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Customer Satisfaction and Loyalty in the Digital Banking Era: The Case of Arab Tunisian Bank

Presented and defended by :

Kamilia JEGHAM

Supervised by :

Mr. Slim Hédi CHEKILI

Student belonging to :

ARAB TUNISIAN BANK

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Kamilia JEGHAM

Acknowledgements

Dedication

I would like to dedicate this work to my beloved parents for their affection,

limitless support and sacrifices. I am truly grateful for always having them by

my side, believing in me and motivating me to achieve my goals.

I also dedicate this work to my brother for supporting me and encouraging me

to never give up on my dreams.

I would like to dedicate it also to my friends for their support.

Kamilia

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Abstract

During the past decades, the banking sector has undergone many changes due to the development of new technologies, resulting in an intense competition and changing the behaviour of customers and their expectations and needs. In an increasingly competitive market, customer satisfaction and loyalty are essential to win market share, increase profits and develop a competitive advantage. The purpose of this study is to investigate and determine the different factors that have an impact on customer satisfaction and loyalty as well as the relationship between satisfaction and loyalty in the digital banking era (Case of ATB). To further investigate this area of research, we collected data by conducting a survey with 135 customers who use the digital banking services of ATB. We analyzed data using Partial Least Squares- Structural Equation Modeling (PLS-SEM) using SmartPLS.4 software. Our results indicated that ease of use, functional quality, perceived value and trust have all a significant direct impact on satisfaction. The findings showed also that loyalty is directly impacted by perceived risk, trust and satisfaction. Our findings also proved the existence of indirect effects between ease of use, functional quality, perceived value and trust and loyalty through satisfaction. Our results provide many insights that could help bank managers when implementing a Digital Banking strategy.

Key-words: Digital banking, Customer Satisfaction, Customer Loyalty, Partial Least Squares- Structural Equation Modeling

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List of Abbreviations

ATB: Arab Tunisian Bank

ATM: Automated Teller Machine

AVE: Average Variance Extracted

CFA: Confirmatory Factor Analysis

DB: Digital Banking

EFA: Exploratory Factor Analysis

EU: Ease of Use

FQ: Functional Quality

IT: Information Technology

KMO: Kaiser-Meyer-Olkin

LOY: Loyalty

NFC: Near-field communication

NPS: Net Promoter Score

PCA: Principal Component Analysis

PLS-SEM: Partial Least Squares-Structural Equation Modeling

PR: Perceived Risk

PV: Perceived Value

RM: Relationship Marketing

SAT: Satisfaction

WoM: Word of mouth

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GENERAL INTRODUCTION

During the last decades, technological developments have reshaped many sectors, and the retail banking sector is one of them. This development has led to an increase of adoption of digital banking (DB) services. It has also led to an increasingly competitive environment and changed the bank-customer relationship. Competition is intensifying especially with the new actors who are entering the financial industry and mainly Fintechs. Recently, the COVID-19 pandemic has accelerated changes in the behaviors of customers who have limited their physical interactions with banks and preferred to use of digital technology. In fact, the health crisis has forced banks to quickly provide more online solutions to mitigate the closure of branches. Therefore, developing new digital banking services has become crucial to meet customers' needs and demands. Nowadays, banks are facing new challenges to keep their current market position, attract new customers and maintain existing ones.

The early technological developments in the retail banking industry started with the introduction of cards and ATM. Then online banking enabled customers to carry out their banking transactions from a computer. Meanwhile, one of the most significant changes was the introduction of mobile banking making it possible to conduct transactions at anytime and anywhere. Nowadays, a wide range of digital banking services is available to customers through different channels (Internet banking, mobile banking, etc). The progress in the technologies of information and communication, allowed banking institutions to expand their service offerings. Digital banking enables banks to deliver services in a more convenient and cost-effective manner (Akinci and Atilgan, 2003). Customers are able to conduct a variety of banking operations including fund transfers, payments, checking account balances anytime and anywhere without visiting the branch.

This change has also led to a shift in how customers interact with their bank as the adoption of digital banking services technologies increased. Customers who, previously, used to go to branches to conduct different transactions are now using online and mobile services. In the digital era, the main challenge for banks is to manage their relationship with customers. DB has made the customer's life easier being able to conduct banking transactions with a touch of finger or a click of a mouse instead of waiting in line. However, digital banking is also challenging for banks due this changing customer behavior. As customer expectations

change and banking competition increases, satisfying and retaining customers is now crucial. Thus, banks have to focus more on customers. This shift to digital banking means that customer acquisition and retention are no longer determined solely in the branches.

Customer satisfaction and loyalty are essential to build stronger relationships. It is also crucial to gain a competitive advantage. It is important to maintain a good relationship with customers to satisfy them and retain them to be able to make profits. Anderson and Forneel (1994) stated that the loyal customers tend to repurchase and reuse products and services, buy more often and in a more significant volume and promote a positive Word of Mouth (WoM) thereby attracting new customers.

Earlier research about digital banking has mainly focused on adoption and acceptance of these services (Pikkarainen, et al., 2004; Wessels and Drennan, 2010). For instance, Pikkarainen et al. (2004) proved that perceived usefulness is the main factor that makes customers adopt online banking which means that if a customer perceives that the service enhances their performance while conducting transactions, the service will be adopted. While the pre-adoption perspective of digital banking is important and has received a lot of attention in prior studies, taking into account the post adoption perspective is also crucial. It is therefore an interesting field for further research. Along with the increasing adoption rates of digital banking services, researches are focusing more on a post-adoption perspective, investigating the impact of internet and mobile banking on the relationship of the bank with its customers. For instance, Arcand et al. (2017) examined the connection between mobile banking service-quality and relationship quality and found that service-quality dimensions have an impact on relationship quality including commitment, satisfaction, and trust. A number of researches about customer satisfaction and loyalty have been done for the past couple of years but further research is needed to better understand which factors have an impact on customer satisfaction and loyalty in the digital banking era.

It is crucial to understand the impact of digital banking on customer satisfaction and loyalty to be able to implement the right strategies. The challenge for banks is to satisfy and retain customers. Satisfaction and loyalty would not only lead to profitability but it also enhances the competitive advantage and is nowadays crucial for the banks to survive in the digital banking era. Many studies conducted across different sectors have confirmed the significant relationship between customer satisfaction and loyalty (Anderson and Srinivasan

2003; Shanker et al., 2003; Ribbink et al., 2004; Ghane et al., 2011). Theoretically, loyalty is proven to be one of the outcomes of satisfaction.

The main purpose of this thesis is to study the impact of digital banking on customer satisfaction and loyalty for ATB customers. More precisely, our aim is to investigate the different factors that affect customer satisfaction and loyalty in the digital era for the customers of ATB. Therefore, to further investigate this area, we propose the following research questions:

- What are the major factors[1] that directly affect customer satisfaction in the digital banking era?
- What are the major factors that directly affect customer loyalty in the digital banking era?
- What is the relationship between customer satisfaction and loyalty in the digital banking era?

As customer satisfaction and loyalty affect profitability, it is important for companies in general and banks in particular to understand how satisfaction and loyalty is created in the new digital era. Examining the different factors that affect satisfaction and loyalty and understanding the relationship between the two is important as it enables bank managers to determine the different factors that they should focus on when implementing a strategy thereby building a long-term customer relationship and gaining a competitive advantage.

The structure of our study is as follows. Chapter 1 presents the concept of digital banking, its evolution, the different digital banking channels and related concepts as well as the different drivers, challenges, advantages and drawbacks of digital banking. The second chapter is a literature review related to studies on relationship marketing, customer satisfaction and loyalty and the different antecedents of the two variables. Chapter 3 deals with the methodology used in this study. Finally, chapter 4 presents the main results and recommendations.

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[1]Among Ease of use, functional quality, perceived value, perceived risk, problem solving, reputation, trust

THEORETICAL FRAMEWORK

CHAPTER ONE: BANKING IN THE DIGITAL ERA

CHAPTER ONE: BANKING IN THE DIGITAL ERA

Introduction

Nowadays, the use of digital technologies is increasing all over the globe in all areas and sectors. In fact, due to the widespread of internet penetration and mobile devices especially smartphones, innovations have intensified since the 2000s. There is a huge difference between the era of internet during the 90's and the digital era nowadays. New technologies have reshaped the habits and preferences of consumers dramatically over the past few years, which have had an important impact on many industries and sectors including banks (Ganguli and Roy, 2011).

While competing in this digital era, banks are expected to adapt to the greater integration of digital technologies in response to customers' needs and market changes. Banks have also to accumulate different digital capabilities to be able to take their customer service into the next level. This will not only result in enhancing customer satisfaction rates and therefore retention and positive word of mouth recommendations but also higher profits (Zouari and Abdelhedi, 2019). It will also ensure effective automation as well as cost efficiency (Alstad, 2002). Therefore, it is crucial for financial institutions in general and banks in particular to adapt their business model to the changes enhanced by internationalization of markets, the digital revolution and the change in consumer behavior in order to survive and remain competitive.

This chapter is structured as follows: In the first section, we will give several definitions related to the concepts of digitization, digitalization, digital transformation as well as digital banking. We will also discuss how digital banking is implemented in Tunisian banks. Then, we will discuss how digital banking has changed over the past decades. We will also present the different digital banking channels which will be followed by a presentation of the new entrants as well as the new technologies and concepts in this digital era. In section two, we will discuss the drivers of adopting new technologies and digital solutions by banks. We will also discuss the impact of Covid- 19 on the digitalization of banks. Then, we will present the different challenges faced by the banks in this new digital era. And finally, we will discuss the different advantages and drawbacks related to the digitalization in banks.

Section 1: Definitions, evolution, different channels and digital related concepts

During the last decades, new technologies have been introduced into the market and have changed the way companies operate and deliver their services. The banking sector was not excluded. A considerable amount of money has been invested by banks to implement these technologies. Banks are now offering a variety of digital banking services to meet their customers' needs. They are also ensuring that customers could use both the offline and online channels. At the same time, the appearance of new technologies has enhanced the changes in banks and has helped them to improve processes and services.

I-   Definitions

Banks are making efforts to remain competitive in this new era. In fact, according to "Deloitte's 2019 Banking and Capital Markets Outlook"[2], banks have finally started to make some digital banking efforts to adapt with the new evolutions. 28% of banks stated "create digital capability" as their primary initiative when it comes to digital technology. Moreover, a survey of the companies conducted by Bottomline Technologies in North America and Europe in 2019 proved that 76% of banks are willing to enhance and maximize using financial technology solutions for payment services to retain customers (Melnychenko,2020). Almost all banks have given importance to technological development including ATMs, plastic money such as Credit Cards and Debit Cards, online services, Electronic Funds Transfer, mobile applications thus illustrating their initiative towards using technologies (Sharma and Piplani, 2017). In addition, banks spend three times more money than any other industry on investments related to IT (Gartner, 2012).

1- Digitization, digitalization and digital transformation

When referring to implementing digital technologies, it is important to distinguish between digitization, digitalization and digital transformation. In this vein, Diener and Spacek (2021) claimed that the term "digitalization" is different from the term, "digitization". The authors stated that the former refers to the impact of digital technologies on the organization's processes, however the latter is about the shift from non digital solution to a digital one. In

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[2]Deloitte's 2019 Banking and Capital Markets Outlook available at
https://www2.deloitte.com/content/dam/Deloitte/us/Documents/financial-services/us-fsi-dcfs-2019-banking-cap-markets-outlook.pdf

other words, **digitization** is about creating a digital representation of physical objects. **Digitalization** is about enabling and/or improving different processes through digital technologies as well as digitized data which means digitization is related to information, and digitalization is all about processes. When it comes to digitalization processes are not necessarily fully digital, but rely more on digital technologies than before.

On the other hand, **digital transformation** refers to business transformation induced by digitization and digitalization. For instance, an organization could focus on an isolated project. It is considered a digitalization effort. However, if the goal of this project is the digital transformation, then it has to implement changes across all divisions and departments. It is therefore a wider strategic mission which depends on integrating both digitized data and digitalized applications. By using digital technologies and their integration in the workflow of the entire organization, digital transformation occurs. In other words, digital transformation is transforming business processes, products, activities by using different digital technologies/tools which involves both digitization and digitalization.

2- Digital banking (DB)

Globalization, technological advances and changes in customers' behaviors have pushed organizations to redefine their business practices, reengineer value chains and transform their business models. Thus, the term "Digital Banking" has emerged. According to Gartner (2013), digital banking refers to *"a broad range of technology-centric capabilities that enable new methods of interaction and service delivery to augment the customer experience and potentially transform the business. These capabilities are supported by a robust, dynamic and accessible digital infrastructure and open banking system that transform the analog environment"*. Thus, digital banking refers to the digitalization of traditional banking activities which were historically available to customers only when they are physically inside a branch (Temenos). It refers to incorporating technologies throughout a financial services institution to offer better services and improve experiences. *According to* Shaikh and Karjaluoto (2016) *"Digital banking is an any day, anytime, and anywhere banking system consisting of a variety of alternative delivery channels, products, and services developed and deployed by a banking company so that consumers can access banking information to conduct financial and non-financial transactions using an electronic device – commonly, but not exclusively, an ATM, the Internet, cell phone, smartphone, tablet, etc."*

For the past few years, customers had to be in bank branches', wait in lines to get cash from their accounts. ATMs for instance, were not popular and available everywhere. Nowadays, things have changed. All banking activities are available online. DB allows customers to have free access and enables them to conduct all traditional banking activities through a computer, tablet or mobile phones. Digital banking can be done through different channels including: Internet banking, mobile banking, telephone banking, etc. Digital banking services enable customers to do transactions anywhere anytime. Customers are no longer limited by time or location. They have access to their accounts 24/7. It offers customers many advantages such as convenience, global access and availability, time and cost savings, ability to choose, ability to compare, transparency. Customers have access to different banking operations including fund transfers, cash withdrawals, and bill payments. They can also have bank statements, send checkbook requests, find ATM locations, and apply for loans.

To conclude, digital banking is an **AnyTime, AnyWhere and Any Device** banking **(ATAWAD)** where services are offered to customers in the convenience of their home or office and which allows them to use any device to have an access to their banking information and conduct transactions anytime anywhere . As a result, new technologies helped companies in general and banks in particular to offer new products and services.In addition, it contributed to the creation of customer added-value and a better customer experience (Capgemini, 2018).

3- Digital Banking in Tunisia

According to the annual report of "We Are Social" [3] about digital trends in Tunisia "Digital 2022:Tunisia" published on February 2022:

- There were about **8 million** internet users in Tunisia by January 2022.
- Tunisia's internet penetration rate is **66.7%** of the total population by the beginning of 2022 which represents an increase by **1%** between 2021 and 2022.
- There were **16.3 million** cellular mobile connections in Tunisia at the beginning of 2022.

According to the same study:

- **36.8%** of the population [4]has an account within a financial institution.
- **23.5%** of the population owns a debit card.

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[3] It is an international study that delivers the latest trends in digital, social media, mobile and ecommerce on a global scale and by country (https://datareportal.com/reports/digital-2022-tunisia)
[4] Aged >15

- **3.4%** used internet to pay bills in the past year.

However, despite the lack of official statistics on the number of visits to banks' websites, the mobile applications of the banks have been downloaded more than 1,000,000 times on the Play Store platform alone according to « Tunisia Survey » published in June 2020. The same survey showed that 41.5% of respondents use digital banking services and only 23% of respondents prefer to go only to the branch. However, the number of users of digital banking services is still relatively low.

Nowadays, commercial banks in Tunisia are competing aggressively to provide new DB services to improve operations, reduce costs, enhance customer experience, satisfy customers and retain them. Bank cards, automated teller machines (ATMs), Mobile and Internet banking are among the services offered by banks to keep up with the changing behaviors and requirements of customers and the emergence of new technologies. Banks in Tunisia use their websites not only to provide basic transactions such as funds transfer or account details, but also to offer services such as checkbook applications, credit card applications, and investment advice. Banks offer mobile applications to pay bills. In addition, some banks have taken the initiative to launch innovative online banking services like Amen Bank with its AMEN FIRST BANK offer which enables the opening of accounts online. This effort to have good online services has been proven by a remarkable work on the improving customer experience online (modern and user friendly apps, website design, different languages: Arabic, French...) as well as focusing on the security aspect (Obtaining international security certifications ISO/CEI 27001). Despite these efforts, the use of DB services is low. The number of internet and mobile banking users is still very low. Therefore, it is crucial to understand the reasons that make customers hesitate to adopt digital services.

II- The evolution of digital banking

During the past decades, technological development has impacted several sectors including the banking sector. The first changes in banking sector started by introducing credit cards and ATMs. This evolution led to handling cash out of branches and therefore customers became less cash dependent. After that, telephone banking allowed customers to carry out banking transactions 24/7 from a distance. Then, online banking was introduced and was the first self-service technology that allowed customers to carry out their banking operations by using a computer.

The ATM and credit cards were launched in the 1960s. For instance, in 1967 Barclays Bank installed the first ATM in Enfield, UK which enabled customers, for the first time, to make financial transactions without having to go to a branch. After that, telephone banking and point of sales machines POS solutions made their appearance in 1980s. Then, internet banking services emerged in the 90s. First direct was launched in 1989 in the UK by Midland Bank and offered telephone banking services. In 1994, the Federal Credit Union of Stanford has offered Internet banking for the first time becoming the first financial institution in the US to provide its customers with internet banking. During the same year, Banque Direct and ING Direct were launched in France (Bondeson and Lindbom 2018; Wewege et al 2020). Latter, the emergence of smartphones has contributed to the emergence of a lot of new services. Finally, the concept of app-based mobile banking appeared as the latest technological delivery channel. The development of app-based mobile banking was mainly linked to the appearance of the iPhone that changed the way people access internet. Today, almost all services can be done with a touch of a finger or a click of a mouse.

Figure 1: The evolution of digital technologies in the banking sector

1960-1970	• ATM and credit cards were launched : Barclays Bank installed the first ATM in Enfield in 1967
1980-1990	•Telephone banking and POS emerged. • First direct was launched in 1989.
1990-2000	• The emergence of Internet. • The Federal Credit Union of Stanford (US) offered Internet banking for the first time in 1994 • Banque Direct and ING Direct were launched in France in 1994.
2000s	• App-based mobile banking linked to the appearance of Smartphones

Source: By authors

III- Digital Banking channels

Nowadays retail banks are operating in a customer-driven era. Therefore, to reach more clients and respond to their changing needs, banks adapted their delivery channels providing a wide range of products and services. New technologies had a major role in creating these delivery channels (Bizle, 2007). Several types of channels can be used by bank customers nowadays including branches, automated teller machines (ATM), point of sales (POS), internet banking, as well as mobile banking. Channels nowadays are a continuum of physical channels to electronic ones which is becoming a norm in the banking industry (Kushwaha and

Shankar, 2013). Banking channel technologies have been classified according to the customer interface mode, into "face to face" which refers to "branch banking" and "face to screen" which refers to "Digital Banking."

1- Different types of channels

-Branches: Branches offer a wide range of direct face to face services, including opening accounts, transfers, offering personal and mortgage loans, etc. A bank branch is the most traditional and oldest way to offer banking services to clients. In fact, banks were working for years in an analogue way, where branches are the only channel to deliver services and products. However, branch visits have decreased by 10% since 2010 (Pond, 2017). At the same time using mobile banking has increased. According to Nicoletti (2014) transaction at a branch can cost about $4.24, meanwhile the same one executed via mobile costs only about $0.10.

-Automatic Teller Machine (ATM): The introduction of ATM marked the beginning of a more innovative and digitalized banking industry. The ATM works with plastic cards (debit cards, credit cards) and allows customers to have an access to some services including bank cash withdrawal/deposit , account inquiries, having bank statements without having to go to the branch and wait in the queue (Bizle, 2007). At the beginning, ATMs were only installed outside near branches. However, later, banks realized the importance of installing them in places like shopping centers, shops, stations, etc.

-POS Banking: POS banking refers to point of sale device which is connected to the bank server and which enables automatic transfer of funds from the customer's to the merchant's account. In other words, it is an electronic device which enables verifying and processing transactions by payment card (debit, credit or prepaid debit). In recent years, mobile devices including smartphones which are powered by NFC technology *(Near Field Communication)* enabled customers to make payments by either waving or tapping their mobile phones on a terminal. The NFC offers security and as a result, it has been used by many merchants more rapidly than anticipated (Morosan & DeFranco, 2016). For banks, this channel could provide a higher profit margin as it allows them to collect fees from the retailer for every use of terminal (CambraFierro et al.,2016).

-Phone banking: By using call center phone lines, banks are able to offer some services including account requests (Bizle, 2007). The main purpose of this channel is to substitute a

branch visit by a service that is available 24/7. Obviously, the identification process is different from the branch banking, therefore banks used phone banking passwords (words, specific security questions, etc). Operators usually only ask about a part of the password in order to eliminate the risk of hearing the full password by someone (Pond, 2017).

-Internet Banking: Internet banking services emerged in the 90s. In fact, banks including Well Fargo and ING started to deliver services via internet where customers can use their computers to make their transactions (Nicoletti, 2017). Internet banking enables clients to have an access to their accounts through a bank's website. It allows them to make many transactions including checking balance inquires, transferring funds and making payments (Bizle, 2007). Today, customers are able to perform the majority of tasks, that were previously only possible in a branch, through internet banking including opening accounts and applying for loans (Pond, 2017).

-Mobile Banking: Mobile banking is a concept has been around for the few past years. Mobile banking was firstly introduced through collaboration with Deutsche Bank in Germany, where basic features were implemented and it was accessible by using mobile phones (Shaikh & Karjaluoto, 2015). Mobile banking is similar to internet banking, but it operates through portable devices including smartphones or tablets. Mobile banking has introduced new and innovative services including mobile payments by near-field-technology[5] (NFC) or m-wallets[6]. Clients therefore can save and use cards (Nicoletti, 2014). Mobile banking is user friendly and accessible. For instance, customers could carry out banking errands easily by scanning invoices with the camera. It could also use geolocations to personalize and optimize suggestions and offerings to clients.

Nowadays, customers use many different channels they only need human interactions for more complex problems (McKinsey & Company).

2-Multi-channel vs Omni-channel

Nowadays, omni-channel and multi-channel terms are often used interchangeably; however, there is a difference between the two.

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[5] NFC technology enables its users to exchange digital content and make transactions in a secure way. It also enables them to connect devices. Transmissions are usually short range going from a touch to a just a maximum of 10 centimeters. Therefore the devices should be in close proximity. It is used in contactless cards. It enables to make easy payments by smartphones.
[6] A mobile wallet is a digital service that enables storing cards (ID, credit, debit, and gift cards). Purchases therefore can be made through a mobile device instead of a physical card. Details of cards are stored which enables the client to make payments via mobile.

-**Multi-channel:** Financial services are provided through a spectrum of channels including branch, call centers, ATMs, online and mobile banking. However, it does not mean they necessarily work together in a unified way. Each channel supplies services and works independently and separately from the others. It is bank-centric and focuses on transactions. Multi-channel retailers have time and geographical advantages over retailers with one channel (Schroder and Zaharia, 2008). However, it could pose challenges in terms of providing a seamless consistent experience across different branches and electronic channels (Bapat, 2017). In fact, in a multi-channel setting, it is crucial to understand how customer experience is formed through different moments of contact with different channels (Sousa and Voss, 2006).

-**Omni-channel**: It is about providing services to customers in a seamless, unified experience. Thus, customers are able to easily access information from any channel as all the channels are interconnected. It allows real-time data synchronization. Therefore, it offers the flexibility of banking in multiple ways (website, app, and branch). Thus, customers are able to start a process with one channel, and then finish it seamlessly with another if they want. Omni-channel is about customer-centricity and it takes into account interactions. Omni-channel banking embraces different digital channels such as internet banking and mobile applications as well as traditional channels. Omni-channel banking is much more than simply meeting customer needs and expectations, it's about improving customer experience.

3-Brick and Mortar vs Digital Banking: Are branches still relevant?

Bank customers use different types of channels, including branches, mobile banking, and internet banking which implies a continuum of physical channels to digital ones.

Through digital banking services, customers can execute their financial transactions anytime, anywhere and from any device. They are also able to enjoy convenient service features (Deloitte, 2010).The current success in digital banking is one of the factors that led to a record number of branch closures. In 2021, almost 9% of banks have closed their branches in developed markets which represents the largest rate during the five recent years (Mckinsey, 2020). This reduction could also be explained by the Covid-19 pandemic which reshaped customer behavior, thereby accelerating the shift to digital channels and reducing the number customers going to branches.

However, even with the emergence and proliferation of new technologies in the banking industry, a significant number of customers still want to execute their transactions inside

branches which is at the same time a challenge and an opportunity for banks. Customers who prefer branches claim that this is motivated by social considerations. For instance, through branches they are able to meet the banker they know and they are able to ask experts. According to Mckinsey (2020), about 28 % of customers still prefer executing their transactions at branches. This rate is almost 50% for more complex or sensitive situations including advice on financial difficulties. Furthermore, almost 52%[7] of retail bank customers are branch dependent, which means they either rely on the branch exclusively or visit branches and use online and mobile banking service at the same time.

Digital transformation does not imply that bank branches should completely disappear. In fact, many customers still want face-to-face interactions especially to discuss important or more complicated financial transactions. Digital banking is not complete replacement for branches but the two are complementary. Banks should meet the needs of their customers and at the same time implement new advanced services. Many people still want face-to-face interactions especially for important financial matters. In fact, for complex services including personal loans or mortgages as well as advice, many clients still prefer to have personal and direct in-branch service, and continue to value branches. Some customers rely on both physical and digital channels.

Banks should also expand their customer base and deliver a hybrid service which is a mix of both online as well as in-branch services. For instance, to provide face to face advice for services that are complicated. It is crucial that both the digital as well as the branch elements function seamlessly. Sardana and Singhania (2018) claimed that nowadays *"the present trend is 'Brick and Click' or 'Click and Mortar', where banks combine physical presence with internet and electronic channels"*. Banks need to take into consideration the complementarities between channels. Enhancing the digital solutions and upgrading the physical ones to have a "phygital" solution which is viable and which leads to satisfaction and trust. Banks could enhance their relationships with their customers by implementing new technologies to allow branch staff to be more focused on higher-value activities including giving advices on investments, insurance or loans.

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[7] Report" Retail Banks Face Major Customer Satisfaction Challenge as World Shifts to Digital-Only Engagement, J.D. Power Finds"

IV- New entrants

Recently, new actors have started to appear in the financial services sector and could have a huge impact on the industry. Technology is at the very core of the success of these companies .

1-FinTech The term "FinTech" is a combination of the two terms "finance" and "technology": It refers to an innovative startup which uses technology for financial and banking services. FinTechs provide financial services that are able to change an entire ecosystem which was dominated by traditional banking institutions. FinTechs have also led to the change of customers' expectations and behaviors. Therefore, traditional banks have to change their way of operating. These companies are disruptive, they are able to break old habits and provide a new way of consuming services, which is more accessible and less expensive. (Capgemini, 2018).

2-GAFA It is an acronym for Google, Apple, Facebook and Amazon, to which Microsoft is sometimes added (the GAFA(M)) . Google, Apple, Facebook and Amazon are often referred to as the Big Four tech companies due to their disruptive effect on technology and culture, making them stand out from other large tech companies. These companies have even operated their own payment systems. For instance, Amazon launched Amazon Pay in 2013, which was followed by Apple Pay one year later . Google has also its own service Google Pay. Recently Facebook has been experimenting and considering the idea of launching its own crypto-currency. It is worth noting that some Chinese internet giants like Alipay and WeChat Pay already have over a billion active users.

3-Neobanks: also called digital bank, Neobank is a direct bank which operates exclusively online. It does not have traditional physical branches. The services could be accessed by customers by computers or mobile devices. The range of services offered by neobanks is not as broad as a traditional bank. A large part of the income of neobanks is mainly due to transaction fees received when customers pay using their card. A research by Exton Consulting stated that there were 256 neobanks worldwide by the end of December 2020. The most known ones are Chime, Varo and Current.

V- New technologies and concepts

1-Big Data is a new generation of technology. Big data is mainly about collecting a huge variety of data via different sources including website cookies, financial transactions, social

networks. It enables creating new tailored services to clients (Tanda and Schena, 2019). For instance, and due to big data, both financial and non-financial institutions can now offer suggestions to clients according to their geographic location (Megargel, Shankararaman and Reddy, 2018). Companies including Google and eBay were the first adopters of big data analysis (Nicoletti, 2017).

