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Digital Banking Challenges and Opportunities In Algeria

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<u>DEDICATE</u>

I dedicate this work to my parents who have always teach me to trust in Allah, believe in hard work and taught me so much that could be done with little. And to my sister Imane and my brother Abd El-Aziz.

I am dedicating this thesis to two beloved people who have meant and continue to mean so much to me. Although they are no longer in this world, their memories continue to regulate my life. First and foremost, to my uncle whose love for me knew nobounds and, who taught me the value of hard work. Thank you so much, I will never forget you. And to my uncle's wife who raised me, loved me, and taught me to love and respect.

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And Also. I am dedicating this to my beloved friend Mouhamedgone forever away from our loving eyes and who left a void never to be filled in our lives. Though your life was short, I willmake sure your memory lives on as long as I shall live. I love you and miss you all beyond words. May Allah (SWT) grant you Jannah Firdaws.

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Finally, we would like to express my gratitude to the people in our life who have had to put up with my protracted library and computer sessions. People could comment that your retirement is unusual.

Abstract

We did investigation research to determine the level of acceptability of digital banking by users and their reactions, using a descriptive approach and asking customers, and we developed the questionnaire by adapting the TAM method. And a study of a sample of 200 people. Then analyzing the data using IBM SPSS v.26 and MS Excel, which received a great response from clients.

Keywords: Digital banking, Digitalization.TAM

Nous avons réalisé une recherche d'investigation pour déterminer le niveau d'acceptabilité de la banque numérique par les utilisateurs et leurs réactions, en utilisant une approche descriptive et en interrogeant les clients, et nous avons élaboré le questionnaire en adaptant la méthode TAM et une étude sur un échantillon de 200 personnes. Analyser les données à l'aide d'IBM SPSS v.26 et MS Excel, qui a reçu un excellent retour de la part des clients.

Mots clés : Banque numérique, Digitalisation.TAM

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Introduction

New banking and financial payment methods have emerged due to the widespread adoption of the internet and mobile devices worldwide Digital banking entails the digitization of traditional banking services in order to deliver financial services to customers. The advent of digital banking has led to an emergence of some best practices in the banking sector they are achieving operational and technological excellence by ensuring their top processes are automated which is now replacing the traditional banking mechanism and they are also organizing in a way that allows them to innovate rapidly.

Digital banking was established as a cutting-edge, practical, and effective method of financial transactions. When the economic crisis rose caused by the global COVID-19 pandemic, digital banking became an enabler in facilitating the business transaction. The digital ecosystem linked banks to entrepreneurs, suppliers, employees, and new markets.

Simultaneously, digital banking allows for social distancing and helps foster financial inclusion in remote or impoverished places where financial institutions are not physically present. The banking industry invests in digital banking to obtain substantial benefits and remain competitive.

Problematic:

We often find cases where some bank frequenters suffer from difficulties to visit the bank weather was it caused by physical inability like being occupied or the long distance to reach it, which is why bank utilized a variety of tactics innovate and produce digital bank services that deals with this type of problematic situations and even facilitate most of the interactions evolving the bank to all customers.

And we will be studying the reaction of the society to these newly developed and integrated financial technologies whether it became a hindrance or a ficilator in the daily needs of bank services users and customers.

Sub-questions:

- What exactly do you mean when you say "Digital bank"?
- What makes It different from regular banking services?
- What is the most significant approach for digital bank innovation and development?
- Will there be a day where traditional banks will be replaced by the digital banks?
- How wide has the digital banking spread in Algeria?

Hypotheses:

A series of hypotheses may be made in light of problematic, which are :

- **H1**: the digital banking app/web site easy to use.
- **H2**: Using digital banking allows me to manage my money more efficiently than traditional methods
- **H3;** the benefits of digital banking outweigh the potential risks
- **H4:** users has full trust in digital banking transactions

Methodology:

In the research process, we relied on the descriptive approach describing Digital banking, we used an analytical approach. and descriptive methods for studying variables and outcomes.

Reasons of chosingthis topic:

- **Personalreason:** The subject of the research falls within the academic majors at the university, personal tendencies in studying modern technology in banking, and interest in the field.
- **Objective reasons:** The importance of banks in the national economy, an attempt Discover whether financial technology contributes to improving the bank's performance and if it increases the quality of experience to the customers.
- **Importance of the topic:**
  The importance of the study lies in the fact that it addresses one of the most controversial topics Currently, as the development of technology has expanded to the point of taking a big part in the economic field, it has gained great importance in improving the activites of Banks and it's services, therefore the importance of this study is evident that the proper use of technology and the degree of social acceptance of it improves the financial

performance of the bank and facilitates transactions, attracting a larger audience, since it constitutes the basic foundation for supporting The national economy, all while achieving user satisfaction.

➢ **Topic objectives:**
-Trying to clarify the concept of digitization and how to link it with the bank's transactions and services
-Identify the technologies that can be used to improve the bank's performance and Facilitating use for customers
-Trying to know the extent of acceptance of these changes in the user's financial life, while clarifying the positive and negative aspects
-Reflecting the user experience on the difficulties and privileges that the bank experiences in its attempt to keep pace with modernity and whether these will lead to its prosperity or downfall.

Temporal and spatial framework:

The study has temporal and spatial limits, which are:

- Temporal limits: The study of this topic extended for a period of 6 months, from January to June.
- Spatial boundaries: The research was limited to clarifying the impact of using modern technology in banks in terms of difficulties, opportunities, and examining the community'sreaction ,In the case study, were lied on the opinions of residents of Saïda.

Study Variables

Independent variable : Usage of digital banking	⟶	Variable : Acceptance level
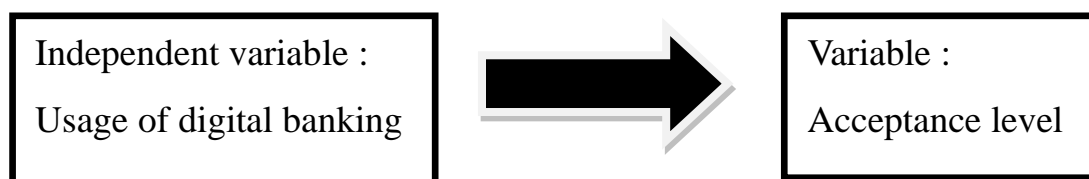
literature review

Since banks can be considered the heart of the economy in all countries and the great whether positive or negative effect it has on them based on how well functioning their banking system is, We find constant efforts to develop the services and products provided mostly relying on new technologies in order to advance reaching a new horizon called the digital banking, That's why its no surprise that it became the focus of studies to many researches and scholars that focuses on the digitalization of the banks some of we may mention, First of all we have the study of **Robert Ortstad and Binan Sonono 2017 by the title The effects of digital transformation on process on banks relationship with customers,** The purpose of this study was to investigate how the banks relationship with customers is affected by this digital focus, This study has been conducted through a case study at a large Swedish bank.

