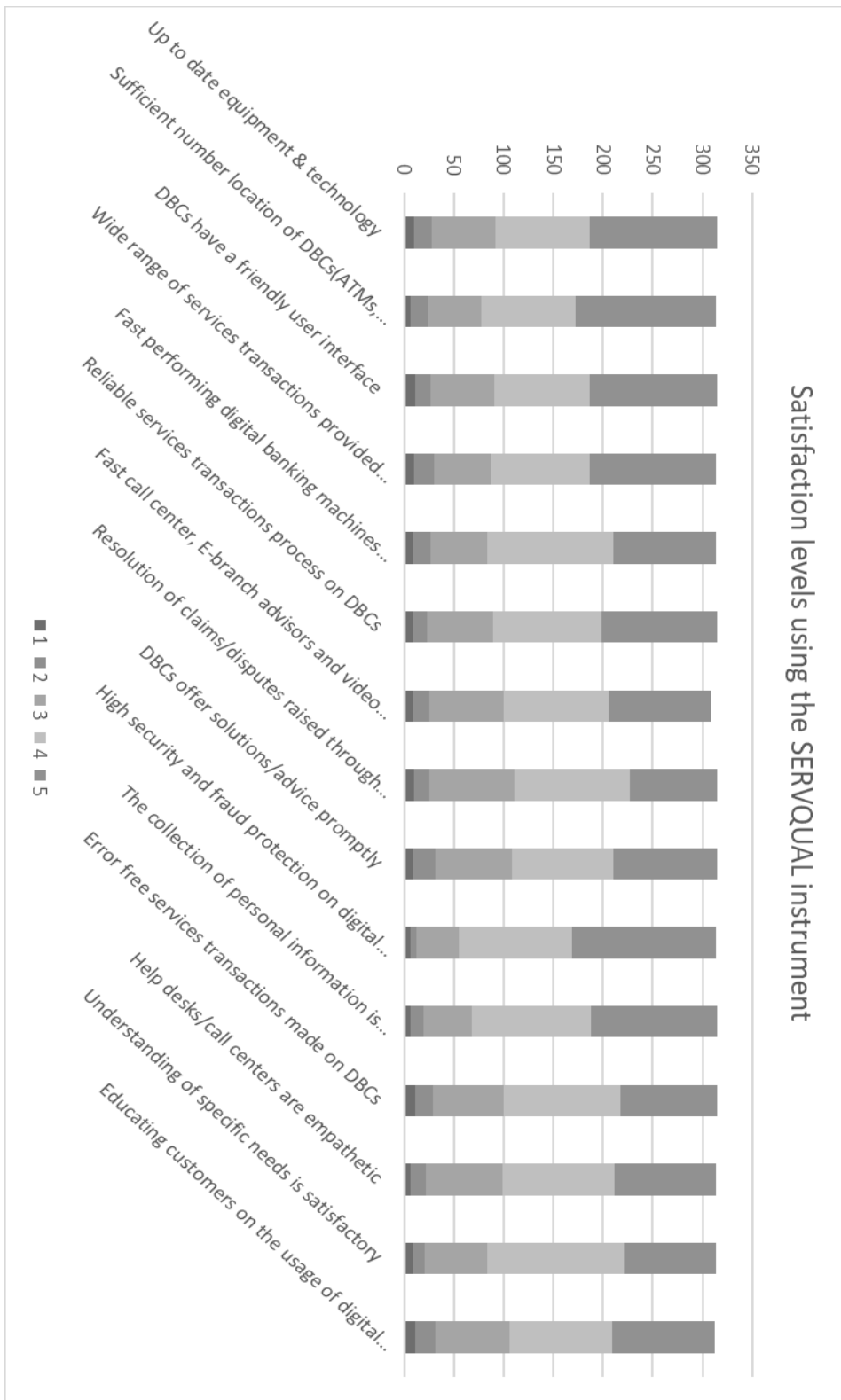Figure 4.8: Benefits that encourage usage of DBCs

Figure 4.9: DBCs adoption extent

Figure 4.10: SERVQUAL dimensions