Big Data technology helps to reinforce the knowledge of the customers, give them a better customer experience and enhances their satisfaction (For instance by personalizing products and services by using data sources to which the customer has access). It also allows identifying in real time any behavior which could be qualified as abnormal in order to avoid any fraudulent use of bank cards or bank transfers.

2-Artificial Intelligence (AI): Artificial Intelligence refers to using technology which allows processing a huge amount of data instantly. It replicates numerous human intelligence processes. In other words, artificial intelligence is the ability to execute tasks that were previously done by humans as human intelligence is required. Machines are therefore able to replicate human capabilities. Artificial Intelligence has numerous advantages for banks. It offers better ways to handle data, to get an improved customer experience. It contributes to simplifying, accelerating and redefining traditional processes thereby making them more efficient. The advanced data analytics allow banks to fight against fraudulent transactions and can improve compliance.

3-Application Programming Interface API : An API refers to the interface which allows synchronizing, linking and connecting the database of a service to an application. Therefore, it guarantees the transmission of data safely. In the banking system, API links a bank's database to different applications or programs. An API is therefore basically software which acts as an intermediary between other pieces of software. Through an API separate systems are able to communicate with one another. The API also is able to define which information could be shared between the two systems, thereby it communicates only what is necessary. It allows different applications to share information.

Section 2: Drivers, challenges, advantages and disadvantages

The adoption of new technologies by banks was mainly due to the change in its environment: An increasing competition, a changing customer behavior, financial and

health crisis, etc. Banks have been also facing many challenges while trying to implement new tools and technologies. The adoption of technologies has had both positive and negative effects.

I. Drivers: Why are banks increasingly turning to digital solutions?

Digital technologies have been impacting the banking industry for few years. Diener and Špacek (2021) affirmed that "*retail banks have been at the forefront of technological revolution, characterized by rapid deployment and innovation of digital services, exponential pace of change, and innovative breakthroughs that alter conventional banking practice».* As a consequence, the banking operations are becoming more and more dependent on the IT services. According to Deloitte[8], *"The banking industry is in a digital arms race".* In 2018, banks invested about US$9.7 billion enhancing their digital banking in the front office alone. For the majority of retail banks, online and mobile banking is becoming *«as important, if not more important, than branches or ATMs".* Factors including fierce competition, customer's new expectations, technology advances and new regulations are the major drivers of turning into digital solutions. Therefore, services and products have been broadened, the quality has improved, and banks expanded their delivery channels thereby reaching more customers (Kalaitzakis, 2020). Furthermore, in recent years, profound changes have been taking place in the banking industry. For instance, ten years ago, the largest ten banks (by assets) were either in Europe or in the United States, however nowadays six out of ten of the most important and largest banks are based in Asia. This can be explained not only by the crisis and the rise of Asia but also the increased competition in the market from FinTechs. As a result, the profitability of the banks is threatened, with some banks in Europe struggling to cover their cost of capital (OCDE 2019). Thus, many factors contributed to going digital.

1- Regulation and low barriers to entry

Regulation of digital technology has a major impact on the increase of use of digital in the banking industry. Many countries are implementing changes in the regulatory framework which contributes to developing financial technologies. For instance, new regulations are a game changer for developing open banking in some regions. On the other hand, regulations could be a factor that allows new and non-traditional competitors to join the market. Deregulation as well as technological advances have lowered the barriers to entry and thereby

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[8]https://www2.deloitte.com/us/en/insights/industry/financial-services/digital-transformation-in-banking-global-customer-survey.html

created unprecedented competition among financial institutions (Conilh 2020). In this context, Puschmann (2017) affirms that regulatory changes after the 2007-2008 crisis, allowed start-up financial institutes and new competitors like FinTechs to enter the financial markets.

Regulators' acceptance of different technologies all over the globe contributed to modernize the financial institutions and allowed digital offerings to emerge. It is worth mentioning that digital-banking regulation has evolved in gradual way. Regulators appreciate the potential benefits of digitalizing financial institutions. But, many regulators are still careful avoiding thereby any risk that could affect trust or financial stability. Regulators have also a major role in shaping the context in which financial institutions operate. In this vein, Mckinsey[9] stated that for example in a market where the central bank implements mechanisms that encourage open banking or support data flow, it could be easier for banks to handle data.

For instance, in 2017, Japan has revised its banking Act, which encourages banks to open up their API and making it easier for them to acquire FinTechs or collaborate with each other, in order to drive innovation and improve bank efficiency. These regulatory initiatives affect the way banks and new entrants compete (OCDE, 2019).

2- New entrants and an increasing competition

Nowadays, new banking alternatives are entering the market and threatening banks. To overcome this challenge, banks should reinvent their services and products to keep up with the new increasing competition. In fact, the banking industry has been impacted by the arrival of new entrants such as Fintechs, the GAFA. According to a study[10], tech companies such as GAFA followed by fintech start-ups and finally neo-banks and other actors are the main threats to banks. *"In the context of competition for banks, it's not really banks anymore"* affirms Michael Ruttledge, chief information officer and head of technology services at Citizens Bank. *"It's FinTech organizations and large tech companies like Google, Apple, and Amazon that are delivering at speeds we have to compete with."* In other words, technology companies are entering the market providing financial services and threatening banks. It is also worth mentioning that the capitalization of some large companies like Amazon and Google which are technology-based is more than twice that of banks like JP Morgan (OCDE, 2019).

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[9] https://www.mckinsey.com/industries/financial-services/our-insights/lessons-from-the-rapidly-evolving-regulation-of-digital-banking
[10] Backbase. «Omni-channel banking - The digital transformation roadmap.» 2015

In addition, the number of Fintechs, is increasing. For instance, according to Citi[11] (2016), investments in Fintechs have increased going from $1.8 billion in 2010 to $19billion in 2015. Moreover, in Europe, the use of fintech apps has increased by 72% since the lockdown (Theiri and Alareeni 2021). As new entrants, FinTech companies are offering new services for different segments. Those companies are able to offer very specific solutions including money transfers, crowdfunding, microloans, and payment services. They have the advantage of being innovative and agile; they can therefore use the latest technologies to offer affordable solutions satisfying customers' needs. One of the biggest competitors, Paypal, a fintech offering secure and online money transfers, which is one of the main activities of the bank. The success of Paypal therefore represents a real threat for the banks (Conilh 2020).

Moreover, the competition between banks is increasing. According to Salerno (2002), there are several banks that offer similar services, which leads to an increasing competition. Banks should therefore be aware of the offer of its competitors to anticipate their new offers and differentiate itself retaining thereby its customers and attracting new ones.

Thus, there is a high risk caused by new entrants. Diener and Špacek (2021) stated that *"If such changes are missed by system-relevant financial institutions, such as large banks or groups of smaller ones, then financial services and the whole economic system will be endangered"*. This pushes banks to rethink the way they are operating.

3- The change of customer behavior and expectations

Technology has largely contributed to the change in consumer expectations about the way banks offer their products and services. In this vein, Gerrard_Schmid, president and CEO at banking solutions and retail technology systems provider Diebold Nixdorf stated that [12] *"The financial industry is undergoing a sweeping transformation due largely to changing expectations and preferences among consumers"* Schmid adds *"Within both new and established bank branches, digital transformation is inevitable,"* . In the same vein, Kalaitzakis (2020) affirms that customer behavior changes after the introduction of mobile devices have pushed the banks to offer new online delivery. The behavior of customers is changing, therefore it is not enough to only offer new digital services, or offer services similar to others. Banks do not only need to digitalize or automate their processes and services, but they have also to understand customer's needs and new requirements. Those needs are

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[11] Citi.(2016) « Digital disruption, how fintech is forcing banking to a tipping point»
[12] https://eightfold.ai/blog/digital-transformation-in-banking/

different from years ago. Nowadays, customers are no longer willing to wait or queue in banks for basic banking services. They want and expect a facility to conduct their banking services at anytime and anywhere (Sharma and Piplani, 2017).

The habits of bank customers have changed drastically (Ernst & Young EY, 2019). For instance, more than 60 % of internet users in OECD countries used online banking in 2018 (Carbo- Valverde, 2020). Moreover, 76% of bank clients have made or have received at least one digital payment using their account. Furthermore, digital consumers today belong to the digital native generation, they were born and raised with Internet, and were exposed to technology since their childhood. This generation is accustomed to the online environment where choices are limitless. Young people are heavily connected and rely on smartphones and apps. Customers therefore rely heavily on Internet and can adapt rapidly to the new changes and are continually seeking information online. They are demanding more choices, availability and ready-to-use services and information. They are expecting rapid, simple and safe banking services. They expect banks to understand their needs and offer the right service to satisfy them.

4- The financial crisis of 2008

Since the financial crisis of 2008, banks have been struggling with low interest rates in developed countries, increased regulation and many compliance requirements, as well as the deterioration of reputation (OCDE 2019).

Colin (2015) stated that the 2008 crisis has had an important role in accelerating digital transformation. In fact, the crisis made markets more vulnerable to new digital and disruptive entrants. Moreover, some organizations have taken advantage of this situation to accelerate their dematerialization in order to optimize certain costs. In fact, after the crisis, banks wanted to transform as quickly as possible because they no longer had sufficient sources of income and margin to cover their costs, accumulate the required reserves and capital levels at the same time. Thus, many banks have tried to take advantage of digital banking to make more profits.

Furthermore, since the financial crisis of 2008, governments and regulations became stricter, and therefore require banks to apply and report several requirements (Goodhart, 2008).These requirements involve additional investments in technological solutions for

reporting, fraud protection, data analysis, etc. So, since the financial crisis, banks started to adhere to new regulations and compliances which involved investing more in technology.

In addition, the financial crisis has had a huge impact on trust towards financial institutions. It shattered trust in the banks and led to an increasing uncertainty. To improve their image and attract customers, banks turned towards using digital banking services.(BenChouk 2020, Conilh 2021). In fact, the financial crisis that occurred between 2007 and 2009 has resulted in large losses, and has even induced the collapse of established well-known banks thereby shaking the trust of customers in financial institutions all around the globe. As a result, implementing digital tools and providing digital banking services was a solution to regain trust, improve reputation and image and make more profits (Wewege and Thomsett 2020).

II- The impact of Covid-19

With the announcement of an increasing number of cases of Covid-19 all around the world during the first months of 2020, the economic downfall started. The rapid spread of the coronavirus pushed governments to implement social distancing measures, resulting in a significant decline in demand and consumption (Craven et al., 2020), a dramatic decrease in GDP growth mainly in the second quarter of 2020 and thus creating an unprecedented shock in the economy worldwide. Lockdown strategies have had a huge impact on the economy pushing governments to take unprecedented policies (Long & Ascent, 2020). Several industries crumbled while others were struggling with financial challenges. Stock markets' volatility increased (Theiri and Alareeni 2021).

As the economy was in deep recession, the financial and banking industries were also impacted by the pandemic that affected them. Liquidity was a major concern for financial institutions during the pandemic. The crisis led to significant challenges for financial institutions. *"Banks have planned for years for disaster recovery if their technology failed but have never planned for disaster recovery if their buildings closed"* says Chris Skinner[13], a leading influencer and commentator on the financial markets and fintech. *"This is the big lesson of the crisis."* However, Covid 19 also offered the opportunity to increase digital adoption (Theiri and Alareeni 2021).

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[13] https://www.financialmarket.ro/fintech/advanced-technologies-will-revolutionize-banking-here-is-how/

The global pandemic has pushed people worldwide to stay at home, being socially distanced and not going to public spaces unless it is very necessary. As a result, many changes occurred not only in interactions between people but also in business operations. People were not able to have direct contact with each other, communications thereby shifted to using digital platforms and social media. On the other hand, transactions and businesses operations were done through online channels. Technology was heavily used to support business operations. Digital banking helped customers to execute their operations from their houses. The use of digital technologies was therefore accelerated during the pandemic (Ali et al., 2021; Khairina, 2022;). According to a report by Deloitte [14] *"The COVID-19 pandemic was an unprecedented catalyst for digital banking across the globe".* According to Sydney Morning Herald[15]*, "COVID speeds up digital banking revolution in '10 weeks not five years".* Therefore, digital banking roadmaps, designed while anticipating a slow change during many years, had to be modified to adapt to the rapid changes in the behavior of consumers after the Covid-19. Digital technologies helped maintain the volume of transactions, and presented new opportunities which could on a long term generate income. As a consequence, technology had contributed to ensure business continuity while maintaining safety. During the pandemic, the lockdown and social distancing measures restricted face-to-face banking operations in branches. Therefore, banks were providing a variety of services and increased their digital offers as shown in **Figure 2.**

Amid the pandemic, customers shifted to digital tools for their banking operations at a historic pace. Banks have seen an important rise in first-time online accounts, mobile payments, and general usage of both mobile and banking channels. For instance, mobile banking applications usage has reached about 72% of clients for four of largest banks in the United States in April 2020, increasing by almost 10 % from 2019 (Wells Fargo, 2020[16]).

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[14]Building on the digital banking momentum: How banks could influence customer channel preferences
[15] https://www.smh.com.au/business/banking-and-finance/covid-speeds-up-digital-banking-revolution-in-10-weeks-not-five-years-20200528-p54x9u.html
[16] Digital banking soars in the COVID-19 pandemic - Wells Fargo Stories Digital banking soars during coronavirus pandemic (https://stories.wf.com/digital-banking-soars-in-the-covid-19-pandemic/)

Figure 2: New Functions Implemented Due to Covid-19

41% of banks increased **limit of contactless payments**

34% of banks implemented **fully digital processes** (product opening etc.)

25% of banks introduced **appointment bookings in branches**

24% of banks enabled **donations to NGOs, social actions** etc.

23% of banks introduced **digital ID&V methods**

18% of banks launched **contactless payment methods**
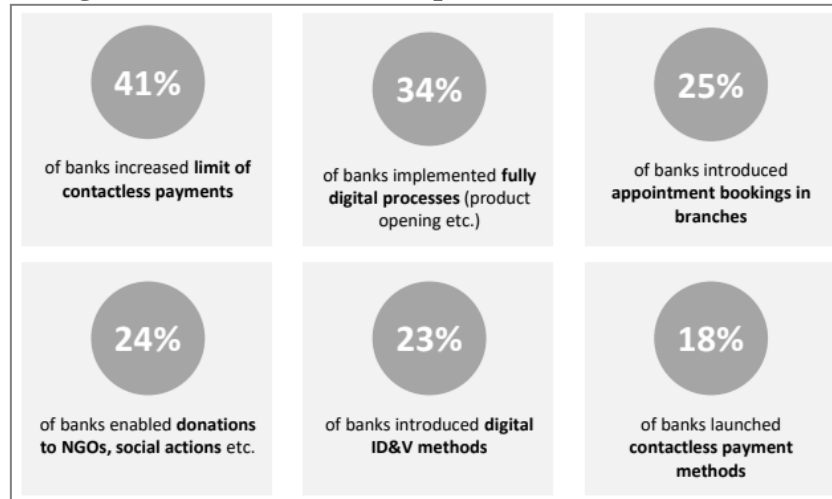
Source: Deloitte-Digital Banking Maturity 2020

Ben Soccorsy, head of the Wells Fargo Digital Payments team stated *"We are seeing a mix of increasing engagement with existing customers and customers who have historically not used digital banking."* Wells Fargo has seen an increase by almost 23% in customers sign-on to digital banking services between mid-March and April. In addition, the second-biggest bank by assets in the United States, Bank of America, has also seen an increase in the adoption of those services. According to Financial times, approximately, 40% of the bank's cheque deposits were done through an online channel. The bank's chatbot, Erica, handled almost 400,000 customer interactions a day which is twice the number handled during the previous year. Truist, another bank, has been using new technology heavily during the pandemic. When examining the trends of digital banking in 12 European markets, Mastercard's Evolution of Banking study [17] reported an increased appetite for online solutions. 62% of respondents stated an interest in changing to digital platforms in 2020. The study showed this has translated into an increase of adoption. The study has also found that customers were willing to continue using those channels after the pandemic. According to Boston Consulting Group's , Thorsten Brackert, et al., in a report on global retail banking: *"Most of them liked what they found"[18]*.

The Covid 19 pandemic has led to a significant decrease in the reliance of customer on the brick and mortar channels. Branch traffic was decreasing before Covid-19, and the pandemic

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[17] Life under the new normal accelerates digital banking adoption across Europe (2020)
(https://www.mastercard.com/news/europe/en-uk/newsroom/press-releases/en-gb/2020/november/life-under-the-new-normal-accelerates-digital-banking-adoption-across-europe/)
[18]https://eightfold.ai/blog/digital-transformation-in-banking/

and the lockdown intensified this trend.[19] During the pandemic, according to Mckinsey[20], banks have closed about 7 percent of their branches in 2020, which is the largest in five years in developed markets. This is due to the fact that social distancing has limited direct contact.

On the other hand, during the pandemic, a high number of bank employees were working remotely and several processes in banks were executed through digital tools. For instance, a significant number of employees were working from home, making use of platforms. This has contributed to an increase of the acceptance of technologies by the work force and changed the traditional working processes. Managers were also promoting using digital tools and remote working during the COVID-19 pandemic (Kitsios et al.2021). The pandemic has therefore proved that, even if employees are working remotely and are not in the office, businesses are able to operate effectively and efficiently.

To conclude, the COVID-19 was a unique shock that led to an increased demand for digital banking services, mainly due to the new restrictions of social distancing and lockdowns. Banks that used technologies and embraced it were more successful during this unprecedented crisis.

III- Challenges
1- Competition

Despite the fact that banks have an important customer base which is an advantage when compared to new entrants, the threat of new non-banking entities is a challenge for banks. Digital developments have paved the way for new entrants to enter the financial services market by lowering the entry barriers and allowing competitors to enter the industry providing more tailored services and products (Capgemini and Efma, 2016). New entrants, such as FinTechs are now offering digital financial services. Customers are nowadays exposed to different digital offerings and services from technology giants including Google and Amazon. (Revathi, 2019).Their services are generally technologically advanced.

Moreover, there are multiple banks that are highly competitive. Those banks are exploiting new technologies at a fast pace to offer a variety of digital services without affecting the quality (Sardana and Singhania, 2018). The Banking industry is also characterized by an offer of identical products making it more difficult to differentiate (Gayathri, 2022). In its annual report, Ernst & Young (2017) has reported that the offers of traditional banks lack

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[19] The Economist Forging new frontiers: advanced technologies will revolutionize banking
[20] Mckinsey (2020): Best of both worlds balancing digital and physical channels in retail banking

differentiation. Therefore customers perceive them as similar. As a result, banks witnessed in the last few years an increase in mobility of clients between different banks. It has also affected switching costs as clients are now able to choose more and change easily (Ndubisi, 2007). This has changed the power balance between the bank and its clients who are now able to put more pressure on their institutions (EY, 2010). In fact, about 41% of respondents stated that they could change their provider of financial services given better online experience (Ernst & Young, 2017). It is then important to maintain an adequate balance between offering a wide range of products and services but at the same time maintain a level of specialization that distinguish the bank from others.

2- Infrastructure

A country should have an adequate level when it comes to infrastructure to be able to adopt technologies and support its growth and use. However, the infrastructure in many countries still lacks many improvements (Sardana and Singhania 2018). Infrastructural facilities, mainly electricity and communication networks are still lacking in some underprivileged parts of the world (Raghavendra, 2018). A country has to have an adequate level of infrastructure that permits adopting technology and helps the banks by providing the necessary support for using it. Otherwise, it can be huge barrier that hinders innovation efforts. However, in many countries, the infrastructure is still not developed enough. For some regions, internet is not even available. (Sardana and Singhania, 2018).

3- Cultural resistance and customer concerns

One of the main barriers to using digital banking services is user habits. Customers are used to traditional banking so it takes time to change those habits. Some clients are fearful or find it difficult to change their habits and others are not ready for adopting technology due to the lack of skills related to digital innovations (Amin, 2016). Others have some security concerns. Furthermore, digital services such as online and mobile banking make it harder for customers to have a personal face to face contact with bankers for advice on complex products and services which creates a barrier for some clients. Some customers find online and mobile products so complex and hard to use. They lack knowledge on technology or the advantages it could offer to its users. Therefore, for some clients, the costs of this type of services (time required to understand it and develop skills, effort, financial costs) could sometimes outweigh its benefits (Mew and Millan, 2021). Thus, digital and financial literacy has a major role in this context. In addition, for some customers it is even hard to have an

access to these services (non-availability of internet or smartphones and even ATMs in some areas). Some people are even unaware of the existence of some types of services.

4- Lack of trained employees

It is normal that at the beginning of any change, employees often tend to refuse and reject it. But employee availability and knowledge have a crucial role in implementing digital technologies in banks. Missing or not having sufficient employee qualifications can hinder understanding complex processes related to digital banking. Employees have to be more flexible and expand their existing level of knowledge and performance (Diener and Špaček 2020). In fact, the lack of knowledge and adequate skills is a major obstacle for employees that makes it difficult to use and deal with the innovative technologies in the banking industry. It is therefore crucial to focus on training them on the changing trends in IT. It is crucial to have IT savvy employees (Weill and Aral, 2006).

5- Security issues

Some external threats including hacking, sniffing make banks exposed to several security risks. Security is therefore one of the most important challenges for banks. This is due to the fact that with digital banking, cyber criminals for instance only need to obtain a few personal information in order to break into a client's account and steal money (Gayathri, 2022). This could lead to a decline in trust on digital activities of banks. Continuous efforts in the form of security measures should be taken to be able to benefit from the full potential of new technologies.

6- Regulations and laws

The Banking industry is characterized by some rigid industry norms making it more challenging to implement new technologies. The banking sector is highly regulated. Morover, regulatory norms are not yet clearly and well defined when it comes to digital banking (Sardana and Singhania, 2018). Furthermore, new technologies in the banking sector have also resulted in new types of products and services and new means to deliver them. But it became also necessary to add some legal definitions, mainly when it comes to electronic signature and permissions. Thus, many existing legal permissions need to be rethought. Technology has also changed the ability of regulation to keep up with the new trends. Therefore, regulations can become outdated as it is related to technology. It should be more dynamic and agile. Banks have therefore to keep pace and adapt. Regulations are not always a

mean to boost digitalizing the banking sector. Although, it is necessary to comply with regulations, it should not hinder innovation.

7- Financial costs

Despite its many advantages, providing new digital banking services can have high costs for banks (Sleimia et al.2020). In fact, it is sometimes required that the banks obtain licenses to provide internet services causing thereby an increase in operating costs (Katiyar and Badola, 2018). Moreover, like any modern IT solution, systems need maintenance. As a result, these spendings have an impact on the costs (Githuku and Kinyuru 2018). Furthermore, it is suggested to introduce the service at the beginning at low cost to accelerate the use. This can also increase the financial costs for banks when launching a new digital service for example. Finally, many IT directors find it difficult to justify or obtain investments, thereby preventing large-scale transformation. It is therefore essential to have constant financial support to be able to implement digital tools in the banking industry.

8- Technical issues

Some digital banking services are still patchy. Despite the fact that a significant progress has been made in digital alternatives, not all banks are able to offer the same quality of service. In fact, the delivery of such services is not equally smooth for all banks. In addition, when it comes to offering digital banking services, a lot of banks still lag behind.[21] Moreover, as many digital services rely generally on the online platforms, systems crash and bugs can generate substantial losses. Technical issues can interrupt operations and be costly. It is so important for banks to have their systems, online platforms and websites working smoothly, as well as, their mobile applications. Moreover, banks require a high technical effort to be able to implement, develop and adapt new solutions (Diener and Špaček 2020). It is therefore crucial to innovate and upgrade.

IV- Advantages

A study by Celent[22] in 2015 showed that about 47% of bankers find that digital banking is a way to improve relationships with customers, 44% think that it enhances competitive advantage, 32% consider it an important for new customer acquisition and 16% stated that it

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[21] Deloitte: Digitalisation of banking: Will the move to online banking continue after the COVID-19 pandemic? (https://www2.deloitte.com/ch/en/pages/financial-services/articles/digitalisation-banking-online-covid-19-pandemic.html)
[22] Celent is a leading research and advisory company that focuses on technologies for financial institutions all over the world.(https://www.celent.com/insights/268657967)

helps to reduce costs. Thus, digital technologies in banking offer many benefits.

1- More profits, better performance and efficiency

Many studies proved that technology usage increased banks performance (Sardana and Singhania, 2018; Khairina, 2022). In fact, there is a positive impact of IT on performance of banks which could lead to increased profitability and market share as well as process efficiency (Gössling , 2020; Khin and Ho, 2019). Retail banks that offer services and products through online channels benefit from higher revenue (Campbell and Frei, 2010). Moreover, digital banking services such as online and mobile banking helps banks to have be competitive strategy and thereby retain existing clients and attract new ones. As a result, banks could increase their market share. According to François Jurd de Girancourt, Partner at McKinsey & Company, Head of Banking and Insurance for Africa, a successful digitalization, could improve the profits by 15-30% for banks[23]. In the same vein, according to a study by McKinsey[24] *"digital laggards could see up to 35 percent of net profit eroded, while winners may realize a profit upside of 40 percent or more"*. Andy Saperstein, head of wealth management at Morgan Stanley has also stated that there are many big improvements in efficiency that were achieved when customers turned to digital tools[25]. Furthermore, automating repetitive processes allows boosting productivity. As a result it leads to more efficient work flows (Mckinsey, 2015).

2- Reduced costs

Digital tools help reducing the operating costs. Switching into digital offers the advantage of cheaper service delivery. In fact, by offering services via new digital channels, banks can downsize both their branches and staff. (Khairina,2022; Ali et al.2021). Moreover, the change of the behavior of customers who are now executing their transactions through digital devices is beneficial. For instance, due this behavior Wells promised investors it could reduce costs by $10bn. Delivering services is therefore less expensive for the bank through digital channels (Ernst &Young, 2016)[26]. Innovations enabled banks to improve or replace their existing products, services and capabilities at a much lower cost (Ernst &Young, 2016).Thus, the cost savings is mainly due to the automation of functions and delivering services via digital online channels.

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[23] https://fnh.ma/article/actualite-financiere-maroc/mckinsey-une-digitalisation-reussie-ameliore-de-15-a-30-les-profits-des-banques
[24] Strategic choices for banks in the digital age (2015)
[25] https://www.ft.com/content/3eb18287-35b7-4d3f-9f91-38bc11796e8a
[26] Ernst &Young (2016) The digital bank: tech innovations driving change at US banks

3- More services and better quality

DB enables to deliver services in new and innovative way which enhances service quality as well as its delivery. As a result, it could provide a competitive advantage for the banks that use digital technologies (Sardana and Singhania,2018 ; Gössling , 2020; Khin and Ho, 2019). There are numerous options and a wider range of products and services offered in the new digital era. Banks have now expanded the products and services through different channels. In fact, technologies enabled operations such as funds transfer and electronic payment to be executed remotely (EY, 2016). Therefore, digital banking modernizes services. In fact, in the past, a simple operation such as transferring money or consulting an account had to be done by going to the branch. Nowadays, just a simple touch of a finger can execute this operation through a smartphone (Theiri and Alareeni, 2021). Moreover, digital technologies contribute to better quality services.

4- A more customer centric approach and a better customer experience

Using digital tools helped companies becoming more customer-centric and as a result, when responding to market demands, institutions are now more efficient and competitive (Nachit and Belhcen 2020). Digital banking can ensure a sustainable competitive advantage and enhances customer satisfaction. That can be achieved by implementing a digital strategy that focuses on the functional, the emotional as well as relational needs of customers (Theiri and Alareeni 2021,Wang 2016). Furthermore, the use of technologies in banks helps ensure a better service targeting by implementing a customer relationship management functions that fulfill customers' needs thus increasing the competitive advantage of the bank (Guraau, 2002). Moreover, digital tools could help banks to build better relationships with new tech-savvy customers.

DB has therefore improved customer experience. The digital customer experience refers to all the interactions that an individual has with a brand or company and across all channels, including an application or a website. The digital customer experience has a major role in guaranteeing a winning strategy for the digital transformation. The emergence of new technologies as well as the entry of new competitors to the market has pushed banks to rethink their digital strategies. As a result, banks are taking into consideration an approach centered on the end consumer and his experiences in a phygital environment on both online and offline channels.