The data gathered in the case study indicate that the relationship with customers has become less personalized and more automated. It also shows that an alignment in the bank has contributed to increased satisfaction among digitally oriented customers, Next is the study of **Aarti sharma and Nidhi Piplani 2017 by the title of Digital banking in India: A Review of Trends, Opportunities and Challenges,** The purpose of this study was to examine the recent digital banking trends in India along with identifying the challenges faced by banks in incorporating these digital banking trends and to present the opportunities and challenges of going digital in the Indian banking sector alongwith some recommendations to overcome these challenges. The paper concludes that, digital banking will not only be acceptable but the most demanded mode of conducting transactions. It will be useful to the academicians, banking and insurance personnel, financial advisors, professionals, students and researchers.

Lastly The study of**thiago Christiano Silva and Sergio Rubens Stancato de and others 2023 by the title of COVID-19 and bank branch lending: The moderating effect of digitalization**, The purpose of this study was to examine how COVID-19 and digitalization have changed bank lending behavior. Using microdata from Brazil, Branches in areas more affected by COVID-19 reduced loan issuances and experienced lower credit revenues. These branches could not adjust their costs in the short term due to this decline in lending, resulting in

increased marginal costs. they also find that branches of more digitalized banks were less sensitive to local borrowers' conditions and could expand their *clientele*. These branches extended credit to borrowers in remote localities less affected by COVID-19, positioning themselves better than branches of less digitalized banks. Our research highlights the critical role of digitalization in distressed periods, as it enables banks to respond more swiftly and effectively, favoring financial stability.

Of course this topic was gaining the interest of many even foreigner who also did their own research and analysis so we may also mention some of them, Starting withthestudy of **Boulahrouz Ghozlane & Bourabah Yanis (2021/2022)** by the title **La Digitalisation Du Secteur Bancaire.**The objective of this work was to determine the place of digitalization in Algerian banks and how these technologies impact their financial performance.This made them wonder what the Algerian banking industry might look like in the digital age. In order to respond to this inquiry, they conducted a questionnaire survey among financial institutions in Algeria. The purpose of the survey was to ascertain the institutions' digitalization plans and to compile an overview of the present condition of digitalization in our banks. According to the findings, most Algerian banks have begun their digital transformation initiatives, prioritizing client interactions.Their study demonstrates that the strategic investments made by banks in digitalization significantly impact customers at an individual level.

Also,the study by **تخربين وليد&بوخرص أحمد أمين (2022)** لدى **واقع وأفـاق التحول الرقمي** This study aimed to assess theالمصـارف الاسلامية ـ دراسة حالة مصرف البالد السعودي reality and prospects of digital transformation inIslamic banks by applying to the Saudi Albilad Bank, where the most prominent concepts related to both digital transformation and Islamic banks were addressed, in addition to acase study of the Saudi Bank, based on the report of the Board of Directors of the Saudi Bank for the year 2020.The study concluded with a number of results, the most important of which are: Bank Al bilad attaches great importance to digital transformation within its strategy, as it seeks to become the leading digital bank in innovation The bank has been able to achieve several achievements, perhaps the most prominent of which is that it is the first bank in the Kingdom and the Gulf to offer the service of digitally opening current accounts for institutional and individual clients, the bank won several awards for its efforts on the digital

front, such as the award for the best digital bank for the year 2018, in addition to the award for the best digital product in 2019.

Table one: literature review

Name of the study	The period and location of the study	The approach followed	The results
The effects of digital transformation on process on banks relationship with customers,	at a large Swedish bank.2017	gaining access to information regarding the bank's digital strategy,the study aims to describe how digitalisation has affected customer relationships, a descriptive design was used for the study to describe how the digital strategy is used for the customer relationship management.	The data gathered in the case study indicate that the relationship with customers has become less personalised and more automated. It also shows that an alignment in the bank has contributed to increased satisfaction among digitally oriented customers
Digital banking in India: A Review of Trends, Opportunities and Challenges	In India ;2017	This study is based on the analysis of the recent trends, opportunities and challenges in banking with the help of secondary data collection. Thus, the sources of data are Report on	. This study looked at the latest developments in digital banking in India, as well as the difficulties banks had implementing these changes. It also presented the opportunities and difficulties of going digital in the Indian banking industry, along with some suggestions for over comeing these

		Trends and Progress of Banking in India and the Report on Payment System Indicators published by Some Financial institutions	difficulties. The article concludes that performing transactions through digital banking will become the most popular and accepted method. Academics, employees in banking and insurance, financial advisors, professionals, students, and researchers will all find it helpful.
COVID-19 and bank branch lending: The moderating effect of digitalization	In Brazil.2023	Using microdata from Brazil investigate the determinants of these changes at the bank branch level and by credit type.	The purpose of this study was to examine how COVID-19 and digitalization have changed bank lending behavior. Using microdata from Brazil, Branches in areas more affected by COVID-19 reduced loan issuances and experienced lower credit revenues. These branches could not adjust their costs in the short term due to this decline in lending, resulting in increased marginal costs. they also find that branches of more digitalized banks were less sensitive to local borrowers' conditions and could expand their *clientele*. These branches extended credit to borrowers in remote localities less affected by COVID-19, positioning themselves better than

			branches of less digitalized banks. Our research highlights the critical role of digitalization in distressed periods, as it enables banks to respond more swiftly and effectively, favoring financial stability.
La Digitalisation Du Secteur Bancaire.	2021 \ 2022 In Algeria	they conducted a questionnaire survey among financial institutions in Algeria. The purpose of the survey was to ascertain the institutions' digitalization plans and to compile an overview of the present condition of digitalization in our banks.	The objective of this work was to determine the place of digitalization in Algerian banks and how these technologies impact their financial performance.This made them wonder what the Algerian banking industry might look like in the digital age. In order to respond to this inquiry According to the findings, most Algerian banks have begun their digital transformation initiatives, prioritizing client interactions. Their study demonstrates that the strategic investments made by banks in digitalization significantly impact customers at an individual level.
بوخرص &تخربين وليد (2022) أحمد أمين واقع وآفـاق التحول الرقمي لدى المصـارف الاسلامية ـ دراسة حالة	A case study of Al-Bilad Saudi Bank, based on the report of the	A combination of descriptive and analytical methods was relied upon due to their suitability	This study aimed to evaluate the reality and prospects of digital transformation in Islamic banks by applying it to

مصرف البالد	Board of Directors of Al-Bilad Saudi Bank for the year 2020.	for the purposes of the study.	Al-Bilad Saudi Bank, where the most prominent concepts associated with both digital transformation and Islamic banks were discussed. The study concluded with a number of results, the most important of which are: Al-Bilad Bank attaches great importance to the digital transformation within its strategy and As it seeks to become the leading digital bank in innovation, the bank has been able to achieve several achievements, perhaps the most notable of which is that it is the first bank in the Kingdom and the Gulf to offer the service of opening current accounts for institutional and individual corporate clients digitally. The bank has also won several awards for its efforts on the digital level, such as the Best Award. Digital Bank of the Year 2018, in addition to the Best Digital Product Award 2019

Source: prepared by student

What distinguishes the study from other studies :

Most previous studies addressed the role of bank digitalization and how it may impact the bank ther positively or negatively depending on how it's implemented in the banks, while our study unique from other studies, in which it concentrates on the degree of clients acceptance to these inserted new technologies and how much of a benefit or obstract is it to the instead of taking only banks perspective of these new aspects.

Study difficulties :

➢ The difficulty of acquiring unbiased opinions.
➢ The difficulty of translating data while upkeeping the meaning.
➢ the difficulty of mirroring the society's acceptance compared the challenges and opportunities of the banks.

Chapter two:

The theoretical framework
Of the study

Preamble

Digital transformation began in the 1980s and has since evolved through various stages, including the personal computer, internet, mobile software development, smart phones, Web 2.0, big data, high-speed multimedia networks, and artificial intelligence. This strategic project requires a clear vision of goals and methods to bring about significant organizational changes.

First topic: The term of Digitalisation

First requirement: Definition and components of digitalization

❖ **Definition**

➢ It is the step that aims at transforming an object, a tool, a process, or a job into an informatics code to substitute it and make it more performing. The adjective "digital" comes from the Latin "digitus" which means "something that has a relation with the fingers". (Tarik & Bouchria, 2022)

➢ In the beginning, the term "electronic "was much more used to refer to the new services related to internet. We used to say the e-business to refer to the electronic business (e-agency, e-travel…). However, starting from 2007 with the appearance of the 1st iPhone, our daily life became digital. The web opened a new stage with the appearance of mobile applications.

Hence, digitalization is transforming as it changes the way businesses interact with their customers and their sources of incomes. **(Tarik & Bouchria, 2022)**

Digitization is the process through which information is transformed from its traditional form into a digital form, regardless of its type, whether it is images, an audio file, or text data.**(رضا، 2020/2021)**

There are those who define it as the process by which data is converted into digital form in order to be processed By computer, the term digitization is usually used in information systems to refer to the conversion of printed text and images into binary signals using a scanning device so that they can be displayed on a computer screen.**(رضا، 2020/2021)**

Digitization represents the process of converting data into a format so that the information is organized into discrete units ofData that can be processed separately, and computers and many devices with computing power can process this data. **(رضا، 2020/2021)**

❖ **Components of Digitalization**

Digital transformation is described as a combination of automation, dematerialization, and restructuring of intermediary processes. These three categories of effects interact with each other and are reinforced by the other two. **(Djemadi & Khaled , 2021/2022)**

1. **Automation**

This is due to the effects of increased performance in the use of productive factors: capital productivity, labour productiveness, energy and raw material productivities, but also increased ability to customize supplies.

2. **Dematerialization**

It leads to the emergence of new channels of communication and distribution, to replace or modify the physical network of agencies, stores, and to make the marginal costs of production and transaction lower.

3. Portability

Digital is a set of mobile, so-called "portable" computer applications. These mobile applications are developed with languages that allow the portability of the latter on different media, such as desktop or laptop computers as well as tablets and smartphones. Client/server applications that require a fixed computer in use are replaced by applications accessible through a web browser and/or on a server with a web connection. Applications (commercial, entry management, or document sharing) are also accessible on portable supports that allow freedom of action, which was impossible with the use of fixed computers. **(Djemadi & Khaled , 2021/2022)**

Figure one : Components of Digitalization
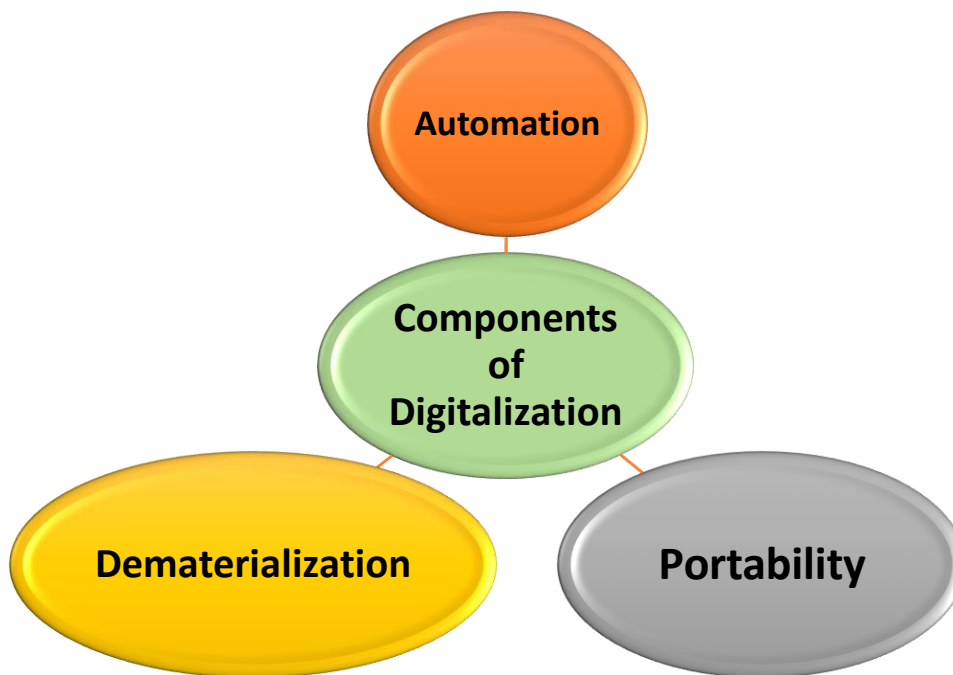
source: prepared by student from Djemadi&khaled