Customers are now able to conduct transactions through different channels seamlessly while having a more tailored services, having access to their preferred channels anytime anywhere, as well as having secure transactions (EY,20116) contributing to enhancing the overall customer satisfaction (Nachit and Belhcen 2020). Digital banking allowed customers to conduct their financial activities such as checking their bank account statements, payments, transferring of funds, applying for loans a by just logging into their digital banking portals from the comfort of their homes without having to visit the branch. Baking operations are as a result more convenient. Therefore, digital banking offered a fast, simple, and effortless experience which is becoming increasingly important. Banks have to use new technologies to create seamless, convenient, and intuitive customer experiences. In this day and age, it is crucial to deliver a consistent customer experience through digital channels. Banks could also leverage advanced banking technology by using technologies such as artificial intelligence, using a chatbot, to offer-real-time assistance. Banks should provide a seamless Omni-channel experience and make use of big data and analytics to give customized services.

5- Less errors and more accuracy

Traditional banks working methods, by relying on paper processing, can have significant error rates which could reduce efficiency. Digitalization helps to decrease human errors (Raghavendra2018, Sardana and Singhania, 2018). IT solutions can therefore lead to financial accuracy which is important to comply with regulations.

6- Data collection, credit worthiness and risk management

New technologies help banks to collect data. As a result it enables to assess the creditworthiness of customers that want to borrow (Sardana and Singhania, 2018). In fact, new financial technologies allow banks to generate and store huge quantity of data. It enables them to analyze and store the information about customers allowing them thereby to make decisions about investment and credit and improving banking operations (Melnychenko et al. 2020). As a result, they could understand risk factors related to customer and financial transactions better. Moreover RPA (Robotic Process Automation) helps banks to examine transactions on a real time basis therefore they can identify which ones require further review. New technologies also enable to detect fraud more quickly and in a cost efficient manner (EY, 2016).

7- Improve internal operations

Initially, banks adopted some individual technologies to change some narrow and targeted functions such as automating documentation processes for example. But, as new technologies emerged banks integrated different innovations to speed up transformation. This includes changing some of the banks' most challenging and resource-intensive processes. For example, according to EY (2016), analytics are used in streamlining anti-money laundering/know your customer (AML/KYC) functions and are integrated within *"the broader risk management framework."*

8- Market expansion

There many advantages of digital financial services including reaching more people (Raghavendra 2018). In fact, digital banking has removed geographical limitations, thereby extending operations (Sardana and Singhania, 2018). It has contributed to market expansion (Ali et al, 2021). It reduced relying on brick-and-mortar channels by providing the same services via mobile for example (Ernst&Young,2016). In this context, according to McKinsey (2016), in emerging markets, only around 55% of adults had access to a bank or an account, however almost 80% had a mobile phone. Banks could therefore reach people by relying on mobile phones. The same study stated *"With digital finance, as many as 1.6 billion unbanked people – more than half of whom are women – could gain access to financial services."*

VI-   Drawbacks
1- Lack of human contact

The development and emergence of new digital tools and services in the banking sector has pushed customers to visit their branches less regularly. According to Lamirault (2017), customers still want a face-to-face relationship with their bankers for more complex products and services. The need for human contact remains fundamental. In fact, for some clients it is important to be able to contact and ask an advisor especially when it comes to more complex transactions or operations (mortgage, loan, a waived fee…). If the customer needs to make changes for instance about the terms of some charges, then the bank manager is sometimes able to help him according to the circumstances which is not usually possible for digital services. It is also important for bankers to be able to have a direct relationship with their clients to be able to know them on a deeper level.

2- Unemployment

Digital banking can contribute to an increase in unemployment rates as technologies takeover certain tasks that were previously done by employees. Automation has an impact on the workforce. For instance, according to a report by Deutsche Bundesbank [27](2021), in the banking sector, the number of employees has decreased over the past two decades (Harchekar, 2018).

3- Frauds and cyberattacks

Fighting against fraud and cyberattacks has become a top priority nowadays. As banks are implementing technologies, risks related to technologies are emerging. In general, digital services are safe and secure as banks are continually trying to ensure that security protocols are well implemented and in place. Meanwhile, sometimes, systems could be hacked. Increased transactions via digital channels can increase the risk of identity theft as well as account takeovers. Banks are increasingly exposed to cybercrimes (such as hacking, sniffing and spoofing, phishing emails, scams, malware, skimming, and clone website) (Harchekar,2018). Cyberattacks lead also to some losses for the banks. Those losses could be due to the refund to customers, reputational damages, etc (Resti, 2021).

Hackers take advantage from the technical complexity and are becoming more and more professional in hacking the data of digital services users and using it to make fraudulent withdrawals. Hackers are mainly interested in payment systems and target them to fraudulently transfer funds. In addition, cyberattacks can sometimes interfere or even take down bank's key systems. Furthermore, in this digital era, customers are more exposed to third-party apps and unsafe networks, they could click on some unsecure links on emails or websites and be hacked (Doshi, 2021). Thus, it is crucial to focus on implementing the necessary security measures. This can ensure that the bank data as well as their customers' data are available and secured from unauthorized access all the time.

4- Exclusion of certain categories

Despite the fact that digital banking facilitated transactions thereby reaching more people and expanding access, it has also excluded some categories. In fact, in certain cases it increased the cost of transactions for some people who are now forced to have internet or mobile phones to be able to execute their transactions. It has therefore neglected some people

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[27]Deutsche Bundesbank : Digital risks in the banking sector(Monthly Report July 2021)

who are underprivileged, who cannot afford tools to have access to those services as well as some illiterate or elderly people who are not able to use technology.

5- Exposure to technical difficulties

Nowadays, banks are more exposed to technical issues as they implement technologies. Dependence on functional IT has increased and failures in IT systems, including payment or trading systems, can have a huge effect on the ability of the bank to deliver its services (Deutsche Bundesbank Monthly Report July 2021). As many digital services rely generally on IT, banks are more exposed to losses when systems crash or when there are some bugs. Technical issues can interrupt operations and cost losses (Revathi,2019). This can be an obstacle for customers also. For instance, the ability to have an access to an online account by customers is highly affected by technical problems related to systems and internet which could sometimes lead to a major inconvenience among clients.

Conclusion

Nowadays, banks are adopting technology more than ever. They are all competing to offer DB services though different channels to satisfy and retain customers. Banks operate in a highly competitive environment. They are facing many challenges to meet customers' needs and keep costs at minimal level. In a competitive environment, the banks are adopting technologies and implementing digital tools more than which is motivated by new entrants, high competition, new customers' expectations and needs, etc. The Covid-19 pandemic has amplified these changes. While digitalizing processes and services has offered many benefits including reduced costs, more profits, customer acquisition, satisfaction and retention, it has had several drawbacks including the exclusion of certain categories and the higher security risks related to technologies.

CHAPTER TWO:
SATISFACTION AND LOYALTY
CONCEPTS AND ANTECEDENTS

CHAPITRE TWO: SATISFACTION AND LOYALTY CONCEPTS AND ANTECEDENTS

Introduction

The banking industry has faced many changes during the last two decades. Banks are constantly working to provide a variety of services through different distribution channels to be able to attract customers, enhance satisfaction and foster loyalty (George and Kumar, 2014). Through digital banking services, customers can have a constant access to different banking transactions anywhere and at any time. However, it has also led to fewer interactions between customers and banks thereby making relationships between banks and customers weaker. Furthermore, nowadays, there is an intense competition between the different banks. All banks are offering digital banking services and are making huge investments and efforts to provide high quality, innovative offers. Moreover, customers have access to different sources of information enabling them to choose between the different services and products. Hence, switching service provider has become easier. Therefore, customer satisfaction and customer loyalty are crucial factors in creating strong relationships in the digital banking era (Chen, 2013; Chen et al., 2012; Dahlstrom et al., 2014).

With an intense competition in the banking sector worldwide, it is crucial for banks to enhance customer satisfaction and foster loyalty to gain a competitive advantage. Several studies have proven that a satisfied customer tends to remain loyal (Casalo et al 2008;Thakur 2014:Mbama 2018). Many studies tried to investigate the different factors that make a customer satisfied (Yoon, 2010; Ankit et al., 2011) in a digital banking context. Others focused on the major drivers of loyalty in an internet and mobile banking context (Ganguli and Roy; 2011; Ribbink etal, 2004). Moreover, many researchers proved the mediating role of customer satisfaction between several factors and customer loyalty (Ganguli and Roy, 2011; Leon et al.2020; Sasono et al., 2020; Haq and Awan;2020).

This chapter is structured as follows: The first section focuses on key concepts including relationship marketing, the concept of loyalty and its importance as well as concepts related to it mainly the Net Promoter Score and Word of mouth. The second section focuses on the main factors that have an impact on satisfaction and loyalty which will be examined in this study.

Section 1: Relationship marketing, customer loyalty and satisfaction

The emergence of DB decreased personal interactions within retail banking. Banks nowadays are working to provide channels that are innovative and at the same time respond to the needs of their customers. Thus, it is important to focus on relationship marketing to maintain or build strong relationships with customers for a long-term .With the rapid changes that occurred during the last decades, banks are working maintain profitable relationships in a digital era. It is therefore crucial to focus on satisfying customers and enhancing their loyalty.

I-   Relationship Marketing

Relationship Marketing (RM) was introduced by Berry (1983). The author defined relationship marketing as the actions implemented to attract, maintain, as well as enhance the relationships with customers. In Relationship Marketing, the business/customer relationship is the centerpiece. Relationship marketing emphasizes on the importance of building relationships with customers on the long term. In the same context, Relationship Marketing is defined by Grönroos as *"to establish, maintain and enhance relationships with customers and other partners, at a profit, so that the objectives of all parties are met. This is done by mutual exchange and fulfillment of promises".* This definition shows the importance of not only attracting but also retaining customers .Palmer (2001), stated that Relationship Marketing aims to retain customers and focuses on continuous contact, customer value, and high commitment to be able to reach customer expectations. The main goal of Relationship Marketing is therefore to ensure strong relationships and switch indifferent clients into loyal ones (Berry and Parasurarnan, 1991).

The development of marketing has led to the transition of its orientation from transactional marketing to relationship marketing. Blomqvist (1993) stated that in relationship marketing every customer should be considered as a unit or an individual person. The author claimed that firm's activities should be predominantly directed towards their existing clients, and it should be based on interactions. Therefore, firms are trying to be profitable by decreasing customer turnover and by strengthening relationships. Baron and Harris (2003) distinguished between relationship marketing and transactional marketing. In fact, transactional marketing focuses on attracting customers through offensive strategies including encouraging switching brands. On the other hand, relationship marketing is about using some defensive strategies such as minimizing customer turnover and ensuring its retention. By focusing on the

customer, relationship marketing has marked the transition from mass to niche marketing (Chirica, 2013).

Baron and Harris (2003) stated that there are the seven key indicators of relationship marketing mainly: trust between the two parties, commitment, open communication, long time horizon, taking into consideration customer's best interest, commitment to quality, attempting to retain the customer. In the same vein, Ndubisi (2006) claimed that the four key indicators: commitment, communication, conflict handling and trust.

Relationship marketing is a recommended strategy specifically for service intangibility. In fact, in the literature there is a consensus stating that a relationship strategy can be appropriate for the majority of services (Dall'Olmo Riley and de Chernatony, 2000) including the banking sector (Colgate and Stewart, 1998). In the services field, may studies emphasized on customer relationships (Grönroos, 1990). This could be explained by the fact that it is characterised by high degree of risk where relationship is important to service delivery (Ennew and Binks, 1996).

In the literature, it has been shown that engaging in a relationship with customers has many benefits as it enhances loyalty. It can also have many advantages for the company such as increasing sales, leading to a positive word of mouth (Gwinner et al., 1998). A good relationship marketing strategy can lead to an increase in customer loyalty. The link between Relationship Marketing and loyalty has been assessed and the majority of findings stated that loyalty is a goal of Relationship Marketing. Studies showed that there is a significant impact of Relationship Marketing on loyalty (Ndubisi, 2006, Sivesan and Achchuthan, 2012). In fact, Ndubisi et al.2006 stated *"Taking into account that the cost of serving one loyal customer appeared to be less than the cost of attracting and serving one new customer, it is obvious why it is important to invest in relationship marketing instead of traditional marketing and advertising options"*. In this vein, Sivesan (2012) measured relationship marketing through communication, commitment, trust, and conflict handling and proved that there is significant correlation between relationship marketing and loyalty. Moreover, Mishra and Vaithianathan (2015) emphasized on the importance of retaining customers and the importance of their loyalty. They supported the fact that it is so important to focus on the relationship with customers rather than implementing traditional or transaction-oriented marketing. Banks can, by using the relationship marketing as strategy, acquire loyalty and

therefore improve financial and market performance, and increase competitive edge (Ravesteyn, 2005).

> **Relationship Marketing in the digital era**

Digital banking decreased personal relationships within retail banking. Some studies emphasized on "the high contact nature of banking" and the importance of direct interactions between the customer and the product or service provider in customer acquisition and retention (Ennew and McKechnie, 1998). Since many customers still want a face-to-face relationship, banks are nowadays challenged to provide channels that are innovative and at the same time respond to the needs of their consumers (Lang and Colgate, 2003; O'Loughlin and Turnbull, 2003). Online Relationship Marketing refers to using interactive online tools to maintain or build relationships with customers for a long-term and which are mutually beneficial, (Harker, 1999; Gan et al, 2007).

The firm–customer interactions are changing at rapid pace with the new technologies online. It is therefore necessary for companies including banks to find new ways to maintain profitable relationships (Woldie et al, 2008). Websites and social media are some of the main tools to reach those objectives (Shapiro et al, 2004). These applications have some attributes such as engagement, interactivity, personalization that companies can use to develop a good relationship with its clients (Ching and Ellis, 2006; Ahn et al, 2014).

Nowadays companies are adopting many concepts of Relationship Marketing. Many practices were also possible due to the advances in IT (Bhattacharya and Bolton 2000). Despite the fact that the concept of Relationship Marketing is not new, it may be argued that new technologies and advances in IT have now allowed to use Relationship Marketing effectively. For instance, personalizing and interacting possibilities offered by digital tools have contributed to better reciprocity, which is one of the main ideas of Relationship Marketing. More personalized content is often better perceived by customers. Hence, digital technologies can have a positive effect on interaction and communication which are crucial for a Relationship Marketing strategy (Grönroos2004).

Banks have to focus not only on integrating the new technologies, but also on managing their relationships with customers. Durkin and Howcroft (2003) stated that the Relationship Marketing can become a real one-to-one marketing in the digital era as it is possible for mass marketing to be personalized. In fact, a proper customer relationship management could help

the bank to collect data about customers and thus provide tailored products that meet their needs. The emergence of technology led to development of information and computer based information systems, which could be used in client relationship management.

> **Customer relationship management (CRM)**

Customer Relationship Management (CRM) usually refers to a database which stores customer data. It enables banks to use customer information to customize services, as well as messages for each and every customer (Payne, 2012). However, this would not have been possible without the internet and new technologies.

II- Customer Loyalty

1- The concept of loyalty

The interest in relationship marketing has been increasing substantially with the emergence of technologies and mainly the internet (Sheth and Parvatiyar, 2002). The concept of customer loyalty has been one of the drivers of relationship marketing researches. In literature, many authors tried to define the term loyalty. Oliver (1999) stated that *"loyalty is described as a deeply held commitment to rebuy or repatronize a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behavior."* In a digital context, Anderson and Srinivasan (2003) defined e-loyalty as *"the customer's favorable attitude toward an electronic business, resulting in repeat purchasing behavior"*. Loyal customers tend to have more contacts with their bank and tend to use their products and services more often (Tsai, Tsai, and Chang, 2010). Loyalty therefore implies a repeated purchase at the same bank (Chen, 2012). Hence it extends customers base as well as market share. Having loyal customers is a major necessity of every business (Keller and Kotler, 2012). With the increasing competition as well as the globalization, building customer loyalty is nowadays a critical strategy for the majority of institutions. Consumer loyalty has three characteristics:

- Repeated purchasing behavior,
- Positive attitude towards the provider;
- Favorable word of mouth.

Loyal customers are less likely to change provider and are less affected by competitor campaign or negative opinions (Narayandas, 1998).

Loyalty has an attitudinal as well as behavioral dimension. Attitudinal loyalty can be defined as customers' inclination towards a product or service rather than another from a different firm (Kaura and Sharma, 2015). Behavioral loyalty refers to the repurchase of a product or reuse of a service although there are other alternatives in the market (Lenka et al., 2009, Kaura and Sharma,2015). The concept of customer loyalty is the combination of both favorable attitude and the repurchase behavior. Thus, it is a combination of attitudinal and behavioral loyalty.

Other authors defined two types of loyalty: the active loyalty which refers to a positive Word of Mouth as well as an intention to use, and passive loyalty which is about not switching even if the conditions are not very positive or favorable (Ganesh et al., 2000). In this vein, Srinivasan (2007) stated that there are two main types of loyal customers: satisfied and un-satisfied customers. The authors claimed *"The satisfaction is not an essential requirement for loyalty, so satisfied customers do not have to be loyal but there is a correlation between the satisfied customers and loyal customers"*. A satisfied customer can deflect to a competitor. Furthermore, in some cases unsatisfied customers can be loyal which could be explained by the attachment and commitment to the service/product provider. Furthermore, customers are not always loyal by choice. In fact, repetitive purchases may be due to a lack of alternatives. It could also be explained by high switching costs and barriers that result in the customer staying even though he is not satisfied (Andreassen and Lindestad, 1998).

2- The importance of loyalty

Retaining customers is essential to any business as it is highly correlated with profitability. Many studies tried to investigate the impact of customer loyalty on profitability and growth (Reichheld and Teal, 1996). Studies have shown that bank's profitability is correlated with customer loyalty and retention (Clemes et al., 2010).Studies have shown that companies that are able to sustain long and good customer relations have larger profits (Tsai et al., 2010). In fact, a 5% rise in customer retention can result in an increase in profits of the bank between 25 to 85 % (Akhter et al., 2011). Hallowell (1996) stated that loyalty contributes to increasing the financial performance. Similarly, Clow and Kurtz, (2003) claimed that banks' profitability is highly affected by customer retention. The authors have also stated that customer defection can cost companies millions of dollars. Not only defection leads to financial losses, but it could also impact reputation as defectors usually spread negative Word of Mouth thereby

influencing other customers. Customer loyalty is therefore an essential factor that impacts earning and profits (Chakiso, 2015). Chakiso (2015) stated that *"the bank's assets are not only primarily registered on the balance sheet, but also related to the fact that customers have been successfully retained".*

Building consumer loyalty has a major role in sustaining a good relationship with the customer, winning market share, having a competitive advantage and for the survival of the bank especially nowadays in an increasingly competitive environment (Bilal et al.2010). In this context, Ravesteyn (2005) stated that there are two main advantages of customer loyalty: First of all, if customers are loyal to the company, repeat repurchases and reuse will eventually result in a growth of revenues as well as market share. Moreover, customers are more likely to spread a positive Word of Mouth thereby creating free advertising. Customers therefore become advocates.

It is worth noting that attracting new customers costs more than retaining old ones (Afsar et al.2010). In this vein, chakiso (2015) stated that it could cost a firm five to six more times get a new customer than to retain an old one. Hence, it is important to increase the customer share (the number of services used by each customer) instead of the number of customers.

3- Loyalty and digital banking

The banking sector is no exception therefore managers should understand the antecedents of customer loyalty. It is crucial for banks to understand how relationships with customers are built to identify the different factors that nurture loyalty, as it is the key ingredient to be profitable and sustainable. It is also crucial to gain a competitive advantage and survive in this digital era. However, digital banking has a major impact on the banks' ability to gain loyalty. Nowadays, and in a technologically advanced world it becomes even harder to retain a customer (Bilal et al.2010). Technologies made distances shrink. As a result when providing services online, a bank doesn't have to establish branches all over the country to be able to reach its customers. This could be beneficial from the bank's point of view as they will need fewer employees and will be able to save costs. But this will also make it easier for more banks to compete for customers even if they are smaller or have fewer branches. At the same time, online services reduce direct contact with the employees of the bank which becomes more impersonal, thereby leading to easier switching behavior from the bank to another one. It also increases the transparency, which enables the customer to have a total view over

different banks available, obtain information, compare them and then select the one that meets the needs making the competition fiercer.

4- Word of Mouth (WoM)

Word of Mouth (WoM) refers to the extent to which a customer informs his relatives and friends about an event/ a company/ a product that has created a certain level of satisfaction (Anderson, 1998). It is an informal type of communication between parties which concerns the evaluation of goods and services. It facilitates selling products as it has a powerful impact on customer behavior. The importance of WOM is due to the fact that the choices of customers could be influenced by WoM. This could be explained by the fact that costumers prefer to rely on personal communication sources like other customers when making such decisions instead of formal and organizational sources including advertising campaigns (Bansal and Voyer, 2000). Fellow costumers are considered more objective. Thus, WoM is appreciated because it is seen as more trustworthy and reliable. Satisfied customers are usually promoters of the firm's products and services. Furthermore, positive WoM and recommendation are usually associated with loyalty (Hallowell, 1996). Loyal customers tend to promote the firm and to emphasize on the main attributes of its products and services. WoM is even more important and impactful in the services context. This is due to their intangibility and as a result, greater perceived risk. WoM may be positive which encourages choosing the company, or negative discouraging such choice. Researchers have stated that positive WoM is related to satisfaction (Goldenberg et al., 2007). The company could make profits by attracting new customers via WoM recommendations and increased number of customers. Due to the strong impact of WoM on customers' choices, banks should try to develop positive WoM about their services. However, this is not always easy to do. Some customers are knowledgeable about many products and services; however tend to only give WOM about some of them.

5- Net Promoter Score (NPS)

NPS is a construct that assesses customer loyalty by using the ten-point Likert scale (Reichheld, 2003). NPS have been used in different industries to investigate customers' attitudes towards a company. The NPS is a measure of "how likely a customer is to recommend their company to a friend or colleague". As it is a scale ranging from 1 to 10, the customer can choose a value which represents how likely he is to recommend the company. According to their responses, customers are grouped into promoters (9-10 rating which refers

to customers who are extremely likely to recommend), passively satisfied (7-8 rating) and detractors (1-6 rating customers who are highly unlikely to recommend). To compute the NPS: the percentage of detractors should be subtracted from the percentage of promoters. A score of 75% to more than 80% indicates a world class loyalty. The first step of the calculating NPS is to sort the respondents into three groups: Detractors, Passives and Promoters: **NPS= (% of Promotors)- (% of Detractors)**

Reichheld (2003) claimed that the strength of the indicator lies in the recommendation aspect. In fact, when a person recommends a company or a product he puts his own reputation on the line. The main weakness of this indicator is that it measures the level of loyalty with one single question. However, customer loyalty cannot be identified with a single question. Thus, it is recommended to combine the NPS method with other methods when assessing customer loyalty.

III-   Satisfaction

Satisfaction is a key concept in marketing that has been studied by many researchers. Oliver (1980) defined satisfaction as meeting customer's expectations on the products and services. Thus, when the perceived performance meets or exceeds the customers' expectations of services, they are satisfied. It means that it is a post-purchase assessment. It refers to the fulfillment felt after having interacted with a company. In the banking context, Ladhari et al. (2011) gave the same definition as the author considered customer satisfaction as the evaluation of the services provided after using them and whether they met the expectations. Customers are dissatisfied when the performance does not fulfill their expectations and are delighted or highly satisfied when the performance surpasses their expectations. Customer satisfaction can be different from person to person. In an online context, Anderson and Srinivasan (2003) defined e-satisfaction as the contentment of the customer with respect to his previous purchasing experience online.

Gruen (1995) proved that satisfaction is more important for service companies compared to product ones that can focus on price, while service firms depend more on building relationships with their clients. In banking, customer satisfaction is a key strategic tool that to attract customers, maintain the relationships with existing ones, and develop relationships in the personal and online channels (Eriksson et al., 2020). Customer satisfaction is considered one of the key aspects to achieve competitive advantage and profitability of the company (Gašević, Vranješ and Drinić, 2016).

The relationship between customer satisfaction and customer loyalty was the topic of many researches where many authors stated that there is a positive correlation between these two. In fact, studies have proved that there is a significant relationship between customer satisfaction and loyalty in the banking industry (Anderson and Srinivasan, 2003 Ribbink et al., 2004; Shanker et al., 2003). Moreover, Shanker et al. (2003) stated that this relationship is even stronger in the online context than in an offline context as it is harder to keep online customers. The satisfaction of customers with online services motivates them to reuse the digital channels and generates a favorable Word of Mouth (Casaló et al., 2008). Highly satisfied online banking customers were 39% more likely to purchase additional products and services than dissatisfied ones (Yoon, 2010). Customer satisfaction is crucial for retaining a loyal customer base. In fact, it is more difficult for a competitor to make satisfied customers switch company (Methlie & Nysveen, 1999). Thus, satisfaction is considered a key factor in having a long-term relationship with customers. Generally, the greater the satisfaction of a customer with a service, the greater is the chance to reuse it (Newman &Werbel, 1973). Shin (2021) stated that, in digital banking customer satisfaction can be considered as the stage immediately before the intention to reuse. Therefore, satisfaction generally leads to repeat purchases and reuse, positive Word of Mouth, and more specifically consumer loyalty.

Furthermore, customer satisfaction has been considered as a mediating variable between many variables and customer loyalty. Therefore, a variable may have an impact on loyalty indirectly via satisfaction, which means that it only makes a customer loyal because it boosts his satisfaction rather than boosting another variable (For instance rather than boosting trust). For example Seilimia et al. (2020) proved that customer satisfaction mediates the relationship between E-banking service quality and customer loyalty. Moreover, it has been proved that it is a mediating variable between service quality and customer loyalty in Indian banking sector (Lenka et al., 2009). Casalo et al.(2008) stated that satisfaction mediates the relationship between usability and loyalty which means that usability enhances satisfaction which leads to loyalty. In the same vein, Thakur (2014) usability and customer service both affect loyalty through satisfaction. Other studies that proved the indirect effect of several factors on loyalty through satisfaction are: Ribbink et al. (2004); Ganguli and Roy (2011); Sasono et al. (2020); Haq and Awan (2020). Hence, we can formulate the following hypothesis: Satisfaction has an impact on loyalty

Satisfaction is essential for loyalty. However, this relationship is asymmetric. Despite the fact that loyal customers are mostly satisfied, satisfaction does not necessarily lead to loyalty

Reichheld (1996) claimed that even for customers who are satisfied, between 65 and 85 percent could defect. In the same vein, Capgemini (2012) support these findings, showed that bank customers could leave even if they were satisfied. It is also possible that a dissatisfied customer continues to use the company's products and services. In this vein, Rust and Zahorik stated: *"a dissatisfied customer may still continue his patronage if he expects no better from alternative suppliers"* and *"a satisfied customer may be willing (or even eager) to patronize alternative suppliers hoping to receive even more satisfying results"*. To sum up, loyal customers may not be satisfied customers and dissatisfied customers could be loyal However, it is harder for a competitor to attract a satisfied customer than unsatisfied one.

Finally, it is worth noting that satisfaction is not a permanent condition, as it can quickly turn into dissatisfaction. In this context, Oliver (1999) stated that satisfaction has a major role in developing loyalty however its influence decreases as loyalty develops. In other words, when consumers become attached to a firm, satisfaction becomes less important.

Prior studies have identified several factors that determine e-customer satisfaction in a digital banking context. For instance, Liébana-Cabanillas et al. (2013) stated that internet banking customers are mostly satisfied with ease of use, internet accessibility, and trust. As a result, positive (or negative) costumer perceptions of the quality of the different attributes will lead to satisfaction (or dissatisfaction) with the digital service. Yoon (2010) stated that customers are satisfied mainly by security, design, information content and customer support service.