Second requirement:The Issues and benefits of Digitalization

❖ **The Issues of Digitalization** Overall, digitalization ensures the sustainability of the company: **(Djemadi & Khaled , 2021/2022)**

➢ **Organizational issues:**
The digital transition requires taking the risk of innovating, adopting new practices, offering the opportunity to innovate and seize new business opportunities (innovative products, responses to new needs, better tools, etc.).

➢ **Cultural issues:**
The cultural challenge is the ability to anchor it in the corporate culture, which is a matter of cultural transformation rather than a purely technological consideration. The optimization of internal processes and the modification of employee working habits, which positively affects the company.**(Djemadi & Khaled , 2021/2022)**

➢ **Human Challenges:**
Human resources are seen as the main challenge of the digital culture. For human beings to be fully integrated into the digital transformation of enterprises, three major themes need to be addressed.

➢ **Economic and technical issues:**
Digitalization is not enough for the success of digital transformation. We need to put it into practice, be able to evolve with flexibility, and to restructure in depth. In practice, this involves the intelligent deployment of the company's digital tools. Digital transformation will also transform the work of organizations, from managing this transition to creating value. Digital transformation is a continuous process so the digital organization chosen must allow it to adapt. For this you need:

   o **Digital capital to be valued:** new technologies are about to transform our economic models inherited from the industrial revolution. As stated earlier, data collection and processing will be crucial steps. If they succeed in doing so while complying with regulations and reassuring stakeholders, it could take the form of intangible capital. Just as brand capital can now translate into financial appreciation, the era of digitalization could lead companies to define and value their digital capital.

   o **Keeping up to date with technological developments:** user trends evolve daily, and the organization of the company as a whole need to be rethought with its operations, practices, and professions. To do this, it is necessary first of all to align the technologies with the company's strategy, to ensure that you have the basic skills, and, finally, to define the model of governance and management.

- o **Use new tools that are modern, simple, and effective:** 75% of the world's population has a phone, a major point in the digital transformation, and businesses no longer hesitate to base their business models on this data. On the consumer side, it must offer optimal access to services and products available online, as well as to the tools of information, communication, sharing, etc., and on the professional level, it must participate in the issues of mobility, responsiveness, and agility inherent in the digital transformation of the company. (Djemadi & Khaled , 2021/2022)

❖ **Benefits of Digitalization**

There are many benefits that can be derived from the use of digital technology, and the experiences and visions of many States that have been characterized by the development and effective use of digital technology have demonstrated a high level of experience, including:

➢ reconfiguring the culture of society in general, whether in action, thought or interaction, drawing on available techniques, avec sustainable research and development planning and the reformulation of scientific and practical expertise.

➢ Improve efficiency, improve the quality and flexibility of the services and products provided and, of course, save expenses.

➢ Changing business models, service management methods and enterprise strategies towards future marketing and market share.

➢ Trying to make the most of modern technologies, such as artificial intelligence and others, to make flexibility, speed, time-saving services and products, as well as data analysis and prediction, and then planning for the future.

➢ Digitalization also offers enormous opportunities for government and private institutions in various aspects, the most important of which are:

➢ Achieving the strategic goals and vision of institutions with less potential than currently or prior to digital transformation.

➢ Digital transformation also offers enormous potential for building effective, competitive and sustainable societies through radical change in the services of various consumer, employee and user parties, while improving their experience and productivity through a series of proportional processes, combined with the formulation of procedures for operationalization and implementation, are already evident. The founders have striven to keep pace with digital change and create a significant competitive advantage (ماجدة &دلال, 2022).

<u>Third requirement</u>: Objectif of digitalization.

Digitalization is the modernization of interactions between players in an industry through new technologies available and data accessibility. Digitalization gives the opportunity to offer innovative products and services to their customers and see additional revenue opportunities. here are some objectives of digitalization based on the following factors: **(BOULAHROUZ & BOURABAH, 2021/2022)**

➢ **Data:**
The use of digital data changes the relationship to the flow of information within banks. Exchanges are becoming simpler and faster. The data can be transmitted in real time and can be accessed immediately.
Steve Jobs said, "You can't always ask customers what they want and try to provide them with it... because the moment you offer them that product, they'll already want something else." (BOULAHROUZ & BOURABAH, 2021/2022)

➢ **Production:**
With regard to production, digitization allows the bank to use fully automated systems. This involves accurate production tracking, for example, via a mobile app. If a problem occurs, it can be dealt with remotely and quickly. This type of device thus ensures traceability, which allows both quick identification of errors and also provides a tool that can better prevent them.

➢ **Customers:**
Customer relationships also evolve with digital contact. These technological advances enable, inter alia, a more precise identification of consumer needs and expectations. This allows the bank to focus its services and better target its clients. Each bank is obliged to position itself as a lifelong partner (for family events, studies, projects, company creation, etc.). In this relationship, you have to think "customer" and not "product.". The objective is to strengthen its clientele by being the privileged interlocutor at every stage of its existence. **(BOULAHROUZ & BOURABAH, 2021/2022)**

Topic Two: Digital banking

Requirement One: Definition and types of digital banking.

❖ Definition

➢ Digital banking entails the digitization of traditional banking services in order to deliver financial services to customers. This entails the digitization of marketing, customer onboarding, service channels, processes, products and features such as savings and deposits, loan management, bill payments, and also facilitating digital lifestyle services such ride hailing, e-health, edtech, telecoms, media, etc., through ecosystem orchestration and partnerships, and open APIs. (Awelani & Kagiso, 2021)

➢ Digital banking is the automation of every step of the banking relationship, and it goes well beyond an online banking platform. Digital banking involves a complete transformation toward a digital environment (front-end, backend and everything in between), Digital Banking relies on massive data, analytics and the adoption of all new technologies to improve the customer experience. (BOULAHROUZ & BOURABAH, 2021/2022)

➢ Digital banking It is further defined as delivery of banking products and services to customers through electronic channels. Digital Banking is also known as Electronic Banking, Cyber Banking, Home Banking, or Virtual Banking and includes various banking activities that can be conducted from anywhere. (Pappu , 2018)

❖ Types of digital banking :

There are five different types of digital banks, such as (1) challenger banks/new banks, (2) neobanks, (3) beta banks, (4) non-banks and (5) digitised incumbents banks. (Awelani & Kagiso, 2021);

Table two : Types of digital Banking

Types of digital banking	Definitions
Challenger/new banks	have full banking licenses and are direct competitors of the traditional banks offering the same services as traditional banks. Essentially, they are fintech's with banking licenses.
Neobanks	do not have a banking license, but partner with financial institutions to offer bank licensed services. Typically, neo banks still require customers to have an account at an existing licensed bank. They are completely digital banks that have no physical presence and reach out to customers via mobile apps and web platforms.
Beta banks	are joint ventures or subsidiaries of existing banks that offer financial services through the parent company's license. Beta banks are often set up as a way to enter markets, offering limited services to a targeted consumer base. They are targeted at the tech-savvy, millennial customer segment, as well as to provide best-in-class innovative banking services
Non-banks	have no connections to traditional banking licenses. Instead, they provide financial services by other means. This unique model allows the company to operate independently of existing banks.
Digitised incumbents	are incumbent banks that are pursuing total digital transformation. They compete with digital challengers by acquiring their capabilities. They segment digital and traditional customers

Source:prepared by students from (Awelani & Kagiso, 2021)

<u>The Second Requirement</u>: Banking digitalization tools

The use of digital tools promotes the improvement of banking services to better meet customer expectations.

1. **<u>Information management tools:</u>**

Among the tools of banking digitalization are those of information management which are BIG DATA, Blockchain, could computing.**(Djemadi & Khaled , 2021/2022)**

<u>A) BIG DATA:</u>

BIG DATA literally, this term means mega data, big data or massive data.
Mega given to many applications, in the customer relationship and in the enrichment of offers that can be offered to him individually.
This technology is a real revolution in banking offers, thanks to this tool, the offers become automated and personalized which allows a new relationship at a distance, centered on intelligent automation. The latter thus disrupts market standards by overturning traditional financial models through the exploitation and processing of a wide variety of customer data in real time. **(Djemadi & Khaled , 2021/2022)**
"V" is a common way to view or explain big data, along with the commercial opportunities and difficulties that come with it. Here is how the five V's are defined:**(Scott & Alexander, 2023)**

<u>Figure two: the five V's of BIG DATA</u>
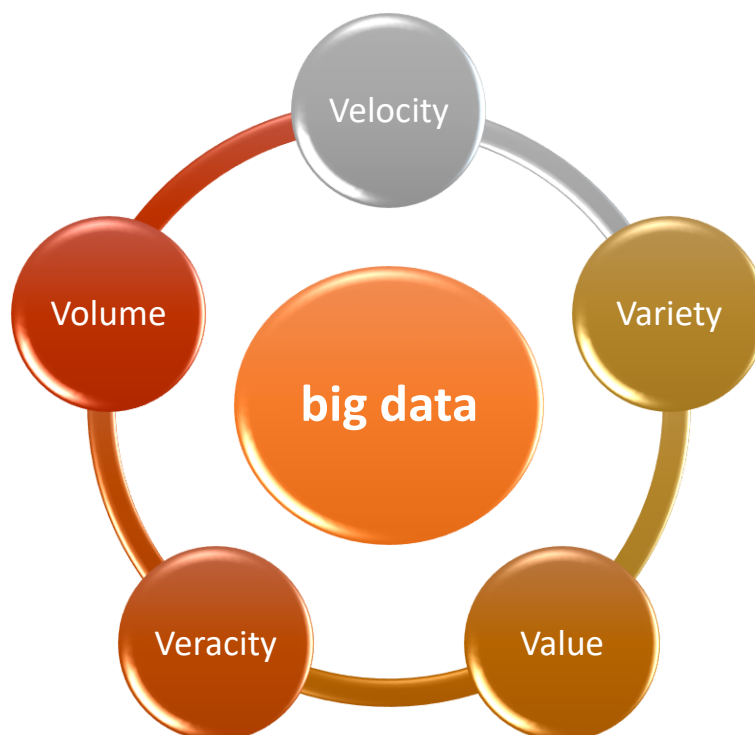
Source: prepared by the student from scott& alexander

➤ **Velocity:**

Velocity refers to how quickly data is generated and how fast it moves. This is an important aspect for organizations that need their data to flow quickly, so it's available at the right times to make the best business decisions possible. **(Scott & Alexander, 2023)**

An organization that uses big data will have a large and continuous flow of data that's being created and sent to its end destination. Data could flow from sources such as machines, networks, smartphones or social media. Velocity applies to the speed at which this information arrives -- for example, how many social media posts per day are ingested -- as well as the speed at which it needs to be digested and analyzed -- often quickly and sometimes in near real time.

As an example, in healthcare, many medical devices today are designed to monitor patients and collect data. From in-hospital medical equipment to wearable devices, collected data needs to be sent to its destination and analyzed quickly.

In some cases, however, it might be better to have a limited set of collected data than to collect more data than an organization can handle -- because this can lead to slower data velocities. **(Scott & Alexander, 2023)**

➤ **Volume:**

Volume refers to the amount of data that exists. Volume is like the base of big data, as it's the initial size and amount of data that's collected. If the volume of data is large enough, it can be considered big data. However, what's considered to be big data is relative and will change depending on the available computing power that's on the market. **(Scott & Alexander, 2023)**

➤ **Value:**

Value refers to the benefits that big data can provide, and it relates directly to what organizations can do with that collected data. Being able to pull value from big data is a requirement, as the value of big data increases significantly depending on the insights that can be gained from it.

Organizations can use big data tools to gather and analyze the data, but how they derive value from that data should be unique to them. Tools like Apache Hadoop can help organizations store, clean and rapidly process this massive amount of data. **(Scott & Alexander, 2023)**

➤ **Variety:**

Variety refers to the diversity of data types. An organization might obtain data from several data sources, which might vary in value. Data can come from sources in and outside an enterprise as well. The challenge in variety concerns the standardization and distribution of all data being collected.