Section 2: Antecedents of loyalty and satisfaction

In the literature about bank customer satisfaction and loyalty, many factors have been investigated and have been shown to have impact on either satisfaction or loyalty or even both. Many authors focused on service quality dimensions to investigate their impact on satisfaction and loyalty. Several researchers have used different service quality dimensions for different industries. Parasuraman et al. (1985) stated that there are five dimensions for service quality: reliability, tangibility, responsiveness, assurance and empathy, which are widely known as the SERVQUAL model. Levesque and McDougall (1996) studied different factors of customer satisfaction in retail banking. The SERVQUAL instrument which was used by the authors and the variables included were relational performance, core performance, tangibility, competitive rates and customer satisfaction. In an online banking context,

Parasuraman et al. (2005) developed a multi-item scale to assess service quality in an electronic context, which they named as E-S-QUAL. The four dimensions of E-S-QUAL are efficiency, fulfillment, system availability and privacy. Zeithaml et al. (2002) stated that service quality could be evaluated in terms of information availability and content, ease of use or usability, privacy/security, graphic style, and fulfilment of purpose. Others studied show satisfaction and loyalty are affected by other factors including bank image (Yee and Faziharudean; 2010), switching costs (Tong et al., 2012), perceived value (Caruana and Ewing ,2010), personalization (Herington and Weaven,2009). Thus different studies used different factors. In our study, we will mainly focus on ease of use, functional quality or functionality, perceived value, problem solving, reputation and trust which were mentioned in many previous studies[28].

I-   Ease of use or usability

According to Davis et al. (1989, p. 320), perceived ease of use is *"the degree to which a person believes that using a particular system would be free of effort".* Ease of use refers to many aspects including the ease of learning to manage the system by the customer, being able to easily memorize basic functions, the degree of error avoidance and the manageability of the system (Nielsen and Hackos, 1993). It reflects the perceived ease to navigate, ease to make a transaction, and interface simplicity. Thus, higher levels of usability are usually associated to lower difficulty to manage the functionality (Davis et al., 1989, Thakur, 2014)

In the banking industry, ease of use boosts speed, allows easy site navigation, and contributes to more user control (Casalo´ et al., 2008; Flavian et al., 2006). It has many advantages for customers including enjoying a user-friendly system (Hussien and Aziz, 2013), and allowing them to use different communication channels (Laukkanen, 2007).

Customers are more likely to adopt digital banking services when they perceive that using technology is not difficult and does not require a lot of effort. Using such services usually requires customers to do all tasks by themselves without assistance from employees. In this context, users have to face a trade-off process between the efforts needed to adopt the technology and its advantages (Alalwan et al., 2016). Davis et al. (1989) stated that perceived ease of use could impact the behavioral intentions which was confirmed by other researchers.

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[28] It worth noting that all factors impact each other in different ways, despite the fact that they need to be described separately in this study to be easier to understand. Studying the impact of factors on each other is not the purpose of this study.

Due to the fact that using digital banking channels requires a certain level of skill and knowledge, perceived ease of use could have a major impact on the customers' intention to adopt technology. This idea has been empirically validated by different studies regarding the banking sector (Gu et al., 2009; Hanafizadeh et al., 2014, Alalwan et al., 2016).

As one of the main goals of digital banking is to allow constant access and make everyday banking activities available anytime anywhere, it is important to deliver applications that are easy to use. If the bank could not offer an application or a system that satisfies the customers, it could impact negatively customers intentions to continue using the application and thereby loyalty towards the service of the bank.

In the context of online banking many studies proved that ease of use has an important influence on customer satisfaction (Casalo´ et al., 2008; Flavian et al., 2006). For instance, in a study about the impact of usability on satisfaction and loyalty in the online banking context, Casalo et al. (2008) found that perceived ease of use has direct positive effect on customer satisfaction and an indirect effect on loyalty. In the same vein, Thakur (2014) showed mobile interface usability in India has a positive impact on customer satisfaction leading to customer loyalty. According to Thakur (2014), better usability helps to better understand the contents and tasks in a digital service thereby enhancing the development of favorable customer behaviors including satisfaction and loyalty in the mobile banking context. Bapat (2017) examined the antecedents of satisfaction and loyalty for a multi-channel banking environment and found that perceived ease of use is an antecedent to satisfaction which has a positive impact on loyalty. Furthermore, Thaker al. (2018) stated that usability and interface design could make customers feel positive about the service. If they have the necessary information on how to use an application, they will have a positive impression. The researchers proved that ease of use is one of the factors that influence customer loyalty and continuance intention to use Islamic mobile banking services in Malaysia. Moreover, the study proved the mediating effect of customer satisfaction. Thus, we can formulate the following hypotheses:

- H1: Ease of use has a direct impact on customer satisfaction
- H2: Ease of use has a direct impact on customer loyalty

An indicator which is related to this variable is the Customer Effort Score (CES). However, it was not measured in this study[29].

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[29] A customer effort score (CES) is a service metric which enables the company to measure how much effort customers put in to use the service or how easy it is to have a problem solved.CES could help drive improvements in

II-   Functional Quality or functionality

Functional quality refers to the functionality of online systems and to having good interfaces. It is also related to its activities components. In other words, functional quality refers to the functional attributes and the access (Mbama, 2018). Functional quality therefore measures items like speed, accuracy, and functionality of the service provided. It refers to the ability of the bank to deliver clear and accurate updated information content as well as good interface design thereby leading the customers to adopt the service, satisfying them and giving them a better experience (Keisidou et al. (2013); Garg et al. (2014); MonferrerTirado et al. (2016); Mbama, (2018)). Functional quality contributes to enhance the effectiveness of digital banking. Hence, banks should take into consideration the accessibility of features as well as user interface when designing and implementing a service through digital channels. It is also important to focus on network speed as well as system stability.

Amin (2016) stated that if a customer has had a bad experience with the functionality of the website in the context of internet banking, he might judge the overall internet banking before even a transaction is executed. Thus, the digital service has to be user friendly, the website has to launch and run right away. Furthermore, pages should not freeze. The customer should be able to complete the transactions quickly when using the digital banking service. In this context, Herington and Weaven (2009) stated that the online banking customer focuses on download speed and is concerned about completing a transaction quickly. Additionally, Ho et al. (2012) found that functional quality has a crucial role. First of all, it improves the efficiency and effectiveness of websites. It also affects costumers' acceptance of the website systems. Nowadays, there are many alternatives in the context of internet and mobile banking. Hence, functionality and user interface have a huge importance (Vatanasombut et al., 2008).

Many studies examined the impact of the functional quality on the relationship between customers and banks. In the context of mobile banking, Gu et al. (2009) stated that the quality of the system including network speed, accuracy and system stability have an impact on the intention and the satisfaction of customers. Ahmad and Zubi (2011) examined the impact of the functionality of internet banking on customer satisfaction in Jordan. The results showed that the e-banking functionality has a significant positive impact on customer satisfaction.

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services to by giving a clear idea on their shortcomings. The question is usually " X made it easy for me to handle my issue" with a Likert scale from 1 to7. But, the question has to be asked immediately after the interaction of the customer with the service that's why it was not measured as a score in this study.

Moreover, while focusing on customer experience and satisfaction in Indian banks, Garg et al (2014) indicated that functional quality has a significant impact on experience and satisfaction. In addition, Monferrer-Tirado et al., (2016) investigated the different dimensions of quality related to services including functional quality and their impact on the relationship with customers mainly satisfaction, trust and loyalty. The findings indicated that bank customers have been affected by functional quality which has an impact on customer satisfaction and trust and that both lead to loyalty in the Spanish banking industry. Furthermore, Mbama (2018) found that functional quality has a significant and positive impact on customer experience, satisfaction and loyalty in the UK. Therefore, our hypotheses are:

- H 3: Functional quality has a direct impact on customer satisfaction
- H 4: Functional quality has a direct impact on customer loyalty

III-   Perceived value

'Perceived values' is concept which is widely discussed in several disciplines including marketing, psychology, sociology, etc. Perceived value refers to "*the trade-off between the costs and benefits of a behavior*" (Dootson et al, 2016). It is the trade-off between the different benefits provided by the service or the product and the sacrifices made to obtain it (costs, effort, time, etc.). Thus, the 'sacrifice' components of perceived value include monetary prices and non-monetary costs (time, energy, effort). Perceived value is related to fair price, good value and the price/quality ratio. In this context, Zeithaml (1988) considers that perceived value is the assessment of the customer of the utility of a product and service when compared to its costs.

The value of a service comes from the fact that benefits are greater than the costs (Boksberger and Melsen, 2011). Value is subjective and is different for each customer. Customers do not perceive overall value of a service if the sacrifices made (for example in terms of the fee for usage) cancel out the benefits. Customers usually take decisions based on value maximization, by choosing the behavior that makes them reap the highest payoff.

Banks are able to gain a sustained competitive advantage, if customers could perceive a positive trade-off between the costs of adopting the service and its benefits. .The customer compares the different offers on the market and then chooses the one with the best perceived value. Perceived value is a key element for customers to be able to sustain a relationship with a company (Berry and Parasuraman, 1991). It is one of the key variables that financial

institutions should focus on. Thus a company should determine where its strengths lie and then implement a strategy that builds superior value there.

Many studies proved the existence of a positive relationship between perceived value and behavioral intention (Chang et al., 2009; Ko et al.,2009; Bressolles et al., 2015;). For instance, Cronin et al., 2000 have investigated the indirect relationship between value and behavioral intentions through satisfaction. Furthermore, and in the banking sector, Roig et al.(2006) stated that perceived value is an antecedent of satisfaction. In addition, studies indicated that perceived value is a variable that has an impact on the customer's intention to re-purchase a product or a service and as a result it is likely to foster loyalty (Trassoras et al., 2015;Anderson and Srinivasan ,2003; Ulaga and Eggert, 2006). Hence, perceived value can be viewed as a major determinant of customer loyalty.

Given that the link between value and customer retention has been proven, banks should enhance their perceived value in the eyes of their customers. Therefore, it is important to know their customers' needs well. Creating value for customers is essential. Vantrappen (1992), stated that *"value creation for the customer means that the firm meets the customer's quality, delivery and cost expectations".* The author added *"each customer has unique and evolving needs: another customer expects to find different attributes in the product; and the same customer will expect different attributes next time he uses it."* However, to create value, focusing only on customers is not enough. It is also crucial to take into account competitors, and what technologies they are offering, and whether customers perceive them as satisfactory alternatives or not (Slater and Narver,1994). Woodruff (1997) stated that, *"Adopting a customer value delivery orientation requires organizations to learn extensively about their markets and target customers."*

It is essential to have an in-depth knowledge about the value customers perceive in the context of digital banking. Many researchers have also used perceived value to assess the perceptions of customers of technology-based self-services and more specifically in the case of digital banking. In an online context, some studies began to focus on investigating the link between perceived value and the relationship between the customer and the bank when using digital banking services (Chang and Wang, 2008). Many studies proved that perceptions of value positively affect the intention to adopt DB services. For instance, Kleijnen et al. (2007) and Ko et al. (2009) showed that overall perceived value with mobile and Internet services have an impact on the intention to adopt the services .The results of a research by Boon-itt

(2015) show that perceived values have a positive impact on satisfaction in the mobile banking context. Similarly, Karjaluoto et al.(2019)proved that the perceived value of mobile financial services apps has strong positive effects on customers' overall satisfaction with their bank. Prior studies have also proved that perceived value could also lead to customer loyalty in an e-business context by reducing their need to find an alternative service provider (Caruana and Ewing ,2010; Chang and Wang ,2011). If the perceived value is low, customers will be more likely to switch to increase perceived value, thereby affecting loyalty negatively (Chang et al., 2009). The relationship between customer satisfaction and loyalty tends to be stronger if customers feel that their bank provides higher overall value when compared to its competitors (Chang et al., 2009).

This construct refers to the different fees incurred when using a service. The service has to offer value for money (fee to pay). It has to be beneficial when compared to the effort needed and it has to be worthy when compared to the time the customer has to spend to use it.

- H5: Perceived value has a direct impact on customer satisfaction
- H6: Perceived value has a direct impact on customer loyalty

IV- Perceived risk (security and privacy)

Digital banking channels have a high degree of vagueness and uncertainty (Eriksson et al., 2008). Thus, the usage of these channels can lead to different risks (Martins et al., 2014). Moreover, the rate of cybercrimes has been increasing over the last decade. The focus of media on such issues has amplified customers concerns about digital banking. Having a secure service that guarantees the privacy of information and the security of transactions is one the most crucial aspects in the delivery of financial services in the digital era.

Perceived risk is a subjective assessment rather than an objective aspect. Several researchers have defined perceived risk. According to Pavlou (2001) perceived risk is *"the consumer's subjective expectation of suffering a loss in pursuit of a desired outcome"*. In the same context, according to Featherman and Pavlou (2003), it is a felt uncertainty related to the probable consequences when using a product or service. Therefore, customers perceive risk if they are not able to anticipate with certainty the potential negative consequences of their buying/usage behavior. It is very important to take risk into account to be able to understand the evaluations of customers and their decisions when choosing a particular service provider, and when adopting technologies. It is a major factor that helps to explain customers' behavior.

The perception of risk is an important factor which determines the acceptance as well as the adoption of a new technology.

Privacy and security are main aspects of perceived risk and refer to protecting of customers' information and guaranteeing safe transactions while conducting services on digital channels. Technology has resulted in security and privacy concerns such as misuse of financial information and identity-thefts (Featherman and Pavlou, 2003). Recently, some concerns have also risen concerning risks such as phishing, where criminals obtain information about the user and could therefore have access to banks to make transactions. Phishing and hacking could thus lead to financial risk when customers suffer from monetary losses (Lee, 2009). Moreover, it could result in a fraudulent behavior.

Banks are constantly investing to minimize risks. Perceived risk requires protecting the service user from information-related risks such as frauds and cyber attacks. Bank should also protect personal data Nowadays there are several technical advancements in Internet security such as digital signatures, cryptography, authentication and certificates. However, costumers still have concerns about security of their transactions when using digital banking channels (Yoon, 2010). . Customers are usually concerned about privacy and cybercrimes, which makes them more hesitant to accept and use new technologies for their financial transactions (Poon, 2008).

Privacy refers to confidential information that is transmitted safely between the bank and its customers. Security refers to the extent to which a digital service ensures safety regarding financial and personal transactions online. As the majority of digital services rely on new technologies and internet, security and privacy are major factors for this type of services. Previous studies have shown the importance of the perceived risk factor when it comes to digital banking. Many researches proved that privacy and security have a significant effect on the intentions of customers to use and adopt digital banking services (Polasik and Wisniewski, 2009; Grabner-Kräuter and Faullant, 2008; Poon 2008; Alalwan et al.,2016; Bressolles et al., 2014). For instance, Polasik and Wisniewski (2009) conducted a study in the Polish market and proved that perceived security has a significant impact on online banking adoption which was later confirmed by Alalwan et al. (2016) with Jordanian customers. Moreover, studies proved that perceived risk is one of the major deterrents that hinders customers' willingness to adopt Mobile Banking (Hanafizadeh et al., 2014; Alonso-Dos-Santos et al., 2020).

Privacy and security concerns are some of the major factors that affect customer satisfaction and loyalty in the context of digital banking. Studies usually focus on the elements that affect positively customer satisfaction. However, it is also crucial to take into account the factors that have a negative impact on satisfaction such as perceived risk. Several researchers proved that perceived risk has an important impact on satisfaction. For instance, in the context of online banking, Yoon (2010) proved that security is one of the antecedents of customer satisfaction in China. In the same vein, Ankit (2011) found that security and privacy are among the factors that have an impact on customer satisfaction in an online context which leads to a stronger bond between the banks and customers and enhances the acquisition of new customers and the retention of old ones. Furthermore, according to a few studies, perceived risk has a direct impact on loyalty. But it could also have an indirect effect through satisfaction as mediating variable. In the mobile banking context, Esmaeili et al . (2021) showed that perceived risk has a negative effect on loyalty in Iran. In addition, Ahmad et al. (2021) stated that privacy and security both have a significant impact on satisfaction. They have also proved that both variables affect loyalty and word of mouth through satisfaction in Jordanian commercial banks. In the same vein, Suroso and Wahjudi (2021) found that perceived risk had a significant impact on loyalty. However, they have found no effect on satisfaction. Therefore, it is crucial for banks to show their customers that it is safe to make transactions remotely. Thus, our hypotheses are:

- H7: Perceived Risk has a direct impact on customer satisfaction
- H8: Perceived risk has a direct impact on customer loyalty

V-   Conflict handling and problem solving

According to Dwyer et al. (1987) conflict handling is the ability to steer clear of potential conflicts, handle the ones that occurred before they create problems, and try discuss openly to find solutions if problems do arise. Complaints occur as a result of not providing services that meet the expectations of customers. Generally, customer complaints are due to the inability of bank to fulfill its promises, to technological difficulties and failures, to the lack of adequate information, or are related to employee competence. It can result in customer defection(Walter et al., 2015). Similarly, problems with financial transactions in the context of mobile banking and internet banking could be followed by complaints, leading to losing customers, and causing financial and non-financial losses (Zairi, 2000).

In a bank, it is crucial to have a complaint management system that processes complaints, handles them and offers response. Banks could respond to customer complaints and restore their image and credibility by explaining, apologizing, correcting transactions or compensating the damage and giving refunds. Thus, complaint handling is crucial as it affects the relationship between the company and its customers. It could satisfy the customer, improve relationships, and prevent customer from switching to another bank (Iii and Netemeyer, 2002). When the response satisfies the customer, he tends to remain loyal. On the other hand, ineffective responses lead to dissatisfaction which may lead to customers leaving company (Hulten, 2012). Slow or improper conflict handling could be seen by customers as incompetence or opportunistic behavior and thus could affect the credibility of the company negatively. It could also affect costumers trust on the company (Ganesan,1994). Complaint management contributes to avoiding 'silent' account cancellation. It helps to achieve direct accountability of the service provider. Moreover, it allows the customer to be more open when expressing complaints. As a result, it creates a new opportunity to enhance customer satisfaction for internet banking (Salmen and Muir, 2003). It is worth mentioning that customer service for an online channel such as mobile banking, is the service that the bank provides to support its customers usually via call centers (phone, e-mail, etc.) and more precisely during problems faced by the customers (Thakur, 2014; Ganguli and Roy, 2011).

Many researchers studied the impact of complaint handling on the relationship between customers and banks mainly satisfaction and loyalty. For instance, Levesque and McDougall (1996) stated that if the company recovers successfully, this could enhance loyalty and increase profits. The authors stated also that customer complaint handling is a major factor that pushes customers to switch service providers in case of unsatisfactory problem handling. According to Levesque and McDougall (1996), when a problem occurs, customers may respond by quitting and switching to another supplier, may be voicing the problem or staying with their service provider hoping things will improve. In this context, Ndubisi (2006) examined the impact of four key dimensions of relationship marketing which are communication, trust, commitment, and conflict handling on customer loyalty in Malaysia and stated that if the bank can handle conflicts well, customers tend to be loyal. Fathollazadeh (2011) has also studied the impact of complaint handling on customer loyalty for three major banks in Iran and found that conflict handling have a direct positive impact on loyalty. In addition, Salim et al. (2018) examined the impact of customer complaints handling on customer loyalty in public banks in Indonesia and proved that effect of complaints on

customer loyalty is mediated by satisfaction. However, Chakiso (2015) results showed that conflict management is not an antecedent for loyalty.

Many studies in literature have also supported the idea that it has an impact on customer satisfaction in the context of online banking (Ganguli and Roy, 2011; Ho and Lin, 2010; Yoon, 2010). For instance, in the online banking context, Yoon (2010) proved that customer service is one of the factors that had an impact on satisfaction. Ankit (2011) proved that problem solving is one of the factors that have a strong impact on the overall satisfaction in the online context. The author stated that a rapid resolution of problems, leads to a good relationship between the bank and the customers. Furthermore, Thakur (2014) proved that customer service has a positive impact on customer satisfaction which leads to loyalty. The author stated that a customer service touch point (mainly call center) that is unable to provide correct and prompt resolution or information could result in customer dissatisfaction, which is confirms the results of Ganguli and Roy (2011). Thus, we can formulate the following hypotheses:

- H 9: Problem solving has a direct impact on customer satisfaction
- H 10: Problem solving has a direct impact on customer loyalty

VI- Reputation

Reputation refers to value judgments which are held by the public about the company's qualities. It synthesizes the opinions and perceptions of customers, investors, suppliers, etc. In general, reputation enables customers to appreciate the quality of the products or services when compared to alternatives (Yoon and Kim, 2000). A company could have different types of reputations (price, quality, innovativeness reputations) as well as global reputation. Customers' beliefs about brand can be due to personal user experience, marketing efforts from the company as well as positive and negative word-of-mouth. *"For many users, reputation acts as a trusted 'consumer guide' on the Internet" (*Lindstrom and Andersen 2000).

Reputation could have an impact on how costumers perceive the company's products or services when compared to others which may affect their purchasing behavior. A good reputation enhances sales as well as market share (Shapiro, 1982). Moreover, the image that a company transmits has a crucial impact on creating a competitive advantage (Andreassen and Lindestad, 1998). Furthermore, a strong positive image takes a lot of time to develop and is difficult to imitate; thus it could serve as a barrier for new competitors (Flavián et al., 2005).

It also contributes to a greater satisfaction and loyalty (Andreassen and Lindestad, 1998). A good reputation is more likely to promote free publicity which enhances customer trust and satisfaction (Walsh et al., 2009).

Some researchers consider it as one of the antecedents of loyalty. When a company has a good reputation, it enhances customer trust and leads to repeat purchases (Nguyen and Leblanc, 2001). A good reputation enhances customer loyalty and thereby loyal customers, due to their attitudes and recommendations, promote positive opinions about the company (Szwajca, 2016).Therefore, reputation could determine the nature of costumer expectations, which are a crucial for determining customer loyalty. Strong and positive reputation fosters loyalty not only from customers but also investors, and business partners leading to better financial results (Ozkan et al.,2019).

The reputation in an online setting is even more important to customers than that of an offline context. (Fathollahzadeh et al., 2011). This could be explained by the fact that in an online context, customers purchase without any immediate delivery or tangible exchange. Customers' expectations are also based on their offline channel experiences and knowledge (Jin, Park Kim, 2009). In fact, digital banking services are usually backed up by conventional banks reputation. Customers are willing to use the digital banking service because their credible traditional banks guaranteed it to them. Customers tend to base their decision to use digital banking services on the reputation of their banks. In the context of internet banking, reputation does not only refer to the website, but it also refers to the entire organization. (Casalo et al ,.2008).

In this vein, Casalo et al (2007), found that reputation in an online banking context is one of the factors that have a direct and significant effect on customers in financial services. The service provider reputation is one of the key factors that affect customer choice services enabled by technology (Aladwani, 2001). A good reputation reflects the company's competences and integrity. As a result it helps increasing satisfaction and trust, even when costumers do not have direct knowledge of service companies (Jin et al.2008). Many studies proved that reputation, in a digital banking context has a significant impact on satisfaction and loyalty (Caruana and Ewing , 2010; Yee and Faziharudean (2010) ; Raitani and Vyas (2014); Shergill (2014). For instance, Raitani and Vyas (2014) stated that corporate image and reputation are among the major factors that significantly affect the e-loyalty of online banking customers. Furthermore, Casalo et al. (2008) stated that a more favorable website

reputation leads to a greater degree of loyalty. However, it is worth mentioning that reputation is unstable as it can change during overtime. Some authors (Herbig et al., 1994) claimed that Gaining a good reputation is harder than losing it as negative actions tend to be more intense than positive ones.

In the past, many banks used to have an unfavorable image, but continued to earn money. However, this could not be sustainable in the long run, thus banks have to improve their image, especially with the appearance of new competitors who are entering the market Therefore, banks should build a good image and reputation in customers' mind. Banks could take advantages of social media to be able to enhance their marketing strategies. To enhance customer satisfaction and loyalty, digital banking providers should not ignore the reputation. Once a customer has had his first service encounter with the bank, the image they hold about it becomes more influenced by his experience.

H11: Reputation has a direct impact on customer satisfaction

H12: Reputation has a direct impact on customer loyalty

VII- Trust

Trust is a complex concept that has been studied in different disciplines, thereby giving different definitions. Morgan and Hunt (1994) defined trust as *"consumer confidence in a retailer's reliability and integrity"*. It could also be defined as the willingness of a customer to count on the brand's ability to meet a specific purpose (Chaudhuri & Holbrook, 2001). In an online context, Ribbink et al. (2004) defined e-trust as "*the degree of confidence customers have in online exchanges"*. Trust is mainly based on the belief that a company's behavior is guided by good intentions considering the best interest of its customers. It is also based on the competence of the company and its ability to keep its promises (Flavian et al., 2006). The role of trust in the financial services sector is crucial due to the complexity of many of the products.

Historical crises that have occurred in the banking sector have resulted in a social distrust against banks. In fact, due to the different crises that the financial system has witnessed, trust in the banking system, has been negatively impacted in many countries (Hurley et al., 2014). The aftermath of the financial crisis of 2007 has resulted in a decreased trust towards the banks. Many measures were taken by regulatory governance to alleviate those problems and to help create, support and restore trust within the banking industry.

Trustworthiness has been studied in several researches which found that it impacts customers' bank choices (Liang et al., 2009; Fathollahzadeh et al., 2011; Akhter et al., 2011). According to Mukherjee & Nath (2003), trust has an impact on relationships with customers in online banking services. The author found that a higher perceived trust boosts customers' commitment in online banking in India. More precisely, Mukherjee and Nath (2003) found that trust has mediating role between relational dimensions including interaction quality and communication, and some relationship outcomes such as customer loyalty and behavioral intentions in the online context. Similarly, Sikdar et al (2015), proved that trust has a significant and positive impact on customers' intentions to use online banking services in India. Once customers trust the bank, they become more willing to use the services. Trust is an even more important determinant in electronic transactions. In fact, in an uncertain environment, banks must pay attention and should focus on trust to mitigate uncertainty. This is in line with the findings of Urban et al., (2000) who stated that trust is even more essential in an e-commerce setting due to the fact that the customer does not have direct contact with the company or its staff. Therefore, during recent years, building and maintaining trust in the digital banking context has been the main focus of many academics and practitioners. Customers have to trust the online system to adopt it and use it continuously (Gefen & Straub, 2004). Due to the absence of interpersonal interactions, the trust online is based on the judgments of customers of the reliability of the service provider.

Trust is an important factor that has been related to loyalty (Reichheld et al. 2000). In this context, Chaudhuri and Holbrook (2001) claimed that trust is a major factor that contributes to loyalty. In the digital context, a relationship cannot be developed without e-trust (Herington and Weaven, 2007). Fathollahzadeh et al. (2011) showed that trust has a significant impact on customer loyalty in an online and offline context. Similarly, according to Natadirja and Pasaribu (2022), e-trust has a positive impact on e-Satisfaction as well as e-Loyalty. Esmaeili et al.(2021) have also proved the positive impact of trust on loyalty in the context of e-banking in . Studies have also shown the impact of trust on satisfaction (e.g. Mukherjee and Nath, 2003; Li,2009; Arcand et al., 2017; Bhatt and Nagar;2021), resulting in greater loyalty. In the context of mobile banking, if customers believe that the service used reliable and trustworthy, they are more likely to be satisfied and evaluate it favorably (Fragata et al., 2021).Trust can also impact the reaction of customers to a bad experience. In fact, customers that trust their bank could consider a bad experience as an exception (Hennig-Thurau et al., 2002). Therefore, our hypotheses are:

- H13: Trust has a direct impact on customer satisfaction
- H14: Trust has a direct impact on customer loyalty

Additionally according to our first section, authors proved that satisfaction affects loyalty. Hence, we formulate the following hypothesis:

- H15: Satisfaction has a direct impact on customer loyalty.

Conclusion

The main objective of this chapter was to investigate the customer – bank relationship in the digital era. More precisely, we focused on the concept of relationship marketing which refers to the different actions taken to attract, maintain and retain customers. In the digital era, it is crucial to satisfy and retain customers to be able to build strong relationships. In literature, many studies focused on examining the different factors that contribute to satisfying customers in the banking sector in general and in a digital context in particular. Studies also stated that satisfaction is a major determinant of loyalty. Among the factors that were heavily examined in prior researches we can cite : ease of use , functional quality, perceived value, perceived risk, problem solving or complaint handling, reputation and trust which will be the main factors investigated in this study.