As noted above, collected data can be unstructured, semi-structured or structured. Unstructured data is data that's unorganized and comes in different files or formats. Typically, unstructured data isn't a good fit for a mainstream relational database because it doesn't fit into conventional data models. Semi-structured data is data that hasn't been organized into a specialized repository but has associated

information, such as metadata. This makes it easier to process than unstructured data. Structured data, meanwhile, is data that has been organized into a formatted repository. This means the data is made more addressable for effective data processing and analysis.

Raw data also qualifies as a data type. While raw data can fall into other categories -- structured, semi-structured or unstructured -- it's considered raw if it has received no processing at all. Most often, raw applies to data imported from other organizations or submitted or entered by users. Social media data often falls into this category.

A more specific example could be found in a company that gathers a variety of data about its customers. This can include structured data culled from transactions or unstructured social media posts and call center text. Much of this might arrive in the form of raw data, requiring cleaning before processing. **(Scott & Alexander, 2023)**

> ➢ **Veracity:**

Veracity refers to the quality, accuracy, integrity and credibility of data. Gathered data could have missing pieces, might be inaccurate or might not be able to provide real, valuable insight. Veracity, overall, refers to the level of trust there is in the collected data.

Data can sometimes become messy and difficult to use. A large amount of data can cause more confusion than insights if it's incomplete. For example, in the medical field, if data about what drugs a patient is taking is incomplete, the patient's life could be endangered.

Both value and veracity help define the quality and insights gathered from data. Thresholds for the truth of data often -- and should -- exist in an organization at the executive level, to determine whether it's suitable for high-level decision-making.**(Scott & Alexander, 2023)**

B) Blockchain:

Blockchain is one of the most recent technologies in the domain of security, tractability, and transparency, for managing any digital asset transaction, as well as for physical assets and agreements. **(Ahmed, 2020)**

Blockchain is shorthand for a suite of distributed ledger technologies that can be programmed to record and track anything of value, such as financial transactions, medical records, land titles, and so on. Blockchain technology is based on the centuries-old method of the general financial ledger. In simplified language, it is a digital ledger which holds the records of all sorts of transactions that happen in a peer-to-peer network. This technology is assumed to 'cut out the middleman' from any sort of transaction or transfer of digital assets. This is a much more secure and decentralized medium. Financial institutions are exploring the possibilities of using this technology to ensure secure transactions. **(Ahmed, 2020).**

C)Cloud computing

Cloud computing is a technology for storing data or accessing computer services via the Internet. These services can be computing power, data storage, networking and much more.

Instead of storing data on your own computer, the cloud allows you to store it on the Data Center servers of a cloud provider such as AWS, Microsoft Azure or Google Cloud. **(Cohen, 2022)**

2. **Multi-Channel Distribution Tools**:
   Among the tools of banking digitalization are those of multi-channel distribution:

➢ **Bank cards:**

They are the most well-known of the instruments of bank withdrawal payment. The CIB card is an interbank card, it is identified by the interbank logo, the name, the logo of the issuing bank. The card contains a microprocessor commonly called "chip" that ensures security in the processing of payment transactions. It allows merchants to make payments at stores, to make transactions on ATMs and also to make internet payments. It is a domestic interbank payment and withdrawal instrument that is accepted by traders affiliated to the interbank monetary network and especially DABs installed in the national territory. **(Djemadi & Khaled , 2021/2022)**

➢ **The Banking Automates**:

These are devices that can be published in different locations, whether in the wall or independently, and are in the bank computer network, and the customer uses plastic cards or smart cards for various services such as cash withdrawals, cash deposits, etc. It is an automated banking machine that allows clients to complete basic transactions without any assistance from bank representatives, the key element that allows the client to withdraw money only and obtain the account balance report, the other is a more complex instrument that accepts the deposit, and provides credit card payment facilities and report accounting information. (**غريب &دريد**, **2022**)

➢ **SMS Banking**

SMS, where individuals or companies can manage their bank accounts, check their account balances, execute checks, cash transfers, pay certain bills and perform other banking transactions using their mobile phones. (**غريب &دريد**, **2022**)

➢ **Emails**

E-mail (e-mail, email, mail) is a service for the transmission of written messages and documents sent electronically. The latter are used to contact the bank (a consultant) in case of information needs or claims. It is one of the most commonly used services on the Internet for sending messages in the form of files, text...etc. **(Djemadi & Khaled , 2021/2022)**

The third requirement: Digital banking services.

Digital banking offers a wide range of services to meet the financial needs of customers. Given below are the various types of digital banking products and services: (Groww)Consulted on 25/03/2024

- ➢ Account Management: One can view account balances, transaction history, and account statements online or through mobile apps with the help of digital banking.
- ➢ Fund Transfers: Transfer money between accounts, including peer-to-peer transfers and payments to other banks.
- ➢ Bill Payments: Pay utility bills, credit card bills, loans, and other regular expenses electronically.
- ➢ Mobile Wallets: Digital Banking also allows individuals to store money digitally and make payments for various services and products using a mobile wallet app.
- ➢ Fixed Deposits: Through digital banking, one can also open and manage fixed deposit accounts with their bank. (Groww) Consulted on 25/03/2024
- ➢ Savings and Current Accounts: Open, manage, and close savings and current accounts through digital banking platforms.
- ➢ ATM Services: It also allows customers to locate nearby ATMs, check ATM balances, and set ATM withdrawal limits.
- ➢ Credit Card Management: One can also view their credit card transactions, pay bills, and manage rewards using the digital banking platform. (Groww)Consulted on 25/03/2024

Topic Three: The outcome of digitalization

The First Requirement: Opportunities and Challenges
➢ Opportunities in Digital Banking
digital banking also opens a variety of opportunities, both for quality of service and the potential for profit. It's still very much in a bank's interest to take the digital plunge. (**RiskOptics, 2022**)

➢ Partnerships
Banks are increasingly partnering with third-party apps and fintech companies. This is a mutually beneficial arrangement: it gives your customers flexible money management and improves the user experience, without the bank having to overhaul its entire system. It also gives the startups stability and an opportunity to gain new customers. Partnerships of this kind can also help you engage with the potentially lucrative cryptocurrency market, which will be seen as a major benefit to some patrons. (**RiskOptics, 2022**)