EMPIRICAL FRAMEWORK

CHAPTER THREE: METHODOLOGY AND CONTEXT OF THE RESEARCH

CHAPTER THREE: METHODOLOGY AND CONTEXT OF THE RESEARCH

Introduction

In the digital banking era, different banks compete to offer digital banking services to attract customers, satisfy them and to foster loyalty. Thus, offering DB services helps to enhance profitability and retain customers. It also enables banks to gain a competitive advantage and improves image and reputation. Moreover, it is crucial for the survival of the bank in this new era. The Arab Tunisian Bank (ATB) offers a variety of digital banking services including internet banking and mobile banking.

Our research aim is to investigate the different factors that have an impact on customer satisfaction and loyalty in the digital banking era. It also examines the relationship between customer satisfaction and loyalty towards digital banking services. After the theoretical framework, we will conduct an empirical framework.

This chapter is divided into two sections. The first one will be dedicated to the presentation of our methodology including the research methodologies, the methodological choice of the research. We will then present the data collection instrument and sample selection followed by the data handling and analysis procedure which starts with an exploratory factor analysis (EFA), followed by a confirmatory factor analysis (CFA) and finally a Partial Least squares-structural equation modeling (PLS-SEM) that enables us to test our research hypothesis.

The second section allows us to present the context of research and questionnaire structure. Thus, we will begin by a brief presentation of ATB followed by a presentation of the different digital banking services in ATB, then the research problems, its purpose as well as the research questions. After that, we will present the research model and hypotheses. Finally, we will discuss the questionnaire structure and measurement scales.

Section 1: Methodology

This section is dedicated to explaining the different steps followed in our research from the choice of our research methodology, sample selection to the analysis of Data. Thus, we define and explain exploratory factor analysis (EFA), confirmatory factor analysis (CFA) as well as PLS-SEM which is used to verify the model fit and to test the different research hypotheses.

I-   Research methodology

Research methodology refers to the different practices followed by researchers (Guba, 1990). Methodology refers to the research process, which includes steps from having a theoretical background to data collection and analysis (Robson, 2002). There are two main approaches used in literature.

1- Quantitative approach

The primary aim of quantitative research is to examine and explain relationships among different variables. It is based on quantitative data. It is generally adopted to investigate gathered data and is usually based on some assumptions (Creswell, 2003).

Creswell (2003) stated that quantitative research uses different strategies such as surveys to collect data and to support or reject hypothesis. Thus, it also involves assigning measures to test relationships statistically and to better understand a topic. After identifying the aim of the study and the research questions, researchers try to develop hypotheses based on existing theory, collect data through survey and analyze it to better understand a problem.

The quantitative approach involves that the researcher remains independent of the elements researched. It measures how many people think in a particular way (Creswell, 2003; Saunders, Lewis & Thornhill, 2009). In marketing studies, quantitative research generally follows the approach that starts with problem statement, followed by formulating hypotheses based on previous studies, data collection, analysis, and conclusions.

2- Qualitative approach

Qualitative approach is mainly based on non-measurable data. It enables the researcher to analyze and understand phenomena, facts or subjects, and group behaviors. Its main goal is not to obtain a large quantity of data but it focuses on the quality of data. It refers to the set of techniques enabling the researcher to describe, de code, or generate meaning. It is a

fundamental approach in the case of exploratory research. It includes individual as well as group interviews, case studies, etc. (Cooper and Schindler, 2006). The research based on qualitative data is therefore primarily exploratory, and it aims at breaking fresh grounds as well as giving new insights. In fact, according to Leedy and Ormrod (2001), qualitative research is more appropriate when the researcher is trying to develop or formulate a new theory. In qualitative research, the researcher has to identify different patterns, themes, and features by examining collected words.

The choice of method depends on the purpose of the research. The following table summarizes the main differences between the two approaches.

Table 1: The difference between quantitative methodology and qualitative methodology

Quantitative methodology	Qualitative methodology
- Survey / questionnaire : -Sampling -Telephone or online survey	Data collection through: -Interview -Focus group
Large sample	Generally, small sample
Precise results	Limited extrapolation of the results
Hypothetico-deductive approach	Inductive approach
Objective	Subjective

Source: https://www.scribbr.fr(Translated)

It is worth noting that some researchers use a mixed approach where they adopt quantitative and qualitative methods for the same study. In fact, sometimes, researchers may need numerical and narrative data for the same research; therefore they use a mixed approach by referring to closed ended questionnaire to collect statistical data, and by having an interview to collect other data.

II- Methodological Choice of the research

In this study, a quantitative research is adopted. The choice of a quantitative approach could be explained by the fact that we intended to collect numerical data which can be tested and analyzed statistically using statistical software.

To be able to identify causal explanations, it is crucial to rely on a hypothetico-deductive process. It is also important to have a sample size allowing the generalization of the results (Holden and Lynch, 2004). In fact, Creswell (1994) stated that when the subject could be based on literature, it helps the researcher to define the theoretical framework as well as the

different hypotheses, the deductive approach could be chosen. Meanwhile, if the topic is new and there is no or little existing literature, then the inductive approach is more appropriate.

A deductive approach has some significant characteristics: different causal relationships between variables could be explained and several hypotheses could be developed and tested. The concept as well as the different factors investigated are operationalized and measured quantitatively. Furthermore, it involves the selection of samples which have sufficient size so that the findings could be generalized (Saunderset al., 2003). David and Sutton (2011, P.216) stated that the hypothetico-deductive research process could be summarized as follows:

Figure 3: The hypothetico-deductive research approach
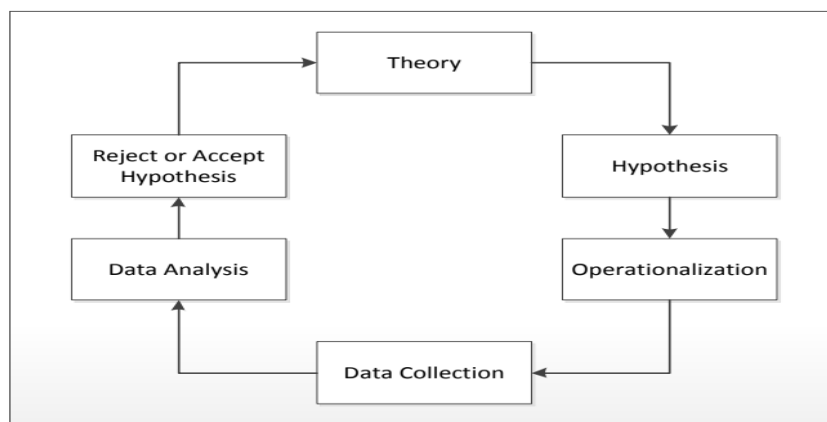
Source: David and Sutton (2011)

Thus, to be able to shape the theoretical foundation of this study, we have adopted a deductive approach where we have investigated previous studies and researches that focused on the same field of interest. The different theoretical constructs, models as well as results from the literature review have been used to help us shape our research model and to form our different hypotheses.

III- Data collection

1- The instrument of data collection:

To obtain the necessary data to test hypotheses, a survey has been conducted, where we collected data through a self-answered questionnaire. The choice of this approach was motivated by different reasons. First of all, the majority of prior studies within the field of digital banking and that focused on customer satisfaction and loyalty used the same approach. Thus, it helps us to compare our results with previous findings. Furthermore, it enables us to reach out a significant number of respondents and to customize our sample as we needed respondents who are ATB customers using digital banking services. Another advantage of

using questionnaires is that it allows obtaining descriptive statistics that could be analyzed statistically (Saunders et al. 2012). A qualitative design using semi-structured interviews could also yield similar results but, due to the fact that answers are not standardized, the interpretability and generalizability would be much harder to achieve and it would be more difficult to reach out to a large group of respondents. Another advantage of the questionnaire is the reduced bias which may be caused during interactions between the researchers and the respondents. In fact, with a questionnaire, interactions are not usually necessary; hence answers are not affected by what the presence of the researcher.

2- Sample selection:

We decided to adopt a non-probability sampling technique and more specifically the convenience sampling for reasons of accessibility and cost. It is a non-probabilistic sampling technique which means that we used available and easily accessible respondents.

Sample size is also important. The issue of sample size has been addressed by many researchers. According to Hair et al. (2010), it is recommended to have a sample of more than 50 respondents to be able to apply factor analysis. Moreover, according to Weisberg and Bowen (1977), if the researcher wants sampling error to be 10% or less, the number of respondents should be at least 100 which was confirmed by other studies. Our sample consists of 135 respondents. We conducted a questionnaire during six weeks from October, 31 to December,9. The questionnaire was distributed in the six branches of ATB and a part was conducted online (Google forms). The target population of this study is ATB customers and more precisely, customers using digital banking services.

IV- Data Handling and analysis

Obtained data is analyzed by SPSS 23 to generate descriptive statistics, Exploratory Factor Analysis (EFA) and then SmartPLs.4 is used to generate the results of Confirmatory Factor Analysis (CFA) and Partial Least Squares-Structural Equation Modeling (PLS-SEM): Firstly, an exploratory factor analysis (EFA) using Principal Component Analysis (PCA) and a reliability test are conducted followed then by confirmatory factor analysis through testing convergent and discriminant validity and followed by a structural equation modeling to test the research hypotheses.

1- Exploratory Factor Analysis (EFA)

The EFA aims to reduce the initial items into sets of factors (variables) that suit the research model. It is a dimension reduction technique. We used Principal Component

Analysis (PCA). The chosen rotation was Varimax rotation following the majority of papers in our field of interest. PCA is one of the most used methods of factorial analysis for multidimensional data in marketing. It is a powerful tool for compressing and synthesizing in presence of a large amount of quantitative data to process and interpret. PCA analyzes the relationships between the variables and synthesize them forming a reduced number of new variables called components or factors (or principal axes) which are a linear combination of the initial variables. It summarizes the statistical units by forming homogeneous groups. Thus, this analysis, attempts to extract the dimensions that contain the largest portion of the total variance of each variable (Delobbe, 2017). But before PCA, it is crucial to check the adequacy of the sample using some tests and by investigating the correlation between the factors.

1.1. Sample adequacy:

a- Bartlett's Sphericity Test: This Test is based on the chi-squared statistic. A calculated value of chi-squared greater than the critical value or a significance lower than the critical value lead to the validation of the method. The value of this test must be less than the 5% critical value.

b - KMO Test: This Test indicates if the set of variables selected is a coherent set or not. If the KMO index is close to 1, then PCA technique is adequate or validated. A KMO below 0.5 indicates that PCA is not recommended.

1.2. Reliability

Also referred to as internal consistency, it is the ability of items within a questionnaire to reflect the underlying construct that it intends to measure (Field, 2005). To ensure scale reliability, Cronbach's alpha (or the Composite Reliability index) should exceed 0.70 (Field, 2005).

1.3. Extraction of factors

Once tests are validated and PCA is authorized, we detect the number of factors to extract. According to Ho (2006), two criteria should be investigated namely: the criterion of the eigen values which must be greater than 1.In other words, according to the eigen value criterion, we retain only those axes that have an eigenvalue Λ which is greater than or equal to 1. The second criterion is the percentage of the variance (the number of factors reaching 60% or more). It is worth mentioning that minimum value criteria to delete items are factor loadings below (0.50) (Karatepe et al., 2005), or communalities below (0.30) (Garg et al., 2014).

2- Partial Least Squares- Structural Equation Modeling (PLS-SEM):

The proposed model was tested by partial least squares (PLS-SEM) which is a structural equation modeling technique. PLS-SEM simultaneously assesses the reliability and validity of the measures and estimates the relationships between the different variables. Therefore, it allows researchers to assess the measurement model parameters as well as the structural path coefficients. Structural equation modeling allows researchers to identify different causal links between variables, including moderators and mediators. It could test the existence of causal relationships between several latent variables simultaneously[30].

The main advantage of PLS is that it has minimal restrictions on sample size and distributions (Chin et al., 2003). It does not assume normal distribution. It could be also used when there is little theoretical knowledge on the research subject or when its issues have not been examined in prior research. Moreover, it could be used also when the theoretical structure is complex. PLS-SEM is also more relevant to our study as the proposed model has many constructs and indicators and a relatively smaller sample size (Hair et al., 2011).

PLS-SEM approach was employed to validate the research model. It was used to estimate structural paths coefficients as well as R^2, Q^2. It enables to explain the variance of the constructs in the model (Chin, 1998). PLS-SEM estimates all path coefficients simultaneously as well as individual item loadings for a specified model. The PLS-SEM model should be analyzed in two stages. First of all, the convergent and discriminant validity are evaluated to test the adequacy of the measures through Confirmatory Factor Analysis. Then, the structural model is examined to verify the model fit and to test the hypotheses.

2.1. Confirmatory factor analysis:

Convergent and discriminant validity of the scales should be tested.[31]

   a- **Convergent validity:** The measurement model shows how items are related to their constructs or latent variable. Convergent validity indicates whether items can reflect their corresponding factors effectively. In a confirmatory factor analysis, convergent validity is proved when:
- A measurement loads highly (> 0.60) and significantly (p-value<0.05) on its assigned construct (Bagozzi & Yi, 1988).

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[30]A latent variable is not observable and cannot be measured directly.
[31]It is worth noting that Content validity is established from the existing literature. In fact, our measures were constructed by adopting constructs that are already validated by other researchers.

- Average extracted variance (AVE)[32] exceeds the recommended level of 0.50 (Fornell & Larcker, 1981).
- The Composite reliability index (CR) for each construct exceeds 0.7 (Bagozzi and Yi, 1988).
    b- **Discriminant validity** It refers to testing if the constructs in a model are unrelated to one another. In other word, it measures whether two factors are statistically different from each other. Discriminant validity is proved when:
- The square root of the average variance extracted (AVE) of each construct is greater than its correlations with the other constructs (Gefen & Straub, 2005).
- Items load more strongly on their assigned construct than on the other constructs

2.2. Structural model evaluation

A bootstrapping procedure is used and it generates t-statistics and standard errors (Chin, 1998). First of all, we start by verifying the model fit then we test the different hypotheses.
    a- **Model fit**

-Coefficient of determination R²: It represents the percentage of variation in the dependent variable that could be explained by independent variables. The explanatory power of the model is evaluated by R2² for the dependent variables. Hair et al. (2014) indicate that an appropriate value should be equal to or exceed to 0,1.

-Stone–Geisser test or Q²: The estimate provided by the Stone–Geisser test or Q2 is used to analyze the predictive capacity of the dependent constructs and endogenous variables. The larger Q² is, the more relevant the predictive model is.

-**Standardized root mean square residual (SRMR)** (Henseler, Ringle, and Sarstedt 2015): It enables to obtain the contrast of the difference between the observed correlation and predicted one (a model adjustment measure). A value below .08 is usually acceptable.

b- Hypotheses testing

Path coefficients are used to examine the possible causal relationships between variables in the structural equation modeling approach. To be able to support hypothesis, p-value should be below 0.01 or 0.05 indicating that there is a significant relationship between the variables. If T-statistic is greater than 1,96 or p-value is below 0,05, we could confirm that there is a significant relationship between the dependent and the independent variables. Therefore, the hypotheses could be accepted.

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[32]The amount of variance captured by a latent variable relative to the amount caused by measurement error

Section 2: Context of the research

This section will mainly present the context of the research. First of all, we will begin by presenting the Arab Tunisian Bank as well as its different digital banking services (ATB net, ATB messenger, ATB mobile and ATB mobilink). Then, we will present the research problem statement, the research questions as well as the purpose of the research. We will also present the different research hypotheses. Finally, the conceptual model will be introduced as well as the questionnaire structure and the measurement scales of the different variables.

I- Presentation of ATB

The Arab Bank was established in Jerusalem in 1930 to provide services to the Arab world. 83 years later, the bank which started with seven shareholders has become an institution with a great reputation in the Arab world. The Arab Tunisian Bank is a commercial bank which was established on June 30, 1982 through the integration of the Tunis branch of the Arab Bank Plc and the contribution of Tunisian private investors.

ATB mission is to "contribute to the economic and financial development of the country by offering a diversified high-quality service". The main values of the Arab Tunisian Bank are integrity, excellence, innovation and transparency. Since its creation, the bank was operating in a competitive environment. Thus, it has always been following an active strategy which allowed the bank to position itself favorably in a changing environment.

II- Digital Banking in ATB

ATB offers a wide range of Digital Banking (DB) services to its customers

> **ATB net**: allows customers to check the details of their accounts as well as the history of the different operations, check card authorizations; issue transfers to other banks in Tunisia and abroad; download account statements, communicate with the bank via a secure mail, consult the exchange rates and use a currency converter.

> **ATB mobile:** allows customers to carry out many free and real time banking operations from a mobile device. It is very similar to ATB net. It allows checking accounts, cards issuing transfers to banks in Tunisia and abroad; consulting exchange rates as well as using a currency converter. It allows the simulation of loans, sending and receiving secure mail, knowing the nearest ATB Branch or ATM.

- ➤ **ATB messenger:** enables the customer to have a multitude of information about the account by a simple SMS: withdrawal, payment, card operations, account balance, exchange rates ...

- • **ATB messenger express:** allows the customer to receive SMS for many operations including card payment and ATM withdrawal, cancellations of ATM and card payment, issued and received money transfers, cheque rejection …

- • **ATB messenger Week-end**: Every Sunday, at a fixed time, the customer receives by SMS the 5 latest transactions conducted on the account, the account balance as well as the exchange rates of the main currencies

- ➤ **ATB mobilink:** allows recharging or paying telephone services from a mobile phone for the customer himself, his family and friends by debiting the ATB account.

- ➤ **ATB pay:** is an efficient, fast and secure mobile payment solution recently launched by ATB. It allows users to pay via QR code, to transfer money, pay bills for some services, consult recent banking operations, and withdraw money via ATM without using a card. However, this service being recently marketed, it was not used by the ATB customers yet. Therefore, respondents were not asked about this very new service during our survey

III- Research problem, purpose of the research and research questions

1- Research problem statement:

The use of digital banking services has increased drastically over the last few years. ATB provides several digital banking services mainly due to its cost saving potential, rapid information transmission and to be able to get a competitive advantage.

Considering the increasing number of users of DB services, it is important to identify what will enable the bank to outperform its competitors. Therefore, it is essential to satisfy customers and retain them. Loyalty among DB services users has become an issue as banks offer competing services. This is of great concern for the bank as customer loyalty affects long-term profitability (Ribbink et al., 2004) and enables it to gain a competitive advantage. It is crucial for its survival and continuity in the new era of DB. As the number of DB services users increases, the focus shifted from enticing customers to use DB to how to keep them satisfied and loyal. Customer satisfaction and loyalty are both affected by many factors in this new DB context. Those factors are different across different banks, countries and individuals. Some users are impacted by the usability of DB services. Others are concerned

with the different risks related to technology when using DB, while another category may be impacted by the value that the service offers. Thus, it is so important to understand the different factors (including ease of use, functional quality, perceived value, perceived risk, problem solving, reputation, trust) which have an impact on customer satisfaction and loyalty towards DB in ATB to be able to implement the right strategy to satisfy customers and retain them thereby fostering loyalty and promoting a positive word-of-mouth.

2- Purpose of the research

The purpose of this study is to investigate the different factors that have an impact on customer satisfaction and loyalty in the digital banking era for the ATB. In other words, it aims to determine the antecedents of customer satisfaction and loyalty towards using DB services of ATB. This will enable managers to draw efficient strategies according to the dimensions that affect satisfaction and loyalty towards DB services.

3- Research questions

To further investigate this area of research, we proposed the following research questions:

- What are the major factors[33] that directly affect customer satisfaction in the DB era?
- What are the major factors[34] that directly affect customer Loyalty in the DB era?
- What is the relationship between customer satisfaction and loyalty in the DB era?

IV-   Research model and hypotheses

After examining the literature related to customer satisfaction and loyalty and more precisely in a digital banking context, we will test the following hypotheses:

H1: **Ease of use** has a direct impact on customer satisfaction
H2: **Ease of use** has a direct impact on customer loyalty
H3: **Functional quality** has a direct impact on customer satisfaction
H4: **Functional quality** has a direct impact on customer loyalty
H5: **Perceived value** has a direct impact on customer satisfaction
H6: **Perceived value** has a direct impact on customer loyalty
H7: **Perceived risk** (in terms of security and privacy) has a direct impact on customer satisfaction
H8: **Perceived risk** (in terms of security and privacy) has a direct impact on customer loyalty
H9: **Problem solving** has a direct impact on customer satisfaction
H10: **Problem solving** has a direct impact on customer loyalty

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[33]Among Ease of use, functional quality, perceived value, perceived risk, problem solving, reputation and trust
[34]Among Ease of use, functional quality, perceived value, perceived risk, problem solving, reputation and trust

H11: **Reputation** has a direct impact on customer satisfaction
H12: **Reputation** has a direct impact on customer loyalty
H13: **Trust** has a direct impact on customer satisfaction
H14: **Trust** has a direct impact on customer loyalty
H15: **Satisfaction** has a direct impact on customer loyalty

Figure 4: Research model
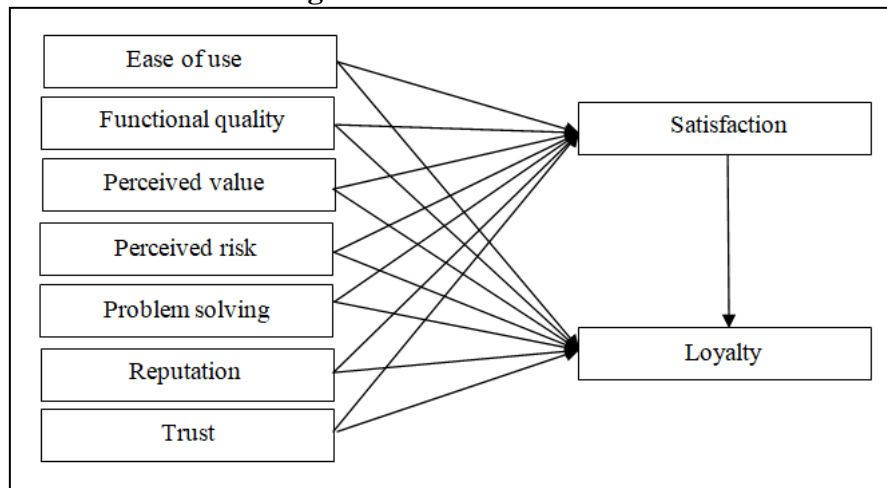
V-   Questionnaire structure and Measurement scales

1- Questionnaire structure

The questionnaire is based on the literature. It consists of three sections.

- The first section includes questions related to the customer's relationship with the bank such as "Do you have an account in another bank" or "For how long have you been a customer of ATB" as well as questions related to DB services including how often does customers use the services, the services used, the transactions/operations conducted with those DB services.

- The second section includes questions related to the different factors that may have an impact on customer satisfaction and loyalty. For each variable, the respondent had to answer and give his opinion on a five-point Likert scale (where 1= strongly disagree;2=Disagree;3=Neutral;4=Agree;5=Strongly agree).

- The third section is related to personal information and demographic data such as age, gender, education.

It is worth mentioning that the questions and items were translated to French to make sure that the majority of respondents understand it well. Ethical considerations were also taken into

account by informing the respondents that their information would be kept private. (See **Appendix1** for questionnaire).

2- Measurement scales

The different variables used in our research were adopted from prior studies in the same field. The questions used to measure the different constructs were adopted from literature to make sure it verifies content validity. A few reformulations were done to adapt the items to the context of DB in ATB. Measurement scales are presented in **Table 2.**

Conclusion

The main purpose of this third chapter was to present, in the first section, the research methodology and the steps followed from exploratory factor analysis, to confirmatory factor analysis to PLS-SEM to test our hypotheses. In the second section, we presented the context of the research as well as the hypotheses formulated previously and the measurement scales of all the variables, namely: "Ease of use ", "Functional Quality", "Perceived value", "Perceived risk", "Problem Solving", "Reputation", "Trust" , "Satisfaction" and "Loyalty" .

Table 2: Measurement scales

Construct	Items	Adapted from
Ease of Use (EU)	**EU1:** The digital banking services are easy to understand **EU2:** The digital banking services are simple to use, even when using them for the first time **EU3:** It is easy to find information I need using digital banking services **EU4:** Learning how to use digital banking is easy for me	Thakur (2014) Alalwan et al. (2016)
Functional Quality (FQ)	**FQ1:** You can easily login/logout on the bank's website **FQ2:** The links are problem free and pages download quickly **FQ3:** The functioning of services is proper **FQ4:** The services possess up-to-date and error free information	Garg et al (2014)
Perceived Value (PV)	**PV1:** Digital banking is a cheap/cheaper way to conduct banking (In terms of money, time and effort) **PV2:** The charges that the bank collect are acceptable and reasonable when compared with other banks **PV3:** Digital banking services are value for money/cost	Rahi and Ghani (2016) ; Poon (2010) ;Fragata et al. (2021)
Perceived Risk (PR)	**PR1:** I think that my privacy is protected using digital banking services **PR2:** I think the transactions carried out in digital banking services are secure (From cyberattacks for example) **PR3:** I am not worried about the security of a digital banking services	Featherman and Pavlou (2003) Pikkarainen et al. (2004)
Problem Solving (PROB)	**PROB1**: My bank replies to my questions/inquires when I have a problem with digital banking services **PROB2:** My bank provides feedback promptly on problems/questions	Yoon (2010)
Reputation (REP)	**REP1:** The bank has a good reputation when it comes to digital banking services **REP2:** The bank's digital services have a good reputation when compared to other banks	Windasari (2021)
Trust (TR)	**TR1:** I believe the digital services of my bank are trustworthy **TR2:** I believe my bank is competent in the field of Digital Banking **TR3:** I can rely on my bank for good digital banking services	Gu(2009) Bhattacherjee (2002) Mbama C. and Ezepue.P (2018)
Satisfaction (SAT)	**SAT1:** The experience that I have had with the digital banking services has been satisfactory **SAT2:** The services confirmed to my expectations **SAT3:** I think I made the right decision to use the bank's digital services **SAT4:** In general, I am satisfied with the service I have received from the website	Bapat (2017) Casalo et al. (2008)
Loyalty (LOY)	**LOY1:** I seldom consider changing my bank when I need to make a transaction through digital services **LOY2:** I consider my bank as my first choice for future financial transactions **LOY3:** I intend to continue using the services of my bank **LOY4**: I would like to say positive things about my bank's digital banking services to other people **LOY5:** I would recommend my bank's digital banking to someone who seeks advice	Zeithaml (1996) Rashwan et al (2020)

Source: By authors

CHAPTER FOUR:
RESULTS AND
RECOMMENDATIONS

CHAPTER FOUR: RESULTS AND RECOMMENDATIONS

Introduction

New technologies in the banking sector have led to a huge change in customer behavior and in his expectations as well as the relationship between the bank and its customers. It is crucial therefore to investigate how digital banking affects customer satisfaction and loyalty in the digital banking era.

Our research methodology was based on a quantitative survey conducted through a questionnaire. We collected responses from 135 customers who use the ATB digital banking services. The answers were subject to an exploratory and then confirmatory analysis. First, we checked the adequacy of the sample and we conducted a Principal Component Analysis (PCA) with the SPSS software and then we used PLS-SEM to verify the model fit and to test the different research hypotheses.

This chapter will present in a first section the results. Then, in the second section, we will present the different recommendations and implications of our study, its contributions as well as its limits and finally we will give some suggestions for future research.

Section 1: Results

This first section will be devoted to the description of the sample studied. We will begin by a description of respondents' profiles, the distribution of their answers to each question. Then we will do an EFA and CFA to validate our measurement model. Finally, we will verify the model fit and test the hypotheses using PLS-SEM carried out on SmartPLS software.

I- Sample description and pilot test

1- Sample description

To test our research hypotheses, we conducted a survey with the customers of our bank. We used two methods for data collection: the face-to-face survey and the online survey. We surveyed customers of ATB who used DB services. Data collection took place during six weeks from October 31 to December 9. The questionnaire was distributed in different branches of the ATB and mainly in six branches including: The main central Branch, El Mechtel, Mutu-International, El Menzah, Montplaisir, El Manar and a part was conducted online (Google forms). The target population of this study is ATB customers and more precisely, customers who use digital banking services. The sample size is 135 respondents who answered the questionnaire **(Appendix 1).**

2- Pilot test

A pilot test was conducted with a small number of respondents to improve the framing of the questionnaire items and reformulate them to make sure all questions and items are well understood by different respondents and to minimize misinterpretations. Some items have been adjusted based on the results of the pilot test.

II- Descriptive Statistics

Table 3 shows the profile of the respondents and presents different frequencies and percentages of different demographic variables.

> **Profile of the respondents**

Table 3: Profile of the respondents

Demographics		Frequency	Percentage
Gender	Male	80	59,30%
	Female	55	40,70%
Age	18-25	17	12,60%
	26-35	35	25,90%
	36-45	33	24,40%
	46-55	28	20,70%
	>55	22	16,30%
Level of education	Primary	2	1,48%
	Secondary	24	17,70%
	University degree	109	80.74%
Occupation	Student	12	8,90%
	Public sector employee	26	19,30%
	Private sector employee	53	39,30%
	Self-employed	25	18,50%
	Retailer/merchant	2	1,50%
	Retired	9	6,70%
	Other	8	5,90%
Monthly Income	Less than 1000	23	17,00%
	Between 1000 and 2000	40	29,60%
	Between 2000 and 3000	29	21,50%
	Between 3000 and 4000	20	14,80%
	More than 4000	23	17,00%
Region	Tunis	65	48,10%
	Ariana	30	22,20%
	Ben Arous	19	14,10%
	Sousse	8	5,90%
	Manouba	5	3,70%
	Sfax	3	2,20%
	Bizerte	1	0,70%
	Nabeul	1	0,70%
	Beja	1	0,70%
	Others	2	1,50%

Source: Authors, from SPSS output

The results show that:

-About 59,3% of respondents are men and 40.7% are women.

-Young customers under the age of 35 represent 38,5% of respondents with 12,6% are under 25 years old and 25,9% between 26 and 35. Thus, the youth represent a considerable number of respondents who use DB services followed by 24,4% of customers who are between 36-45 and 20,7% between 46-55. Lastly, the customers who are above 55 years old represent only 16,3% of the total surveyed customers. Therefore, we can clearly see that the rate of adoption of DB services decreases with age.

-About 80,74% of our respondents have gone to university / or have university degree while 17,77 % have gone to high school or have a high school degree. Only 1,48 % did not pursue their education. Education may therefore have an impact on DB adoption.

-The majority of customers surveyed work either for the public (19,3%) or private sector (39,3%). There is also a considerable percentage of respondents who are self-employed followed by students.

-The respondents with an income between 1000 DT and 3000DT represent the majority of our respondents (51,1 %).

-As our survey took place mainly in branches in Tunis, the majority of our respondents are either from Tunis (48,1%), Ariana (22,2%), Ben Arous (14,1%).

> **Having an account in another bank**

Figure 5: Frequency and percentage of customers who have an account in another bank
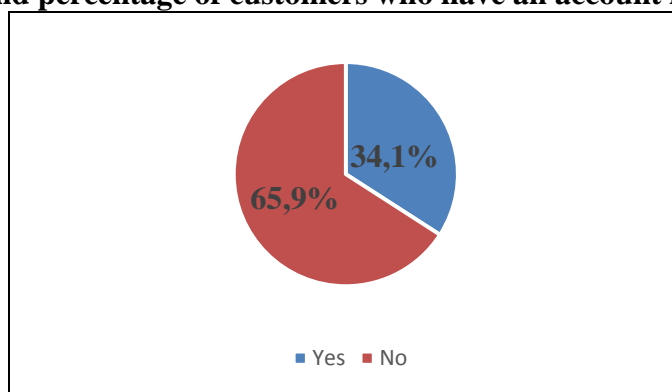
Source: Authors, from SPSS output

The majority of the surveyed customers have only an account in ATB. Meanwhile, around 34% of the customers have at least another account in another bank. Therefore, it is crucial to retain those customers and to enhance their loyalty as they may switch completely to the other bank.

> **Relationship with the bank**

The majority of surveyed customers are long-time clients of ATB for more than five years (56,3%),followed by those who have been customers for 3 to 5 years (23,7%). The majority has been using the bank's services and products for few years. Meanwhile, only 7,4% are new customers for less than one year. It is important to take this into account to be able to implement the right strategy and to adapt offers to each segment of clients according to the number of years that the customer has been a customer of the bank.

Figure 6: Length of the relationship with ATB

Legend:
- Less than one year
- Between 2 and 3 years
- Between 3 and 5 years
- More than 5 years

(Pie chart values: 7%, 13%, 24%, 56%)
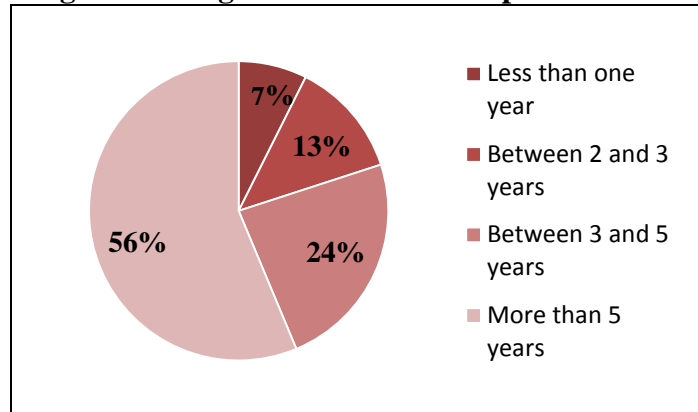
➤ **Frequency of use of BD services:**

The majority of our bank account holders (81,5%) frequently use DB services (either every day, 2 to 3 times a week or once a weak). Only about 5% of customers use it rarely.

Figure 7: Frequency of use of DB

Legend:
- Everyday
- 2 to 3 times a week
- Once a week
- Once a month
- Rarely

(Pie chart values: 5%, 14%, 23%, 30%, 28%)
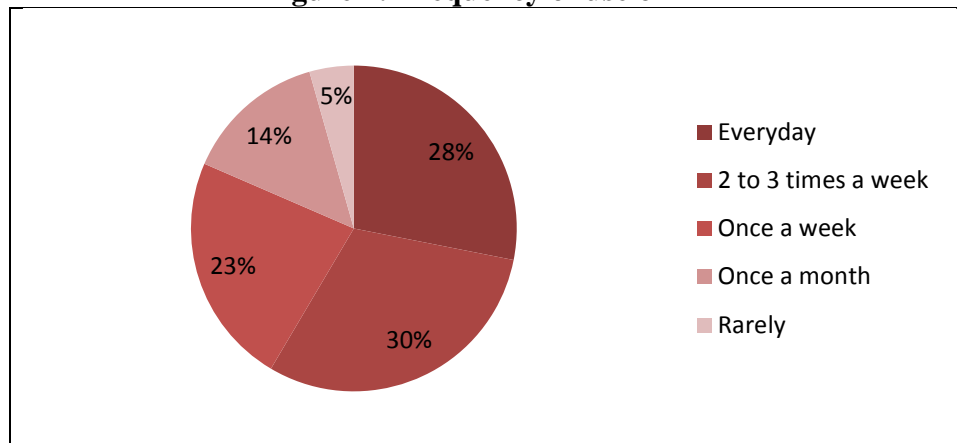
➤ **The DB service used by customers**

Our results indicated that the most used DB service is ATB net (85,9%) , followed by ATB mobile (43,7%) and then ATB messenger (39,9%) and finally ATB Mobilink (3%).

Figure 8 shows the percentage of customers that use each DB service. Many respondents use multiple services.

Figure 8: Digital Banking services used by customers

ATB Mobilink	3%
ATB Messenger	39,30%
ATB mobile	43,70%
ATB net	85,90%

(axis: 0% 20% 40% 60% 80% 100%)
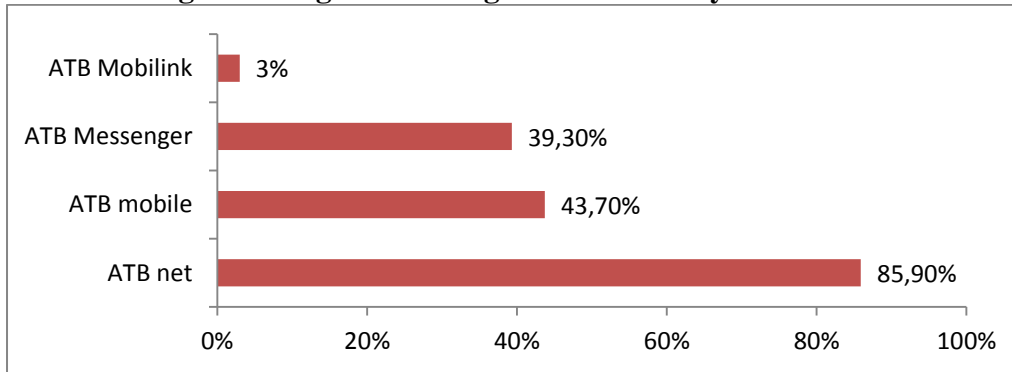
➢ **Use of DB services**

The majority of our customers use DB services to check their account (97,8%) or to transfer funds (29,6%) as shown in **Figure 9**. This helps banks to know what to focus on and which value-added services customers want.

Figure 9: Use of DB services

Simulation	7,40%
Others	8,90%
Order a checkbook	14,80%
Download account statement	21,50%
Transfer funds from an account to another	29,60%
Checking account	97,80%

(axis: 0% 20% 40% 60% 80% 100% 120%)
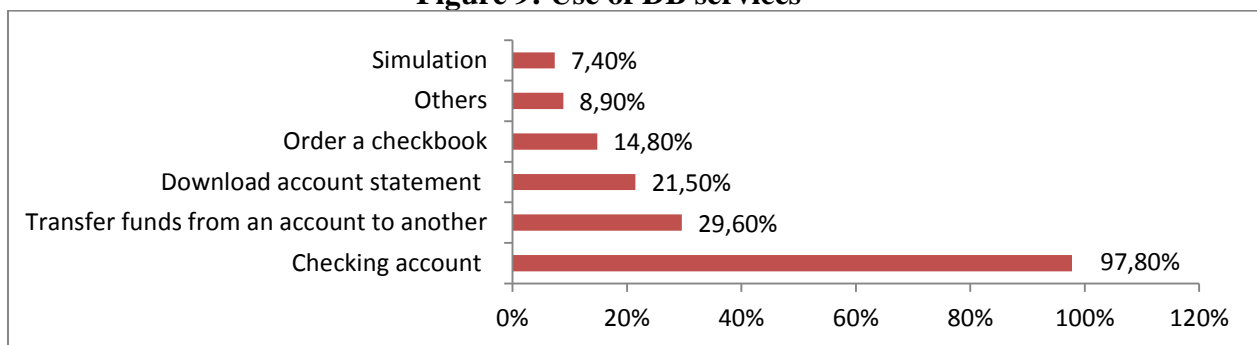
III- Overview of the distribution of answers

Examining how customers answered every item on a Likert-scale could give us a general idea about the perceptions of customers. It allows us to better see the number and/or the percentage of respondents who gave a particular answer (Strongly disagree; Disagree; Neutral; Agree and Strongly Agree) for each selected item in each construct. It gives an overview of the data collected.

➤ **Ease of use**

Table 4: Distribution of answers for the variable "Ease of use"

	The DB services are easy to understand (%)	The DB services are simple to use even when using them for the first time (%)	It is easy to find information I need using DB services (%)	Learning how to use DB services is easy for me(%)
Strongly disagree	0,7	3,0	1,5	1,5
Disagree	6,7	10,4	8,1	6,7
Neutral	8,9	11,1	11,9	15,6
Agree	51,9	48,9	48,9	47,4
Strongly agree	31,9	26,7	29,6	28,9
Total	100,0	100,0	100,0	100,0

Source: By authors, from SPSS output

By examining the results presented in the Table above, we can clearly see that the DB services are easy to understand for the majority of customers as 51,9% agree and 31,9% strongly agree on the fact that ATB's services are easy to understand. Furthermore, more than 70% think that it is easy to use even when trying the services for the first time. Additionally, the majority agrees that it is easy to find the information that they need when they use the DB services of ATB. Around 76% of customers agree or strongly agree that learning how to use DB services is easy. For the items of the variable "Ease of use", the number of customers who strongly disagree or disagree with the fact that DB services are easy to understand, simple to use for the first time, easy to find information or easy to learn did not exceed 10,4% of the total respondents.

➤ **Functional quality**

Table 5: Distribution of answers for the variable "Functional Quality"

	You can easily login/logout on the bank's website %	The links are problem free, accurate and pages download quickly %	The functioning of services is proper%	The services possess up-to-date and error free information%
Strongly disagree	3,7	0,7	1,5	1,5
Disagree	20,7	19,3	17,0	7,4
Neutral	11,1	15,6	11,9	5,9
Agree	45,2	46,3	48,9	45,9
Strongly agree	19,3	18,1	20,7	39,3
Total	100,0	100,0	100,0	100,0

Source: By authors, from SPSS output

For the variable "Functional Quality", approximately 64% of the customers think that it is easy to login/logout on the bank's web site without any problem and agree or strongly agree that the links are problem free, accurate and that pages download quickly. While customers who remained neutral represent between 11,1% and 15,6% for the first two items respectively. For the third item which states that, the functioning of the service is proper, more than 68% of customers either agreed or strongly agreed. Similarly, 85,2% of customers find that the services possess up-to-date and error free information. Meanwhile, only 1.5% strongly disagrees.

However, for the first three items more than 17% disagrees on the statements provided to examine functional quality. This could be explained by the fact that some people are finding some problems to login. It could be due to some technical problems. Moreover, some problems occur when a customer tries to login while his account is already open in another service (For example, when they try to login using the application and the website at the same time). In fact, to ensure security, the user is automatically logged-off if his account is open in two different pages or applications at the same time or if the user enters the website without doing anything for a couple of minutes. Therefore, some customers may have reported it as a problem in the functionality of the DB service.

➢ **Perceived value**

Table 6: Distribution of answers for the variable "Perceived Value"

	DB is a cheap/cheaper way to conduct banking in terms of money, time and effort %	The charges that the bank collect are acceptable and reasonable when compared with other banks %	DB services are value for money/for cost (time, effort) %
Strongly disagree	2,2	0,7	0,7
Disagree	5,9	7,4	7,4
Neutral	19,3	34,8	27,4
Agree	39,3	33,3	32,6
Strongly agree	33,3	23,7	31,9
Total	100,0	100,0	100,0

Source: By authors, from SPSS output

We can clearly see that almost 72,6% either agreed or strongly agreed that DB is a cheaper way to conduct banking in terms of money, time and effort. Moreover, 57% think that the charges that the bank perceives are acceptable and reasonable when compared to other banks. It is worth mentioning that DB services are for free for ATB except ATB messenger on which the bank perceives around 2DT. But apparently, not all customers know that as 34.8% remained neutral. Therefore, it is important to inform customers that the charges are very low

for ATB messenger and that the bank does not charge them for other services which will encourage them to adopt DB services. Finally, for the third item more than 60% agreed/strongly agreed that DB are value for money/cost or that there is a good cost benefit ratio. Thus, the majority of customers believe that the benefits from using DB services are greater /overcome their costs.

➤ **Perceived Risk: Security and privacy**

Table 7: Distribution of answers for the variable "Perceived Risk

	I think that my privacy is protected using DB services %	I think the transactions carried out in DB services are secure %	I am not worried about the security of an DB services%
Strongly disagree	0,7	0	0,7
Disagree	3,7	9,6	12,6
Neutral	8,1	5,2	12,6
Agree	40,7	45,2	36,3
Strongly agree	46,7	40,0	37,8
Total	100,0	100,0	100,0

Source: By authors, from SPSS output

Table 7 shows that 87,4% of the surveyed customers think that their privacy is protected using DB while only 4.4% disagree with the fact that ATB DB services protect their private information. Moreover, 85% agreed that the transactions carried out in DB services are secure. Similarly, 74.1% are not worried about using the DB services of ATB. Thus, the results proved that customers believe that the DB services of our bank protect their privacy and ensure that transactions are secure. In fact, ATB has always tried to offer its customers a high-quality service while ensuring the security and the privacy of data. It has implemented an information security management system for both services (Internet and Mobile Banking) and is certified according to the international standard ISO/IEC 27001. This certification proves that ATB meets the requirements and guarantees a high level of security and protects its customers' data. However, some customers still disagree. This could be explained by the fact that they lack proper knowledge and information. Therefore, it is crucial that the bank informs its customers about the measures taken regarding matters of security and privacy.

- ➢ **Problem solving (Complaint handling)**

Tableau 8:Distribution of answers for the variable "Problem solving"

	My bank replies to my questions and complaints when I have a problem with DB services %	My bank provides feedback promptly on problems/questions %
Strongly disagree	4,4	6,7
Disagree	8,1	13,3
Neutral	46,7	43,2
Agree	28,9	25,7
Strongly agree	11,9	11,1
Total	100,0	100,0

Source: By authors, from SPSS output

Table 8 shows that the majority of customers are neutral when it comes to the items of the variable "Problem solving". In fact, 46,7% are neutral for the first item related to problem solving while 43,2% are neutral for the item related to the rapidity of handling the complaint or the problem by the bank. This could be explained by the fact that those customers did not face a problem where they had to turn to the bank to solve it or to complain. Moreover, the percentage of customers that agreed or strongly agreed on the fact that the bank replies to questions and complaints in case of a problem with DB services and provides feedback promptly is far greater than the percentage of customers who disagree. This reflects that the ATB generally responds to questions, problems and complaints related to DB and tries to solve them quickly and gives feedback rapidly.

- ➢ **Reputation**

Table 9: Distribution of answers for the variable "Reputation"

	The bank has a good reputation when it comes to DB services	The bank's DB has a good reputation when compared to other banks 'services
Strongly disagree	,7	,5
Disagree	7,4	12,8
Neutral	31,9	43,7
Agree	46,7	29,6
Strongly agree	13,3	13,3
Total	100,0	100,0

Source: By authors, from SPSS output

The majority of customers either agree (46,7%) or strongly agree (13,3%) that ATB has a good reputation when it comes to DB services. Moreover, when compared to others, 42,9% either agree or strongly agree that the bank's DB have a good image. Meanwhile, there are many customers who choose to remain neutral.

➤ **Trust**

Table 10: Distribution of answers for the variable "Trust"

	I believe the digital services of my bank are trustworthy	I believe my bank is competent in the field of DB	I can always count on my bank for good digital services
Strongly disagree	,0	1,5	,0
Disagree	6,7	15,6	9,6
Neutral	13,3	25,2	31,1
Agree	57,0	47,4	40,7
Strongly agree	23,0	10,4	18,5
Total	100,0	100,0	100,0

Source: By authors, from SPSS output

The majority of customers (80%) find that DB services are trustworthy. Additionally, 57.8% think that the bank in competent in the field of DB. However, 25,2% remained neutral. The bank should therefore enhance its relationship with the customer to improve its perception about its competence. The bank should enhance customers' trust in the abilities and the competence of the bank when it comes to DB. In the same vein, 59.2% of customers think that they could rely on the bank for its good services. However, 31,1% remained neutral. The bank should therefore improve its relationship with customers to gain their trust. **Table 10** clearly shows that the percentage of customers who disagree or strongly disagree on items of the variable "Trust" is low which is an advantage for the bank.

➤ **Satisfaction**

Table 11: Distribution of answers for the variable "Satisfaction"

	The experience that I have had with the DB has been satisfactory	The services confirmed to my expectations	I think I made the right the decision to use the bank's digital services	In general, I am satisfied with the digital service of my bank
Strongly disagree	0,7	1,5	0,0	0,0
Disagree	5,9	17,8	4,4	7,4
Neutral	11,9	24,4	21,5	7,4
Agree	58,5	39,3	47,4	61,5
Strongly agree	23,0	17,0	26,7	23,7
Total	100,0	100,0	100,0	100,0

Source: By authors, from SPSS output

Table 11 shows that 81,5% of customers believe that the experience they had with DB has been satisfactory while only 0,7% strongly disagree. In the same vein, 74.1% of customers think that they made the right decision by using the DB services of ATB whereas only 4,4 disagree and 0% strongly disagree which is an advantage for the ATB. Additionally, 85,2%

are overall satisfied with the DB services of ATB. Similarly, the percentage of customers who disagree is very low. Moreover, more than 56% of customers think that the services have met their expectations which is a good indicator but it could be improved as 17,8% and 1.5% disagree or strongly disagree. This could be explained by the fact that there are some services that still need to be improved or some new functionalities that need to be added to meet the expectations of customers which are changing constantly.

➢ **Loyalty**

Table 12: Distribution of answers for the variable "Loyalty"

	I seldom consider changing my bank when I need to make a transaction through digital services	I consider my bank as my first choice for future financial transactions	I intend to continue using the services of my bank	I would like to say positive things about my bank's digital banking services to other people	I will recommend my bank's digital services to other people
Strongly disagree	3,7	3,0	0,7	2,2	2,2
Disagree	12,6	16,3	5,2	5,2	5,9
Neutral	37,0	32,3	5,2	11,9	11,1
Agree	30,4	31,3	48,9	41,5	39,3
Strongly agree	16,3	16,9	40,0	39,3	41,5
Total	100,0	100,0	100,0	100,0	100,0

Source: By authors, from SPSS output

Table 12 shows that a good percentage of customers (46,7%) do not consider switching to another bank for its DB services while 16,3% may be switching. Moreover, 48,2% consider ATB as their first choice when it comes to DB. Many customers intend also to continue using the DB services of our bank (88.9%), would say positive things about it (80,8%) or would recommend it to their friends and family. This indicates that the majority of our customers are loyal to our DB services as they either intend to continue using the service of our bank or recommend it and promote a positive word of mouth.

IV-   Exploratory factor analysis

The validation process started first of all with an initial exploratory analysis of dimensionality and reliability (Churchill, 1979).

1- Sample adequacy

To make sure that our dataset was suited for an exploratory factor analysis (EFA), we conducted two different tests: the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, and Bartlett's test of sphericity. According to Hair et al (2006), a KMO between 0.3 and 0.7 indicates an acceptable factorization criterion but it should preferably be above

0,5. The Bartlett's Sphericity test should show a significance lower than the critical value 0.05 indicating that correlations exists among the variables and therefore factor analysis could be performed (Hair et al., 2010). The results of these two tests show a good adequacy of our sample. The results are presented in **Appendix 2**. The results show that it is possible to adopt Principal Component Analysis (PCA) as all the KMO values are greater or equal to 0.5 and as the Bartlett test statistic is below the critical value.

2- Reliability

We checked reliability by examining Cronbach's alpha. The results proved that the indices are above 0,7 which confirms reliability (internal consistency) (**See Appendix 2-C**).

3- Extraction of Factors

To determine the number of factors to extract, we use the eigenvalue (Kaiser-Guttman) and the percentage of variance.

- When using the first criterion of Eigen-value, the number of axes is equal to the number of eigenvalues greater than 1^{35}. The results showed that there is only one factor to extract according to this criterion for each variable (Unidimensionality of variables, as we found only one value>1 for each variable)

- For the second criterion (the percentage of variance), it is recommended that this percentage should be equal to or greater than 60% (Hair et al, 2010). For all the variables studied, our results showed that the percentage of variance exceeded 60% for all the variables. The results confirm those of the first criterion. Detailed results are provided in **Appendix 2**

Only factors that have eigenvalues greater than1 are extracted. Thus, there is only one factor to be extracted for each variable (For instance, the eigenvalue of the first component of ease of use is 3.139 (λ_1>1). There is only one value >1 representing 78.646 % of the total information). Furthermore, when examining the results of PCA, we can conclude that all factors loadings >0.5 for each variable and communalities were >0.3 for each variable (**See Appendix 2-C**). Thus no item has been removed (Following pikkarainen2006).Each variable is represented by one factor (1axe) according to the criteria of eigen value and the percentage of variance greater than 60%.

Our results showed that from the items used, 9 factors are produced. We extracted 9 factors for the items with a variance greater than 60%.

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[35] We retain only those axes that have eigenvalue λ greater than or equal to 1

V-   Partial Least Square –Structural equation Modeling

Partial Least Square (PLS) was used to analyze data following two-stage analytical procedure, In fact, we began by testing the measurement model to test its validity then we examined the structural model to test the model and the relationships between the variables (Hypotheses testing).

1- Confirmatory factor analysis

Prior to structural modeling, we assessed the measurement model of the latent constructs for validity and reliability through confirmatory factor analysis (CFA).

a- Convergent validity

- Factor loadings for items with their respective constructs are significantly greater than the recommended threshold of 0,7 for all items expect FQ4. However, it is still greater than 0.6. Therefore we do not delete it.[36]

- The average variance extracted (AVE) is greater than 0,5 for all the constructs confirming convergent validity. Hence, each item contributes by explaining more than 50% the variance.

- The Composite Reliability CR index confirms the results of reliability and convergent validity as all the values of CR are greater than 0,7.

Therefore, by examining the loadings of each item on its construct, the AVE as well as the CR, we can conclude that the convergent validity is verified. (**See Appendix 3**)

b- Discriminant validity

-According to the Fornell-Larcker Criterion, we can clearly see that the square root of the AVE of each latent construct is higher than the construct's correlations with any other latent construct. Therefore, the table shows that all the constructs are properly discriminated **(See Appendix 4-A).**

-Cross-loadings: There is no item that has low loading value on their respective construct when compared to other constructs. Thus, all the items have higher value on their respective construct. So, discriminant validity is established. (**See Appendix 4-B**)

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[36] According to Thakur (2014) as it is marginally lower than the 0.70 threshold. It could be retained also because according to Chin (1998), a loading is still considered acceptable when the loadings of other items for the same construct are high. Moreover, the loading was still greater than the cut-off point of 0.4 recommended by some scholars (Hulland, 1999; Straub et al., 2004). In addition, the value of AVE of scales exceeds 0.50 (Fornell and Larcker, 1981).)

We can conclude that all items in this research are used appropriately to measure the variables. We can therefore proceed to the evaluation of the structural model and the relationships between the latent variables in our study.

2- Structural Model Evaluation

Having assessed the model in terms of reliability and validity, SmartPLS is used for structural model evaluation. Our structural model is composed of 7 independent variables namely, Ease of use (EU), Functional quality (FQ), Perceived value (PV), Perceived Risk in terms of Security and privacy (PR), Problem solving (PROB), Reputation (REP) and Trust (TR) and two dependent variables which are satisfaction (SAT) and Loyalty (LOY). Therefore, we first of all check the fit of our structural model and then we test our research hypotheses.

a- Model fit

Coefficient of determination R²: The first step of a PLS model evaluation is to examine the coefficient of determination R^2. Our results proved that R^2 for satisfaction is 0.572 and R^2 for loyalty is 0.651. Literature suggested that R^2 values of 0,75, 0,5 and 0,25 for endogenous variables in structural models can be described as substantial, moderate or weak respectively. Therefore, our results showed that the moderate explanatory power of the model. Hair et al. (2014) indicated that an appropriate value should be equal to or exceed to 0 .1. In our case all the values exceed it. The results showed that R^2 was 57.2% for satisfaction and 65.1% for loyalty. Thus, the model is able to explain 57.2 % of the variance of satisfaction and 65,1% for loyalty.

Stone-Geisser Q²: The results indicated that $Q^2 = 0.501$ for satisfaction and $Q^2 = 0.435$ for loyalty. The Stone-Geisser Q^2 index is greater than 0 for the two endogenous variables in our study, which shows the good predictive quality of the model tested. The larger Q^2 is, the more relevant the predictive model.

Standardized Root Mean Square Residual (SRMR): SRMR= 0.060. It acts as a model adjustment measure. A value below 0.08 is considered acceptable. The value=0.06<0.08 confirms a good model fit.