➢ Enhanced Services
The access provided by digital banking allows you to connect to your customers in new ways. This not only provides an enhanced guest experience; it also opens up a new profit area for banks. For example, the process of taking out a loan or opening a new line of credit can be intimidating for many people. By offering information on assorted options on your website and giving your customers a way to apply online, you'll be able to help them find the solution that works best for them, in the comfort of their home.(**RiskOptics, 2022**)

➢ New Customers
Digital and mobile banking is now an expectation for most people, and especially for younger people who may be opening their first account. Attracting these new customers now depends on offering a smooth and user-friendly banking experience on your app and website, just as would happen in traditional banks. In addition to attracting new users, your digital banking system can help you gather data on new trends, which can help you predict new trends and advancements in the banking sector and the economy as a whole. (RiskOptics, 2022)

➢ Digital banking challenges
Digital banking challenges refer to factors that are preventing digital banking from stabilizing and becoming a universal banking method for everybody. And they include: (**White, 2023**)

1. **Security**

This is one of the first things that comes into one's mind when keeping money is mentioned anywhere. It is, however, sad to say that hackers are still giving financial institutions a run for their money. Therefore, some customers are not willing to take any chances. Note that banking security is nothing like downloading and installing an antivirus. **(White, 2023)**

2. **Fully digitized bank, brick, and mortar or both**

Although many people are embracing digital banking, there is still a good portion of people who don't trust it. Also, some people are not convinced about digital banking unless they have proof that a bank exists in brick-and-mortar form. This makes it hard for digital banking to become completely digitized. **(White, 2023)**

3. **An evolution from ancient banking systems**

Many people don't know it, but most banking systems use COBOL programming language. This has been around for more than 60 years and was not meant to suit the kind of technology that is available today. Upgrading the se banking systems and install suitable ones usually takes so much time while the demand for seamless digital banking is on the rise. **(White, 2023)**

4. **The non-financial institution already filling the space**

Several non-financial institutions offer services very similar to what digital banking is expected today. Social media platforms like Facebook, for example, have made it possible for users to send money directly to someone's bank account.

Because they are not restricted by any rules as seen with financial institutions, it is hard for these financial institutions to cope. To begin with, social media platforms, for example, have a large fan base.**(White, 2023)**

5. **Internal barriers**

For banking to be fully digitized, it means that both the banking system and employees will have to undergo a cultural shift. However, it is good to know that unlike other businesses, banks have a unique way of departmentalization, and this greatly influences the level of technology to be used. While some departments will benefit from a digital banking system, some departments will have to lay off some employees. Also, employee training may be required.**(White, 2023)**

6. **To buy or build the banking system**

With the demand for digital banking on the high, some banks are desperate to take the leap and adopt digital banking. However, most banks are not quickly adopting digital banking because they don't know which kind of system will work correctly. Some prefer purchasing such systems because they want to work with a system that has been tested. Others prefer having a system built specifically for them. Don't forget that both kinds of systems have their pros and cons. **(White, 2023)**

<u>**The Second Requirement**</u>: **Advantage and disadvantage of digital banking**

❖ <u>**The main advantages of digital banking:**</u>

In recent years, online banking has been gaining more and more users, who are fascinated by the positive aspects of digital banking **(Anastasiou, 2023)** Some of the advantages of digital banking are the following:

➢ **Easy set up**: creating an account with an applicant bank is a simple and paperless process. Most accounts can also be fully set up from a mobile device. **(Mansurovna, 2023)**

➢ **Lower fees**: with lower transaction costs, challenger banks can charge competitive prices for their services.

➢ **Wider Financial Inclusion**: Branchless banks have lower operating costs and can therefore afford to accept clients who cannot access traditional financial services due to a lack of credit history or poor credit ratings. **(Mansurovna, 2023)**

➢ **Focus on security:** Traditional banks are notorious for being slow to adjust to the demand for more flexible yet secure banking services. Not only the digital banks are easy to use, many of them are security-focused and respond quickly to the latest security threats.

➢ **Additional Features**: In addition to providing digital bank accounts, many banking apps offer their customers built-in payment, budgeting, and savings tools. **(Mansurovna, 2023)**

➢ **Automation of transactions:** the user can by standing orders schedule some payments so that they are made automatically. That is, when he knows the date when an account expires, he gives a standing order electronically to have the payment happen a specific day of each month without any additional movement for each month, as long as of course there is money through in his account. Especially in payments that may incur interest in case of delay the standing order policy can be very useful. **(Anastasiou, 2023)**

❖ <u>**The main Disadvantages of digital banking:**</u>

➢ <u>**Distrust:**</u> a major hurdle to overcome in order to use e-banking was that customers had to be convinced to trust the new technologies. Customer mistrust often stems from the lack of physical contact with employees, and there is always a fear of the security of transactions due to external factors or personal error, in which case, of course, the cost is not borne by the banking institution but by the customer himself.

➢ **Initial investment and maintenance costs**: banks have to spend huge amounts of money on the new technologies necessary to provide all these services to their customers. There are new products appearing every day and increasing the competition between banks, whose staff is discovering new improvements everyday so as to attract more customers. Therefore, in addition to the costs required for the design and implementation of the banks' network ,an additional cost is required for the maintenance of this network and for its evolution and adaptation to the new technologies that are constantly emerging.**(Anastasiou, 2023)**

Références

(s.d.). Récupéré sur Groww: https://groww.in/banking/digital-banking

(2022, 1 6). Récupéré sur RiskOptics: https://reciprocity.com/blog/digital-banking-challenges-opportunities/

Ahmed, M. (2020). *Blockchain in data analytics.* Cambridge Scholars .

Anastasiou, M. (2023). Master Thesis Digital Banking & Financial Technology. *University Piraeus POSTGRADUATE PROGRAMME Department of Management and Business Administration*. Piraeus.

Awelani, R., & Kagiso, M. (2021). DIGITAL BANKING RESEARCH DOCUMENT. *FSCA*.

BOULAHROUZ, G., & BOURABAH, Y. (2021/2022). *La Digitalisation Du Secteur Bancaire.*

Cohen, D. (2022, 09 28). *Cloud Computing : Qu'est-ce que c'est ? Comment ça fonctionne ?* Récupéré sur data scientest : https://datascientest.com/cloud-computing

Djemadi , L., & Khaled , K. (2021/2022). La digitalisation et son impact sur les activités bancaires Cas de la BADR "kherrata" Agence 360.