Having validated the explanatory power and predictive quality of our model, we can test the research hypotheses.[37]

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[37] It is worth mentioning that we verified the VIF measures to examine if there are multicollinearity issues. No issues were detected

b- Hypotheses testing

The hypotheses developed for this research were tested by running a bootstrapping procedure with a resample of 5000, as suggested by Hair et al. (2014). **Appendix 5** presents the research model with different results. The results depicts path coefficient of each construct with its level of significance. The results showed that have significance relationship with their respective endogenous variables. The hypotheses are tested by examining the significance of the relationships between the variables in the study and therefore by analyzing the T-value or p-value. The results of PLS-SEM are as follows:

Table13: Hypotheses testing results

Hypotheses	Beta value[38]	T stat	p value	Supported/Rejected
EU -> SAT	0.168	2.098	0.036	Supported*
EU -> LOY	-0.068	0.977	0.329	Rejected
FQ -> SAT	0.164	2.124	0.034	Supported*
FQ -> LOY	0.054	0.732	0.464	Rejected
PV -> SAT	0.200	2.462	0.014	Supported*
PV -> LOY	-0.018	0.283	0.777	Rejected
PR -> SAT	-0.076	0.949	0.343	Rejected
PR -> LOY	0.137	2.129	0.033	Supported*
PROB -> SAT	0.055	0.891	0.373	Rejected
PROB -> LOY	0.074	1.040	0.298	Rejected
REP -> SAT	0.018	0.230	0.818	Rejected
REP -> LOY	0.031	0.548	0.584	Rejected
TR -> SAT	0.472	5.849	0.000	Supported**
TR -> LOY	0.207	2.445	0.015	Supported*
SAT -> LOY	0.564	6.016	0.000	Supported**

** Significant at 0.01   Source: SmartPLS output
* Significant at 0.05

The results of the hypotheses testing presented in the table above, reveal that the ease of use has a significant direct impact on customer satisfaction (β=0.168; t=2.098; p=0.036<0.05). Functional quality has also a significant direct effect on satisfaction (β=0.164; t=2.124; p=0.034<0.05). Furthermore, perceived value affects significantly and directly customer satisfaction (β=0.200; t=2.462; p=0.014<0.05). Additionally, trust has also a direct influence on satisfaction (β=0.472; t=5.849, p=0.000<0.05). Thus, the hypotheses H1, H3, H5 and H13 are supported.

By examining the different hypotheses which are related to loyalty, we can clearly see that perceived risk in terms of security and privacy have a significant positive direct impact on customer loyalty (β=0.137; t=2.129; p=0.033<0.05). Moreover, trust has also a direct positive

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[38]Standardized regression weights for the research model

impact on loyalty (β=0.207; t= 2.445; p=0.015<0.05). Finally, it's also clear that customer satisfaction affects loyalty significantly and directly (β=0.564; t=6.016; p=0.000<0.05). Hence, hypotheses H8, H14 and H15 are all supported.

However, the other hypotheses were rejected. Hence, perceived risk (security and privacy), problem solving and reputation do not have a significant direct impact on customer satisfaction. Similarly, ease of use, functional quality, perceived value, problem solving and reputation do not have a direct impact on customer loyalty.

The results proved that trust is the most important driver of satisfaction while ease of use, functional quality and perceived value have almost a similar impact. Moreover, it is clear that satisfaction is the major determinant of loyalty followed by trust.

To further investigate the different relationships between the variables, we examined the indirect impact of ease of use, functional quality, perceived value and trust on loyalty through satisfaction. Table 7 shows the results using PLS- SEM:

Tableau 14: Indirect effects

	Beta value	T stat	p value
EU -> SAT -> LOY	0.095	2.098	0.036*
FQ -> SAT -> LOY	0.093	1.986	0.047*
PV -> SAT -> LOY	0.113	2.208	0.027*
PR -> SAT -> LOY	-0.043	0.938	0.348
PROB -> SAT -> LOY	0.031	0.881	0.379
IM -> SAT -> LOY	0.010	0.234	0.815
TR -> SAT -> LOY	0.267	4.278	0.000**

** Significant at 0.01   Source: SmartPLS output
* Significant at 0.05

The results revealed the existence of indirect effect of ease of use (β=0.095; t=2.098, p=0.036<0.05), functional quality (β=0.093; t=1.986, p=0.047<0.05), perceived value (β=0.113; t=2.208, p=0.027<0.05) and trust (β=0.267; t=4.278, p=0.000<0.05) on loyalty through satisfaction despite the fact that there is no direct impact of those variables (ease of use, functional quality and perceived value) on loyalty.

VI- Discussion of the results

The results of the descriptive statistics proved that the majority of surveyed customers who use DB services of ATB are represented by age segments between 26 and 35. Results also proved that the number of adopters of DB users decreased with age. Results also indicated that the majority of our customers have either a high school or a university degree. Digital

banking may differ by customer characteristics therefore marketing strategies should try to satisfy customers needs while targeting specific segments.

The results of the PLS-SEM proved the existence of direct relationships between "Ease of use", "Functional quality", "Perceived Value" and "Trust" on "satisfaction". Moreover, the results showed that these variables have an indirect impact on loyalty through satisfaction. Furthermore, the path analysis results revealed that only "Perceived Risk (security and privacy)", "Trust" and "Satisfaction" have a direct impact on "Loyalty".

➤ **Ease of use**

Results proved that ease of use has a significant direct impact on satisfaction which is consistent with the findings of pikkarainen (2006) and Thakur (2014). Hence, a user-friendly website or application enables customers to have access to DB easily and conveniently and by doing so clients are satisfied. In fact, if customers perceive the DB service to be easy to use, they will be satisfied with technology based-banking as stated by Ganguli and Roy (2011).This could be explained by the fact that ease of use satisfies the customer needs in terms of manageability of the service.

When investigating the direct impact of ease of use on loyalty, the results indicated that there is no direct significant impact. This could be explained by the fact that we tested the direct impact of ease of use on loyalty. Hence, customers may be satisfied with the ease of use but it could be not enough to make them loyal to the DB of the services. Another potential explanation to our findings about ease of use could be that the majority of our respondents are young with either high school or university degree. In fact, according to the main profile characteristics of the surveyed customers, the majority of them are well educated and young. Therefore, they are less likely to have problems regarding the level of the complexity and difficulty of DB services use. They are also active users of digital banking services, where the majority uses the services frequently. Thus, this could have moderated its relative importance of ease of use as this category of customers tend to be more tech savvy and are more likely to have skills and competencies in using technologies. In fact, the more experienced the user is with technology, the less significant perceived ease of use on loyalty will be. This could be also explained by the fact that applications and websites of different banks are seen as similar in terms of ease of use by this category of customers. Therefore, ease of use, despite having an impact on satisfaction, does not have a direct impact on continuing to use the same service or switching to another bank. Furthermore, ease of use may play a more crucial role in the pre-adoption phase rather than a post-adoption phase.

But when investigating the indirect paths, our results proved that ease of use still have a small indirect effect on loyalty through satisfaction. These results are in line with the results found by of Flavian et al. (2006), Casalo´ et al. (2008) and Thakur (2014).

> **Functional quality**

Our results proved that functional quality had a positive direct impact on customer satisfaction and an indirect impact on loyalty which is consistent with the findings of Gu et al., (2009) and Moferrer-Tirado et al (2016) who claimed that functional quality is a major factor that impacts customer satisfaction. In fact, functionality helps banks to satisfy its customers. It is an important factor as it directly influences satisfaction which leads to loyalty. The technical characteristics largely impact customer satisfaction, and thereby his intentions to continue using those services and to recommend them as reported by Delone and McLean (2003), Lee and Chung (2009), and Zhou (2011).

Nowadays, customers can easily find alternative banking websites or applications, thus, it is important to focus on functionality and user interface. The customer is satisfied when he can have access easily and complete a transaction quickly. Customers emphasize on the efficiency of website / application as it is a driver of satisfaction which could lead to loyalty. Customers are also concerned about download speed.They expect to complete their transactions correctly and on time.

> **Perceived value**

Perceived value has been found to have a positive impact on customer satisfaction which is consistent with the result of Karjaluoto et al., (2019) and Poromatiku et al (2019). This implies that the customer usually thinks of the benefits he receives when compared to the sacrifices he makes or the cost he has to pay. The benefits have to be greater than the costs for the customer to be satisfied. However, our results indicated that perceived value does not lead directly to loyalty since no significant direct impact has been found between perceived value and loyalty. This contradicts the results of Poromatikul et al (2019), Khao (2020), Esmaili et al (2020). A further investigation of the indirect effect of perceived value on loyalty through satisfaction, showed that this impact is significant.

Customers' decisions are usually based on value maximization; they tend to choose what reaps the highest payoff. Customers become satisfied when they perceive DB channels as a useful tool in their daily life which offers advantages when compared to the costs in terms of

money, time and effort. Digital banking enables customers to have access to banking services at anytime and anywhere. They prefer not to visit banks during the working day. DB services allow them to execute a service without spending time and effort and for free (As the majority of ATB DB services are free) or with minimal fee (ATB messenger). Hence, when customers perceive that using DB services can offer more benefits in comparison to cost paid or time and effort needed, customer satisfaction levels increase which leads to loyalty. For instance, using DB services like ATB messenger is not free, and the customer should pay a direct cost to use such service. Thus, customers are usually engaged in a trade-off between the cost of using the DB service and the benefits that they get from using it (Having instant messages about every transaction without visiting a branch)

> **Perceived risk**

Our findings proved that perceived risk in terms of security and privacy had no direct impact on satisfaction in line with Arcand(2017) and Poromatiku et al (2019) but which contradicts some previous findings by Yoon (2010) and George and Kumar, (2014). Meanwhile, our findings proved that perceived risk has a significant direct impact on loyalty. This is in line with prior studies (Cheng et al. (2006); Yousafzai et al. (2009), Suroso and Wahjudi (2021); Esmaeili et al. (2021)) that stated that perceived security risk has a direct impact on customer loyalty.

These results could be explained by the fact that there is causality between trust and perceived risk which is more important than its relationship with satisfaction. This could also be explained by the fact that perceived risk has a more important impact on loyalty than satisfaction. A perception of low risk will enhance customer loyalty. Safety of personal and financial data has a huge impact on customers' intention to continue using the service of the same bank and to recommend it to others.

Privacy and security are important issues in a DB context. Despite new technical advancements related to security such as cryptography, authentication, digital signatures and certificates, some customers still have concerns about the security of online transactions. If those concerns are minimized, customers will continue using DB services which results in loyalty. Thus, it is important for the customers not to worry about privacy and security concerns to be loyal to DB services. Moreover, as customers become more accustomed to DB transactions, their concerns over security and privacy would decrease.

➢ **Problem solving or complaint handling**

Our results did not indicate any direct impact of problem solving on both satisfaction and loyalty. It contradicts the results of Ganguli and Roy (2011), Thakur (2014) and Thaker (2017) who proved its significant impact on overall satisfaction. Our results could be due to the fact that not many surveyed customers have turned to the bank to complain or solve a problem. Thus, they did not have a clear opinion or perception about the problem handling in the context of DB for ATB. In fact, many respondents chose to remain neutral when answering the questions related to this variable.

Our findings indicated that there is also no significant impact of problem resolution on loyalty which is in line with the results of Chakiso(2015) but also different from some other studies (Fattollazadeh,2011, Ganguli and Roy, 2014). However, despite the insignificant effect, completely ignoring the questions and problems of customers might result in losing them in the long term.

➢ **Reputation**

In this study, reputation was found to have no significant direct impact neither on satisfaction nor on loyalty which is inconsistent with the results of other authors including Rahi et al.(2017) and Methlie and Nysveen's (1999) who stated that image and reputation are one of the most significant determinants of loyalty. This could be due to the fact that many customers do not have a clear image about the different DB services offered by the bank and its reputation in terms of DB. It could be explained by the fact that customers are still more concerned about the reputation and the image of the bank in terms of offline banking (loans, branch services, engagement with employees) rather than online services.

➢ **Trust**

Our findings proved that trust is an important determinant of satisfaction and loyalty. In fact, there is a significant direct relationship between trust and satisfaction. This is similar to the findings of Lee and Chung (2009); Suariedewi and Suprapti (2019); Natarajaand Pasaribu (2022).Trust has a significant direct impact on customer satisfaction which could be due to the fact that once trust is generated, satisfaction is gained. When costumers feel that the technology could be trusted, they will evaluate DB in a favorable way and become thereby satisfied.

Our findings indicated also that trust has a direct impact on loyalty in line with previous studies which stated that trust leads to customer loyalty (Ribbink,2004; Ghane et al 2011;

Fathollahzadeh et al. 2011; Thaker 2017; Esmaeili et al,2021). Thus, if the customer has trust in the DB service provider, he will be less likely to switch to another one. It could be due to the fact that trust mitigates uncertainties. Therefore, the customer would prefer to stay with his bank that he trusts and he perceives as competent and reliable and able to fulfill its promises rather than switch to another one which he is uncertain about.

Furthermore, our findings have also proved that satisfaction mediates the relationship between trust and loyalty. Thus, trust has also an indirect effect on loyalty through satisfaction which is also in line with previous studies. The findings suggest that to satisfy and retain customers, it is crucial to have a service to which customers perceive good integrity and competence. It is crucial therefore to build trust. It increases customer resistance to alternative offers and as a result, helps to foster loyalty to the entity. In a digital banking context, tasks are executed without face-to-face contact with bank staff. Thus, actions involve a higher degree of risk and uncertainty. As a result, trust levels have an impact on the degree of satisfaction of customers with DB services. It is worth mentioning however that while it is true that trust have a direct impact on loyalty according to our survey, but not with the same magnitude as satisfaction does, which may imply that trust is not "the major" antecedent of loyalty in an online environment.

➢ **Satisfaction**

Customer satisfaction was found to have a strong significant impact on customer loyalty which is consistent with the findings of Keisidou et al. (2013), Ribbink et al. (2004); Mbama (2018); Thakur (2014); Amin et al., (2016);Thaker(2017). This is hardly a new finding, but it is so important to take into consideration especially in the context of DB. Specifically, customer loyalty to the bank is closely related to the level of satisfaction with prior interactions with that service. The more satisfied the customer is, the higher is the possibility that he will be loyal. Satisfied customers will be less influenced by the offers of competitors. Therefore, in the context of digital banking, fulfilling customers' expectations will lead to satisfaction, and higher satisfaction translates into loyalty.Generally, if a customer is satisfied with the DB services, he will definitely reuse the same service of the same bank again and again. Thus, it is logical that the customer reaches the stage of loyalty unless he feels satisfied. Customer satisfaction is a major driver of the long-term relationship between the bank and its customers. Satisfaction with the service provider encourages the customer to patronize the provider again and recommend its services to others.

This study also reinforces the importance of satisfaction as a mediating variable between other variables and loyalty which was confirmed by previous studies (Caruana, 2002; Bapat,2017; Thaker et al.,2018; Haq and Awan;2020, Sasono et al.,2021). In fact, a further investigation of indirect effects proved that ease of use, functional quality, perceived value and trust have all an indirect effect on loyalty through satisfaction. It implies that we cannot ignore satisfaction when trying to understand the different factors that have an impact on loyalty. Therefore, ensuring and maintaining customer satisfaction through its key antecedents is a crucial strategy to develop loyalty. Generally, banks always strive for higher customer satisfaction, which is a key element.

These dimensions are guidelines for managers. The different significant factors help to understand what customers consider while evaluating the DB services.

Section 2: Implications, recommendations, limits and future research

I- Implications and recommendations

The managerial implications of our findings are related to the factors that significantly impact satisfaction and loyalty in our study context. Focusing on these factors is essential to satisfy and retain customers.

In this study, we tried to examine the different factors that have an impact of customer satisfaction and loyalty towards DB services. Our results proved that satisfaction is mainly impacted by ease of use, functional quality, perceived value and trust. Furthermore, perceived risk, trust and satisfaction significantly affect loyalty. Moreover, it has been also proven by investigating the indirect effects that ease of use; functional quality, perceived value and trust also have a significant indirect impact on loyalty through satisfaction. Thus, the results highlight which variables strategy makers and marketers should focus on to enhance the satisfaction of customers as well as their loyalty. These variables are potential inputs into marketing strategies to be able to influence customers' perceptions.

First of all, as mentioned above, the results of the descriptive statistics proved that the majority of surveyed customers who use DB services of ATB are represented by age segments between 26 and 35 and that the number of DB users decreased with age. Results also proved that the majority of our customers are either working for the public or private sector with either high school or university degrees and with moderate salaries. Digital

banking adoption and use may differ by customer characteristics, therefore marketing strategies should try to satisfy customers needs while targeting specific segments. Thus, it is so important to understand the reasons that make customers hesitate to use DB services. It is also crucial to implement adequate strategies to encourage old clients for example to use DB services. The banks need to take into account the difference between age categories of customers and act accordingly as certain categories are more eager to switch.

As **ease of use** has an impact on satisfaction and an indirect limited impact on loyalty, banks have to focus on their internet and mobile banking interface to enhance usability. It is crucial to make the interface easy to navigate and to upgrade the website. It is also important to give them an uncluttered look. Interface should be simple and intuitive. ATB should provide more website facilities including easier navigation tools, easy steps to perform various transactions as well as understandable information. The bank could also include more understandable tutorials that customers can refer to when they are using the DB services and if they find difficulties.ATB employees could also assist customers (especially the older ones) when using the service for the first time to make sure it is understandable by the customers, which helps them to learn how to use the service and thereby satisfy them. User-friendly websites or applications help ease customer searching and use. Thus, it creates a suitable framework to generate higher satisfaction and which has an indirect impact on loyalty.

As **functional quality** impacts satisfaction leading to loyalty, it is crucial to ensure stability and accuracy of the system. The bank should also provide accurate information for conducting banking transactions. It is also important to offer adequate presentation of information. The bank should work to ensure that the website or application enables the customer to login easily without problems and to have accurate information. The bank should also develop more effective systems that help customers to do transactions quickly.

Furthermore and when considering **the value** of these services, ATB should offer value-added services that offer many benefits and which are useful to satisfy customers. ATB has to improve consumer perceived value by improving quality and by pricing its products and services reasonably and making them effort free. The digital service has to offer value for money, compared to what customers have to pay in terms of fees. It has to be beneficial compared to the effort provided and time spent. Services have to deliver good value. As a result, the service is considered a good deal. Nowadays, price fairness and the cost-quality ratio have become so important. Having consistently low prices or costs compared to the

quality or benefits provided could enhance satisfaction and therefore loyalty over time. ATB could also offer more value-added services which are perceived by customers as beneficial. It could for instance offer new services such as opening accounts online, updating personal information remotely, applying for loans through websites.

As for **perceived risk**, the DB services should uphold sufficient security and privacy levels to meet data protection requirements related to the privacy of personal information. Specific features have to be included thereby addressing security or privacy concerns such as the fear of fraud and identity theft. The bank can therefore use encryption for example. The bank could also communicate the different actions taken to mitigate threats to reassure the customers that their personal financial information is protected with whatever DB service used. It should also emphasize on the high level of security (which was proved by ISO) and which is reflected in the different necessary procedures taken before starting to use the service.

Resolving problems should not be ignored. Our results do not mean that the bank should ignore this factor completely. In fact, other studies proved that inability of customer service to provide correct information/resolution promptly could lead to dissatisfaction (Ganguli and Roy (2011). Therefore, the bank should invest in training their customer service agents to be able to offer good customer service. The ability of the bank to offer correct and prompt clarification leads to satisfaction. Therefore, the bank should be able to anticipate requests, give explanations, support customers, give prompt answers, solve problems, and compensate errors.

It is also important to promote a **positive image and a good reputation** by providing innovating products and services that differentiate the bank from its competitors and by being committed to providing high quality services.

As for **Trust**, these results also imply that the bank must be able to maintain its customers using its DB services only if customers keep trusting the services provided. Thus, the bank should provide robust systems and ensure privacy and security to build trust. The bank should also prove to the customer that it has good intentions and that it acts in the best interest of its customers. Furthermore, the bank should behave ethically and should be able to fulfill its promises on time. Moreover, ATB should communicate with its customers timely and accurately.

Managers should consider customer **satisfaction** as a priority as it is the strongest predictor of loyalty. This can be accomplished by taking into consideration the requirements of customers and then offering products and services that meet them. However, satisfaction alone does not guarantee that customers will not switch to other banks. Thus, the bank needs to improve its relationship with customers. Moreover, managers should focus on the online experience of the customer, from the first encounter.

These factors should be taken into consideration when the bank develops or improves its DB services. The bank should focus on these attributes to survive in a competitive banking industry. This study gives guidelines to ATB regarding what customers want.

- ➢ **Other recommendations:**
  - • **Adding more digital services:**

Our survey proved that the majority of customers are satisfied with DB services. The bank could also include more services such as online account opening, online insurance application or an online check deposit. The bank could also offer some advices on (Investment, saving,) on DB services according to the customer's profile.

  - • **Do surveys:**

Nowadays, technologies offer many opportunities that enable the banks to be closer to its customers. Therefore, it is possible to make surveys either on the website of the bank, or on social networks to get an idea about the different perceptions of customers as well as their opinions about our services. Thus, we could incorporate changes accordingly. This will enable us to improve our services thereby guaranteeing a satisfying experience for our customers.

  - • **Offering a multi-channel service**

In the context of multi-channel distribution, every channel has its own specificities and added value to the customer. While DB services offer convenience by allowing customers to have access to their bank's services anytime anywhere, brick and mortar branches still have a crucial role in the banking industry to offer advice especially for complex transactions and to provide a personal and direct face to face contact with the staff. The bank should thereby take advantage of every channel to improve the customer experience and work on meeting his requirements which leads to satisfaction.

- • **Launching new services**

It is important to focus on innovation to distinguish the bank from its competitors. Therefore, the bank could implement new services such as: " Chat Bots " and "Self-service spaces".

Chatbots: Chatbots are software applications used to conduct an online chat conversation in a text or vocal message form instead of having a direct contact with the bank staff and without any human intervention. The customer is therefore communicating with a robot that has automatic quick responses to the requests. This tool offers a wide range of information on different offers, products and services. Customers could also ask questions or report complaints. In banking, a chatbot is an incredibly powerful tool as it is able to manage communications without any human intervention. It enables the bank to handle millions of users at the same time thereby satisfying them. It also automates simple and routine tasks where human intervention is not necessary. Furthermore, chatbots reduce costs, ensure a better use of staff time and enable to provide customer service 24/7 when agents aren't available.

Self-service areas: the setting up of self-service areas, which are equipped with multifunctional automats enables users to carry out banking transactions freely, including withdrawals, accepting cash or check deposits; consulting accounts, ordering checkbooks.

- **Digital loans**

Digital loans could be an opportunity to satisfy customers who will be able to apply for loans remotely, in a more efficient way. The customer can therefore go through the entire loan process online, without having to visit the branch and without a direct contact with the employees. As a result, getting a loan won't be a cumbersome process where a huge paperwork is involved. Borrowers can therefore get loan approvals more quickly which satisfies them. It reduces the time taken to process loans (time to yes) and could eventually create a new range of digitally accessible products. It could therefore reduce the time spent by bank employees on administrative tasks such as file entry and verification. As a result, it could increase the time available for more added value tasks.

- **Providing an omni-channel banking customer experience:**

Omni-channel banking platform enables real-time data synchronization across channels. For instance, customers can start the process with one channel and then complete it with another, without having to provide the same data over and over again.

- **Make access to DB services easier:**

Many customers highlighted the fact that one the major difficulties faced with DB services is the first access to the ATB net website as it requires following many steps and contacting the call center to be able to use the service. As a result, many customers feel discouraged and do

not continue the procedure. An easier and shorter procedure with fewer steps would certainly be more attractive.

- **Personalization or customization:**

Bank managers have to follow a customer-centric strategy which meets their needs. The bank should have the right balance between the customer's needs and requirements and its ability to deliver a better digital service. ATB should collect and leverage customer data to understand their needs and preferences. Therefore, the bank could offer specific tailored services to serve specific segments of customers by setting the content, the layout as well as the functionality of the system. It depends on the ability of the interface/website to identify customers and then adapt services to the customer's specific needs. Customization contributes to offer more features, a greater variety, as well as better quality. Moreover, if the bank that is able to provide truly personalized services, it could differentiate itself from its competitors. Customer Relationship Management(CRM) enables to use customer information to customize messages, services, for each customer. If customization is done in an appropriate manner, it enhances customer satisfaction, which is essential for loyalty by making the customer believe that his bank is fully dedicated to the satisfaction of his personal needs and demands.

- **Social media and communication**

Online social media platforms could be used to promote a positive image about the DB services and by engaging campaigns, thereby promoting a positive image about the services across millions of social media users.

II-   Contributions and limits of the research

1- Contributions

This research offers several contributions to the literature on customer satisfaction and loyalty in the era of digital banking. It distinguishes itself from earlier research as it focuses on the direct effects of different factors on satisfaction and on loyalty as well as the indirect effects of the factors on loyalty through satisfaction. This focus on loyalty instead of acceptance and adoption is due to the fact that the majority of customers have already adopted those services. It also contributes to previous studies within the area of digital banking and relationship marketing, showing that some dimensions of relationship quality such as trust and satisfaction are good predictors for customer loyalty in the digital banking era. It also provides valuable insights for ATB to take into account when making DB strategies. To our

knowledge, there is no other study that focused on the topic of customer satisfaction and loyalty by examining the same factors as well as the relationship between satisfaction and loyalty in the Tunisian banking sector and more precisely for the case of ATB. Our study allows managers to know which factors have a more significant impact on customer satisfaction and loyalty.

2- Limits:

Despite the fact that this study provides theoretical foundations as well as robust empirical results, it is not free from some limitations. First of all, the sample size was relatively small and therefore not representative enough. The survey was conducted on small population of customers due to time limitation. A larger sample size could improve the generalizability of our results. Moreover, it would be more interesting to broaden our study and take into account more customers from other different regions in Tunisia which was not possible as we have conducted a face-to-face survey which took place in Tunis. In addition, our descriptive statistics show also that the majority of surveyed customers are on the younger side, which limits generalization to the entire population of customers. Moreover, one of the limitations of our study is that we did not investigate the possible interrelations that may exist among independent variables. It was not stated as a purpose of our research, but it would have been interesting to investigate such interrelations, especially as there is evidence that they do exist. Furthermore, a longer time frame available for the study would have allowed us to gather more responses, and thereby, conduct more analyzes on different groups, (public/private banks, low/high experienced customers…).

III- Future research

The research could be replicated in other banks in Tunisia or extended to other countries. Furthermore, research could be done to understand if there are other factors that have an impact on customer satisfaction and loyalty. It is also possible to investigate how different factors affect customer loyalty through trust. Moreover, an extension of our study would be to examine the interrelations between the different factors. As a result, more complicated structures could emerge, which would enhance the interpretability of customer satisfaction and loyalty in a DB context. Another possible area of research would be to investigate the factors that make ATB customers adopt ATB pay? the new digital service recently launched by the bank. It is also possible to investigate the factors that could affect ATB customers and make them accept or adopt other new services before launching them such as digital loans.

Conclusion

This fourth chapter has focused on the main results of EFA, CFA and PLS-SEM. Our findings indicated that the factors ease of use, functional quality, perceived value and trust have all a significant direct impact on customer satisfaction. The results also proved that perceived risk, satisfaction and trust have all a direct and significant effect on loyalty, with satisfaction being the major determinant of loyalty. A further investigation of indirect effects proved that ease of use, functional quality, perceived value and trust have a significant indirect impact on loyalty through satisfaction. Thus, to enhance customer satisfaction and loyalty, the bank must focus on these factors.

GENERAL CONCLUSION

Nowadays, it is crucial for banks to improve their digital strategies, given the change of costumer behavior and the increase of competition in the banking sector. A better digital banking service enables the bank to offer good customer experience and gain a competitive advantage. It also enhances satisfaction and fosters loyalty. In a highly competitive environment, ATB offers a variety of digital banking services to satisfy and retain its customers.

Our research investigates the different factors that have an impact on customer satisfaction as well as loyalty in the digital era in the ATB. It also examines the relationship between customer satisfaction and loyalty in a digital banking context.

Through a survey conducted in different branches of ATB, and by analyzing the data using the Partial-Least Squares Structural Equation modeling (PLS-SEM), our results proved the factors that have a direct impact on customer satisfaction are ease of use, functional quality, perceived value and trust. Meanwhile, perceived risk, trust and satisfaction are the main factors that have a direct impact on loyalty. Our results have also proved that ease of use, functional quality, perceived value as well as trust have all an indirect impact on loyalty through satisfaction. In other words, these variables do not affect loyalty directly but they do have an impact on loyalty by enhancing customer satisfaction.

Based on these results, we presented several recommendations which could help the bank to improve its digital services and marketing strategies. The bank could therefore make services easier to use, the website easier to navigate, and provide understandable and easy to access information. The bank could also improve its services by making the website and the application quicker and more efficient. It has also to provide value-added services with high quality and which delivers good value. Thus it enhances satisfaction. The bank should also uphold sufficient security and privacy and build trust to foster loyalty. The bank could also add more digital services including account opening, do surveys to get their customers'

feedback, provide an omni-channel banking customer experience and customize services according to the customers' profiles, needs and expectations.

Although this study provides many empirical results, it is not free from some limitations. First of all, the sample size was relatively small and thus not representative enough. Furthermore, it would be better to broaden our study and ask more customers from other different regions in Tunisia. Another limitation of our study is that we did not investigate the possible interrelations among independent variables.

The research could be enriched if the factors affecting satisfaction and loyalty in other banks in Tunisia or other countries are investigated. Furthermore, research could be done to understand if there are other factors that have an impact on customer satisfaction and loyalty. It is also possible to investigate the factors that make ATB customers adopt other digital banking services such as the newly launched application ATB pay or the factors that could incite ATB customers to use digital loans before thinking about implementing such service.

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Appendices

Questionnaire
Facteurs de Satisfaction et Fidélisation Client à l'Ere Digitale : cas de l'Arab Tunisian Bank (ATB)

L'émergence de nombreuses évolutions liées aux Nouvelles Technologies de l'Information et de la Communication (NTIC) a profondément impacté le secteur bancaire en favorisant l'émergence de produits et services digitaux avec le développement de l'e-banking et du mobile banking. Dans le cadre de notre mémoire de fin d'études portant sur la digitalisation des services bancaires, nous menons une enquête auprès de la clientèle de l'Arab Tunisian Bank (ATB) dont l'objet est de déterminer les facteurs ayant un impact sur la satisfaction et la fidélisation des clients à l'ère digitale. A cet effet, nous vous remercions de bien vouloir consacrer une dizaine de minutes en vue de répondre à quelques questions et vous rappelons que les informations recueillies seront traitées de manière confidentielle.

I-UTILISATION DES SERVICES BANCAIRES DIGITAUX

Utilisez- vous des services bancaires numériques/digitaux (internet/mobile banking/..) ?
- ☐ Oui
- ☐ Non

Si NON, veuillez svp nous expliquer pourquoi
………………………………………………………………………………………………...
Si OUI, veuillez svp répondre aux questions suivantes :

Q1-Vous êtes client de l'ATB depuis :
- ☐ Moins d'un an
- ☐ Entre 1 an et 3 ans
- ☐ Entre 3 ans et 5 ans
- ☐ Plus que 5 ans

Q2-Est-ce que vous avez un autre compte dans une autre banque ?
- ☐ Oui
- ☐ Non

Q3-Quels sont les services digitaux que vous utilisez le plus fréquemment ? (Plusieurs réponses possibles)
- ☐ ATBnet
- ☐ ATB mobile
- ☐ ATB messenger
- ☐ ATB mobilink
- ☐ Autre (préciser svp):……………….

Q4-Quelles opérations effectuez-vous avec les services numériques de votre banque ?
- ☐ Consultation du solde/écritures sur le compte bancaire
- ☐ Téléchargement des relevés de compte
- ☐ Emission de virements
- ☐ Simulation de crédit
- ☐ Commande de chéquier
- ☐ Autre (préciser svp)...

Q5-Selon quelle fréquence utilisez-vous les services bancaires numériques ?
- ☐ Quotidiennement
- ☐ 2 à 3 fois par semaine
- ☐ 1 fois par semaine
- ☐ 1 fois par mois
- ☐ Rarement

II-SATISFACTION/FIDELISATION DES SERVICES BANCAIRES DIGITAUX

Dans quelle mesure êtes-vous d'accord avec les affirmations suivantes ?

Mettez une croix (x) pour chaque proposition dans la case qui correspond à votre réponse. Avec (1) Pas du tout d'accord, (2) Pas d'accord, (3) Neutre, (4) D'accord, (5) Tout à fait d'accord.

Facilité d'utilisation des services bancaires numériques ATB	1- Pas du tout d'accord	2- Pas d'accord	3- Neutre	4- D'accord	5- Tout à fait d'accord
Les services bancaires numériques sont faciles à comprendre					
Les services bancaires numériques sont simples à utiliser, même si c'est la première fois que je les utilise					
Il est facile de trouver les informations dont j'ai besoin en utilisant les services bancaires numériques					
Il est facile d'apprendre à utiliser les services bancaires numériques					

Qualité fonctionnelle des services bancaires numériques ATB	1- Pas du tout d'accord	2- Pas d'accord	3- Neutre	4- D'accord	5- Tout à fait d'accord
Vous pouvez facilement vous connecter et vous déconnecter sur le site web de la banque					
Les liens fonctionnent sans problèmes et les pages se téléchargent rapidement					
Les services numériques fonctionnent bien					
Les informations consultées par les services numériques sont actualisées et sans erreurs					

Valeur perçue des services bancaires numériques ATB	1- Pas du tout d'accord	2- Pas d'accord	3- Neutre	4- D'accord	5- Tout à fait d'accord
Le service bancaire digital est un moyen non ou moins coûteux (en terme de frais, temps et effort) pour effectuer des opérations bancaires					
Les frais des services bancaires numériques que la banque perçoit sont acceptables et raisonnables par rapport aux autres banques					
Les services bancaires numériques offrent un bon rapport qualité-prix ou qualité-côut					

Risque perçu (sécurité et confidentialité) des services bancaires numériques ATB	1- Pas du tout d'accord	2- Pas d'accord	3- Neutre	4- D'accord	5- Tout à fait d'accord.
Je pense que mes informations personnelles sont protégées lors de l'utilisation des services bancaires numériques (en termes de Confidentialité)					
Je pense que les transactions effectuées à travers les services bancaires numériques sont sécurisées (contre cyber attaques par exemple)					
Je ne m'inquiète pas quant à la sécurité des services bancaires numériques.					

Résolution de mes problèmes par ATB	1- Pas du tout d'accord	2- Pas d'accord	3- Neutre	4- D'accord	5- Tout à fait d'accord.
Ma banque répond à mes questions et réclamations quand j'ai un problème au niveau des services numériques					
Ma banque fournit un retour/un feedback rapide sur les problèmes/questions					

Réputation ATB en matière de services bancaires numériques	1- Pas du tout d'accord	2- Pas d'accord	3- Neutre	4- D'accord	5- Tout à fait d'accord.
Ma banque a une bonne réputation en ce qui concerne les services bancaires numériques					
Les services numériques de ma banque ont une bonne réputation par rapport aux services des autres banques					

Confiance en matière de services bancaires numériques	1- Pas du tout d'accord	2- Pas d'accord	3- Neutre	4- D'accord	5- Tout à fait d'accord
Je crois que les services numériques de ma banque sont dignes de confiance.					
Je crois que ma banque est compétente dans le domaine du digital					
Je peux toujours compter sur ma banque pour ses bons services numériques					

Satisfaction en matière de services bancaires numériques	1- Pas du tout d'accord	2- Pas d'accord	3- Neutre	4- D'accord	5- Tout à fait d'accord
Je suis satisfait de mon expérience avec les services numériques de ma banque					
Les services numériques répondent à mes attentes					
Je pense avoir pris la bonne décision en utilisant les services numériques de ma banque					
D'une manière générale, je suis satisfait des services numériques de ma banque					

Fidélité en matière de services bancaires numériques	1- Pas du tout d'accord	2- Pas d'accord	3- Neutre	4- D'accord	5- Tout à fait d'accord
J'envisage rarement changer de banque lorsque j'ai besoin d'effectuer une transaction à travers les services numériques					
Je considère ma banque comme mon premier choix pour mes futures transactions financières à travers les services digitaux					
J'ai l'intention de continuer à utiliser les services numériques de ma banque					
J'aimerais dire des choses positives sur les services bancaires numériques de ma banque					
Je recommanderai les services bancaires numériques de ma banque à quelqu'un qui cherche des conseils.					

III-FICHE SIGNALETIQUE

1-Genre :
- ☐ Homme
- ☐ Femme

2-Quelle est votre tranche d'âge (A) ?
- ☐ 18 ans < A < 25 ans
- ☐ 26 ans < A < 35 ans
- ☐ 36 ans < A < 45 ans
- ☐ 46 ans < A < 55 ans
- ☐ 55 ans< A

3-Quelle est votre catégorie socioprofessionnelle ?
- ☐ Etudiant
- ☐ Employé du secteur public
- ☐ Employé du secteur privé
- ☐ Profession Libérale
- ☐ Artisan/Commerçant
- ☐ Retraité
- ☐ Autre (préciser svp) :

4-Dans quelle tranche se situe votre revenu mensuel net (R) ?
- ☐ R<1000 TND
- ☐ 1000 TND<R <2000 TND
- ☐ 2000 TND< R < 3000 TND
- ☐ 3000 TND <R < 4000 TND
- ☐ 4000 TND < R

5-Quel est votre niveau d'études ?
- ☐ Primaire
- ☐ Secondaire
- ☐ Supérieur

6-Quel est votre lieu d'habitation ?
Gouvernorat : …………..……………

Merci pour votre participation et pour le temps que vous avez bien voulu consacrer à cette enquête

EU

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,828
Test de sphéricité de Bartlett	Khi-deux approx.	361,383
	ddl	6
	Signification	,000

FQ

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,755
Test de sphéricité de Bartlett	Khi-deux approx.	252,952
	ddl	6
	Signification	,000

PV

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,629
Test de sphéricité de Bartlett	Khi-deux approx.	175,683
	ddl	3
	Signification	,000

PR

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,682
Test de sphéricité de Bartlett	Khi-deux approx.	196,723
	ddl	3
	Signification	,000

PROB

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,500
Test de sphéricité de Bartlett	Khi-deux approx.	120,520
	ddl	1
	Signification	,000

REP

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,500
Test de sphéricité de Bartlett	Khi-deux approx.	104,287
	ddl	1
	Signification	,000

TR

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,683
Test de sphéricité de Bartlett	Khi-deux approx.	136,842
	ddl	3
	Signification	,000

SAT

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,828
Test de sphéricité de Bartlett	Khi-deux approx.	435,713
	ddl	6
	Signification	,000

LOY

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,768
Test de sphéricité de Bartlett	Khi-deux approx.	583,588
	ddl	10
	Signification	,000

Model

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,857
Test de sphéricité de Bartlett	Khi-deux approx.	3053,005
	ddl	435
	Signification	,000

Appendix 2-B : Results of Extraction (From SPSS)

EU

Variance totale expliquée

Composante	Valeurs propres initiales			Sommes extraites du carré des chargements		
	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	3,139	78,464	78,464	3,139	78,464	78,464
2	,410	10,259	88,723			
3	,254	6,342	95,065			
4	,197	4,935	100,000			

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante
	1
The DB services are easy to understand	,889
The DB services are simple to use even when using them for the first time	,897
It is easy to find information I need using DB services	,839
Learning how to use DB services is easy for me	,917

FQ

Variance totale expliquée

Composante	Valeurs propres initiales			Sommes extraites du carré des chargements		
	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,678	66,952	66,952	2,678	66,952	66,952
2	,742	18,540	85,492			
3	,392	9,788	95,281			
4	,189	4,719	100,000			

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante
	1
You can easily login/logout on the bank's website	,802
The links are problem free, accurate and pages download quickly	,899
The functioning of services is proper	,914
The services possess up-to-date and error free information	,626

Méthode d'extraction : Analyse en composantes

principales.

a. 1 composantes extraites.

PV

Variance totale expliquée

Composante	Valeurs propres initiales			Sommes extraites du carré des chargements		
	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,215	73,829	73,829	2,215	73,829	73,829
2	,579	19,287	93,116			
3	,207	6,884	100,000			

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante
	1
DB is cheaper way to conduct banking	,770
The charges that the bank collect are acceptable and reasonable when compared with other banks	,873
DB services are value for money	,927

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

PR

Variance totale expliquée

Composante	Valeurs propres initiales			Sommes extraites du carré des chargements		
	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,318	77,278	77,278	2,318	77,278	77,278
2	,478	15,931	93,209			
3	,204	6,791	100,000			

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante
	1
I think that my privacy is protected using DB services	,815
I think the transactions carried out in DB services are secure	,923
I am not worried about the security of an DB services	,895

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

PROB

Variance totale expliquée

Composante	Valeurs propres initiales			Sommes extraites du carré des chargements		
	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	1,773	88,643	88,643	1,773	88,643	88,643
2	,227	11,357	100,000			

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes^a

	Composante
	1
My bank replies to my questions and complaints when I have a problem with DB services	,942
My bank provides a feedback promptly on problems/questions	,942

Méthode d'extraction : Analyse en composantes

principales.

a. 1 composantes extraites.

REP

Variance totale expliquée

Composante	Valeurs propres initiales			Sommes extraites du carré des chargements		
	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	1,738	86,906	86,906	1,738	86,906	86,906
2	,262	13,094	100,000			

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes^a

	Composante
	1
The bank has a good reputation when it comes to DB services	,932
The bank's DB has a good reputation when compared to other banks ' services	,932

Méthode d'extraction : Analyse en composantes

principales.

a. 1 composantes extraites.

TR

Variance totale expliquée

Composante	Valeurs propres initiales			Sommes extraites du carré des chargements		
	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,162	72,073	72,073	2,162	72,073	72,073
2	,525	17,499	89,572			
3	,313	10,428	100,000			

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante
	1
I believe the digital services of my bank are trustworthy	,800
I believe my bank is competent in the field of DB	,853
I can always count on my bank for good digital services	,891

Méthode d'extraction : Analyse en composantes

principales.

a. 1 composantes extraites.

SAT

Variance totale expliquée

Composante	Valeurs propres initiales			Sommes extraites du carré des chargements		
	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	3,269	81,731	81,731	3,269	81,731	81,731
2	,363	9,073	90,803			
3	,238	5,945	96,748			
4	,130	3,252	100,000			

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante
	1
The experience that I have had with the website has been satisfactory	,925
The services confirmed to my expectations	,850
I think I made the right the decision to use the bank's digital services	,909
In general, I am satisfied with the digital service of my bank	,930

Méthode d'extraction : Analyse en composantes

principales.

a. 1 composantes extraites.

LOY

Variance totale expliquée

Composante	Valeurs propres initiales			Sommes extraites du carré des chargements		
	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	3,528	70,562	70,562	3,528	70,562	70,562
2	,825	16,501	87,063			
3	,314	6,274	93,337			
4	,288	5,765	99,102			
5	,045	,898	100,000			

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante
	1
I seldom consider changing my bank when I need to make a transaction through digital services	,744
I consider my bank as my first choice for future financial transactions	,765
I intend to continue using the services of my bank	,845
I would like to say positive things about my bank's digital banking services to other people	,915
I will recommend my bank's digital services to other people	,916

Méthode d'extraction : Analyse en composantes

principales.

a. 1 composantes extraites.

Exploratory factor analysis and reliability analysis results

Factor	Item	KMO test	Bartlett's test	Loadings	Communalities	TVE	α
EU	EU1	0.828	0.000	0.889	0.790	78.464%	0.908
	EU2			0.897	0.804		
	EU3			0.839	0.704		
	EU4			0.917	0.840		
FQ	FQ1	0.755	0.000	0.802	0.643	66.952	0828
	FQ2			0.899	0.808		
	FQ3			0.914	0.835		
	FQ4			0.698	0.501		
PV	PV1	0.629	0.000	0.770	0.593	73.829%	0.820
	PV2			0.873	0.763		
	PV3			0.927	0.859		
PR	PR1	0.682	0.000	0.815	0.665	77.278%	0.852
	PR2			0.923	0.853		
	PR3			0.895	0.801		
PROB	PROB1	0.500	0.0000	0.942	0.886	88.643%	0.872
	PROB			0.942	0.886		
REP	REP1	0.500	0.000	0.932	0.869	86.906	0.849
	REP2			0.931	0.869		
TR	TR1	0.683	0.000	0.800	0.641	72,073%	0.805
	TR2			0.853	0.728		
	TR3			0.891	0.794		
SAT	SAT1	0.828	0.000	0.925	0.855	81.731%	0.925
	SAT2			0.850	0.722		
	SAT3			0.909	0.827		
	SAT4			0.930	0.866		
LOY	LOY1	0.768	0.000	0.744	0.553	70,562%	0.894
	LOY2			0.765	0.585		
	LOY3			0.845	0.714		
	LOY4			0.915	0838		
	LOY5			0.916	0.839		

KMO Model= 0.857   Source:By authors, from SPSSoutput

Bartlett's sphericity test=0.000

Convergent validity

Construct	Item	Loading	AVE	CR
EU	EU1	0.882	0.784	0.910
	EU2	0.896		
	EU3	0.850		
	EU4	0.913		
FQ	FQ1	0.764	0.667	0.874
	FQ2	0.897		
	FQ3	0.925		
	FQ4	0.652		
PV	PV1	0.731	0.736	0.884
	PV2	0.886		
	PV3	0.942		
PR	PR1	0.825	0.772	0.853
	PR2	0.915		
	PR3	0.894		
PROB	PROB1	0.931	0.886	0.890
	PROB2	0.951		
REP	REP1	0.926	0.869	0.854
	REP2	0.938		
TR	TR1	0.764	0.719	0.835
	TR2	0.871		
	TR3	0.902		
SAT	SAT1	0.926	0.817	0.927
	SAT2	0.850		
	SAT3	0.908		
	SAT4	0.930		
LOY	LOY1	0.731	0.705	0.907
	LOY2	0.756		
	LOY3	0.855		
	LOY4	0.918		
	LOY5	0.920		

Source: By authors, from SmartPLS output

Appendix 4 : Discriminant validity

### Appendix 4A: Discriminant validity (Fornell-Larcker Criterion)

	EU	FQ	REP	LOY	PR	PROB	PV	SAT	TR
EU	**0.886**								
FQ	0.529	**0.817**							
REP	0.120	0.277	**0.932**						
LOY	0.365	0.446	0.394	**0.840**					
PR	0.290	0.278	0.226	0.489	**0.879**				
PROB	0.195	0.293	0.308	0.322	0.036	**0.941**			
PV	0.398	0.462	0.307	0.378	0.369	0.192	**0.858**		
SAT	0.485	0.513	0.359	0.763	0.295	0.309	0.454	**0.904**	
TR	0.378	0.407	0.496	0.668	0.416	0.314	0.433	0.665	**0.848**

Bold values at the diagonal represent the square root of AVE of each construct

Appendix 4-B: Cross Loadings

	EU	FQ	REP	LOY	PR	PROB	PV	SAT	TR
EU1	**0.882**	0.410	0.066	0.300	0.247	0.143	0.243	0.392	0.341
EU2	**0.896**	0.507	0.096	0.336	0.339	0.119	0.312	0.451	0.361
EU3	**0.850**	0.479	0.154	0.344	0.163	0.196	0.273	0.454	0.305
EU4	**0.913**	0.470	0.102	0.308	0.279	0.234	0.219	0.411	0.331
FQ1	0.405	**0.764**	0.200	0.238	0.109	0.140	0.166	0.331	0.241
FQ2	0.514	**0.897**	0.217	0.360	0.241	0.187	0.349	0.479	0.356
FQ3	0.515	**0.925**	0.245	0.456	0.316	0.212	0.352	0.519	0.450
FQ4	0.256	**0.652**	0.246	0.368	0.195	0.067	0.276	0.296	0.228
REP1	0.101	0.293	**0.926**	0.351	0.240	0.299	0.153	0.320	0.457
REP2	0.121	0.225	**0.938**	0.381	0.183	0.276	0.230	0.348	0.467
LOY1	0.207	0.315	0.221	**0.731**	0.290	0.215	0.325	0.523	0.407
LOY2	0.301	0.309	0.308	**0.758**	0.309	0.255	0.307	0.557	0.502
LOY3	0.360	0.467	0.307	**0.854**	0.341	0.239	0.326	0.722	0.597
LOY4	0.328	0.385	0.406	**0.918**	0.343	0.326	0.311	0.691	0.629
LOY5	0.319	0.382	0.387	**0.920**	0.345	0.307	0.329	0.683	0.636
PR1	0.146	0.142	0.231	0.337	**0.825**	-0.021	0.302	0.257	0.409
PR2	0.283	0.288	0.192	0.328	**0.915**	0.018	0.315	0.246	0.337
PR3	0.331	0.300	0.174	0.357	**0.894**	0.094	0.353	0.273	0.349
PROB1	0.151	0.200	0.256	0.296	0.016	**0.931**	0.175	0.244	0.262
PROB2	0.212	0.167	0.318	0.309	0.049	**0.951**	0.186	0.331	0.324
PV1	0.195	0.247	0.096	0.252	0.356	-0.020	**0.731**	0.251	0.161
PV2	0.258	0.293	0.170	0.319	0.298	0.194	**0.887**	0.400	0.280
PV3	0.299	0.374	0.238	0.385	0.322	0.253	**0.942**	0.476	0.375
SAT1	0.467	0.481	0.326	0.722	0.324	0.261	0.423	**0.926**	0.640
SAT2	0.442	0.432	0.372	0.609	0.198	0.299	0.418	**0.852**	0.598
SAT3	0.375	0.471	0.297	0.708	0.245	0.276	0.429	**0.907**	0.570
SAT4	0.467	0.468	0.306	0.717	0.294	0.284	0.373	**0.929**	0.594
TR1	0.286	0.364	0.309	0.437	0.351	0.225	0.280	0.423	**0.764**
TR2	0.313	0.333	0.459	0.612	0.316	0.336	0.289	0.603	**0.871**
TR3	0.358	0.351	0.468	0.624	0.396	0.233	0.285	0.634	**0.902**

Appendix 5: Final conceptual model
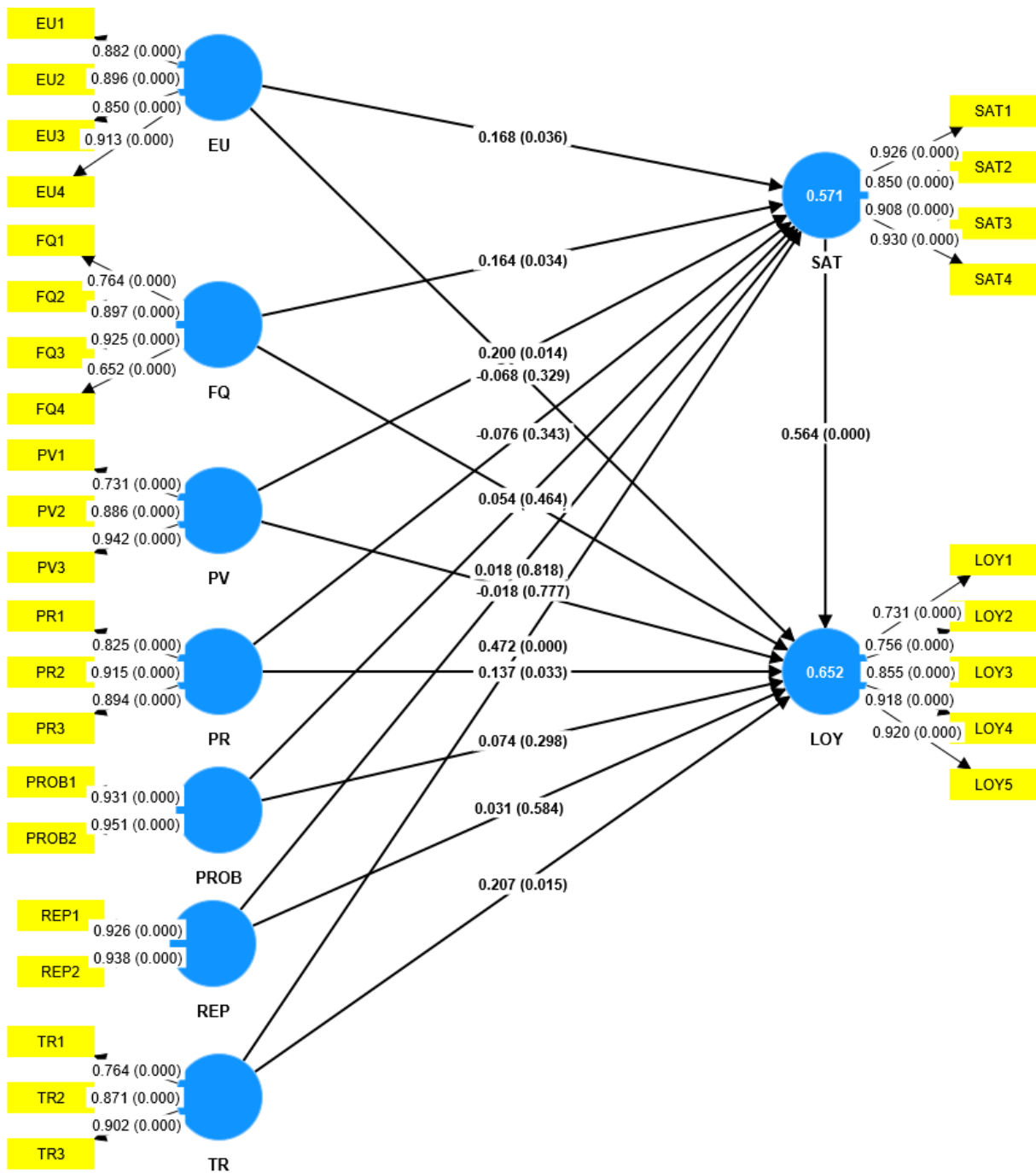
- Values on arrows indicate path coefficients for the structural model
and loadings for the measurement model
- Values between parentheses indicate p-values

Table of contents

Abstract: During the past decades, the banking sector has undergone many changes due to the development of new technologies, resulting in an intense competition and changing the behavior of customers and their expectations and needs. In an increasingly competitive market, customer satisfaction and loyalty are essential to win market share, increase profits and develop a competitive advantage. The purpose of this study is to investigate and determine the different factors that have an impact on customer satisfaction and loyalty as well as the relationship between satisfaction and loyalty in the digital banking era (Case of ATB). To further investigate this area of research, we collected data by conducting a survey with 135 customers who use the digital banking services of ATB. We analyzed data using Partial Least Squares- Structural Equation Modeling (PLS-SEM) using SmartPLS.4 software. Our results indicated that ease of use, functional quality, perceived value and trust have all a significant direct impact on satisfaction. The findings showed also that loyalty is directly impacted by perceived risk, trust and satisfaction. Our findings also proved the existence of indirect effects between ease of use, functional quality, perceived value and trust and loyalty through satisfaction. Our results provide many insights that could help bank managers when implementing a Digital Banking strategy.

Key-words: Digital banking, Customer Satisfaction, Customer Loyalty, Partial Least Squares- Structural Equation Modeling

Résumé : Au cours des dernières décennies, le secteur bancaire a connu de nombreux changements dus au développement des nouvelles technologies, entraînant une concurrence intense et modifiant le comportement des clients, leurs attentes et leurs besoins. Dans un marché de plus en plus compétitif, la satisfaction et la fidélité des clients sont essentielles pour gagner des parts de marché, augmenter les profits et développer un avantage concurrentiel. L'objectif de cette étude est de déterminer les différents facteurs qui ont un impact sur la satisfaction et la fidélité des clients ainsi que la relation entre la satisfaction et la fidélité à l'ère digitale (Cas d'ATB). Pour approfondir ce domaine de recherche, nous avons recueilli des données en menant une enquête auprès de 135 clients qui utilisent les services bancaires numériques d'ATB. Nous avons analysé les données à l'aide de la méthode des moindres carrés partiels - modèle d'équation structurelle (PLS-SEM) en utilisant le logiciel SmartPLS.4. Nos résultats indiquent que la facilité d'utilisation, la qualité fonctionnelle, la valeur perçue et la confiance ont toutes un impact direct significatif sur la satisfaction. Les résultats ont également montré que la fidélité est directement impactée par le risque perçu, la confiance et la satisfaction. Nos résultats ont également prouvé l'existence d'effets indirects entre la facilité d'utilisation, la qualité fonctionnelle, la valeur perçue et la confiance et la fidélité à travers la satisfaction. Nos résultats fournissent de nombreuses indications qui pourraient aider les gestionnaires de banques lors de la mise en œuvre d'une stratégie de Digital Banking.

Mots clés : Digital Banking, Satisfaction des clients, Fidélité des clients, Modèle d'équation structurelle des moindres carrés partiels.