Mansurovna, M. L. (2023). DIGITAL BANKING, ITS ADVANTAGES AND DISADVANTAGES. *BioGecko, Vol 12 Issue 03 2023*.

Pappu , R. (2018). Digital Banking Services:Customer Perspectives. *researchgate*.

Scott , R., & Alexander, S. (2023, 11). *What are the 5 V's of big data?* Récupéré sur TechTarget: https://www.techtarget.com/searchdatamanagement/definition/5-Vs-of-big-data

Tarik, S., & Bouchria, K. I. (2022). The algerian public banks in the era of the digital transformation. *International journal of economic performance*.

White, D. (2023, 4 5). Récupéré sur tech funnel: https://www.techfunnel.com/fintech/digital-banking-challenges-opportunities/

غريب , ا&, .دريد , ح (12 ,2022). الصيرفة الرقمية كتوجه حديث للبنوك الجزائرية- دراسة إحصائية. *المجلة العلمية المستقبل الاقتصادي, المجلد 10*(العدد. 01).

ماجدة , ز., & دلال , و . (2022, 06 11). دراسة التحول الرقمي بالبنوك الجزائرية في ظل جائحة كوفيد−19. *مذكرة مقدمة لاستكمال متطلبات شهادة ماستر*. ميدانية لعينة من البنوك الجزائرية فروع (ورقلة ـ تقرت) أكاديمي الميدان: العلوم الاقتصادية والعلوم التجارية وعلوم التسيير قسم: العلوم الاقتصادية، التخصص: اقتصاد نقدي و بنكي.

رضا, س. ف (2021/2020). *رقمنة البنوك و دورها في العلوم السياسية مذكرة تخرج لنيل شهادة الماستر*. BDL-BADR. في مكافحة الفساد المالي في الجزائر دراسة حالة لبنكي جامعة الدكتور مولاي الطاهر -سعيدة- كلية الحقوق و العلوم السياسية قسم العلوم السياسية و العلاقات الدولية.

Chapter three

Empirical Framework

Preamble:

In this chapter, we will shed light on the rate of acceptance concerning digitalization of banks to measure and evaluate their financial performance since it relies on how well it's inserted into daily financial activities of clients in order to determine the bank's financial and competitive position, therefore projecting on what we covered in the theoretical study.

The statements of 200 people with a variety in ages and professions were used to analyze and evaluate the banks potential performance in comparison with opinions of said participants.

We attempted to divide this chapter into two sections:

➢ Introduction to questioning method TAM, with presented replies in form of tables and statistics.

➢ The analyses of graphs in simplified manners showcasing the results of our thesis.

Topic One: Method and tools used

The first requirement: The method used

Scientific research cannot reach desired results without following a clear approach to studying the problem under investigation. In our study, we used the descriptive approach for the theoretical aspect and the analytical method for the applied aspect. This combination is ideal for describing the phenomenon under study and analyzing's data, as it provides an organized explanation of the phenomenon or problem and offers data on specific characteristics of reality

➢ **Study Tools :**

In order to complete the research process, a set of necessary and appropriate e methods was used for each stage of the research. The most important of these methods is the electronic questionnaire form.
The questionnaire and the study population: This technique is considered one of the methods for surveying and collecting information in human resource management. The form was prepared electronically after determining the dimensions of the topic and its components and identifying the study population. The sample consisted of 200 people who responded to the questionnaire, which was built using the TAM method.

➢ **The method was used to built the questionnaire:**

Technology Acceptance Model (TAM)
Davis (1989) proposed the "TAM" as something of an offshoot Theory of Reason Action (TRA) that was also introduced by Ajzen and Fishbein (1980). Davis' idea sought to provide much more light on the problem of human conduct as in the acceptance of technology by people. (Kelly & Palaniappan, 2023)
The technology acceptance model was used to predict the consumer's (technology user) intention to adopt new technology in information services through three main determinants. Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and the attitude towards using the system to adopt any new technology and its acceptance by the user (ATU) Using Towards Attitude, and many studies show the existence of important relationships between perceived use fulness, perceived usability, attitude, and intention. (Djamel & Redha, April 2023)

Figure three: Technology Acceptance Model (Davis 1989).
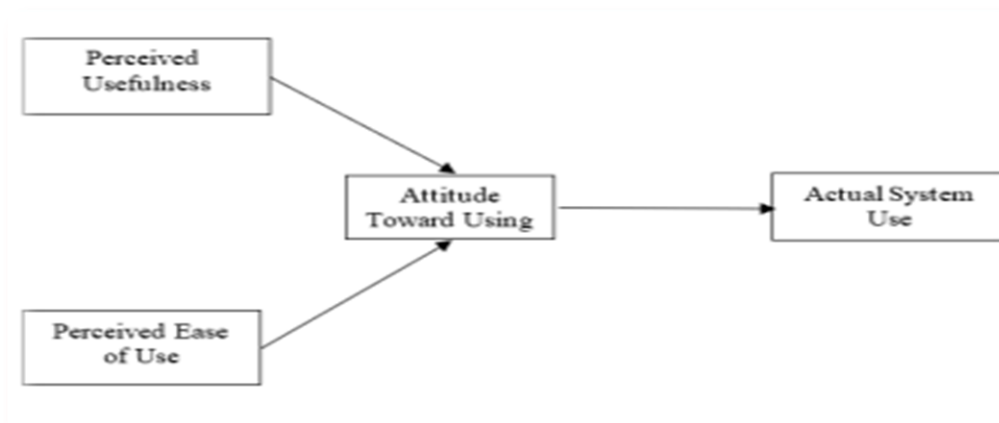
In our case we add Perceived risk A user's risk about a subject matter has a correlated effect in adopting or rejecting that technology or service, in this instance, mobile This was first expressed by Cummingham (1967), where suggested risk is a hinge of these two factors "uncertainty and consequences" when a consumer is unsure or have no imme-diate and future desire or use for a product or service, that renders or determine that product cost, which was referred to as the "consequence". It is, therefore, necessary to decide on or appreciate at any point in time because a consumer will use a particular product. (Kelly & Palaniappan, 2023).

Figure four: Technology Acceptance Model (Kelly & Palaniappan, 2023)
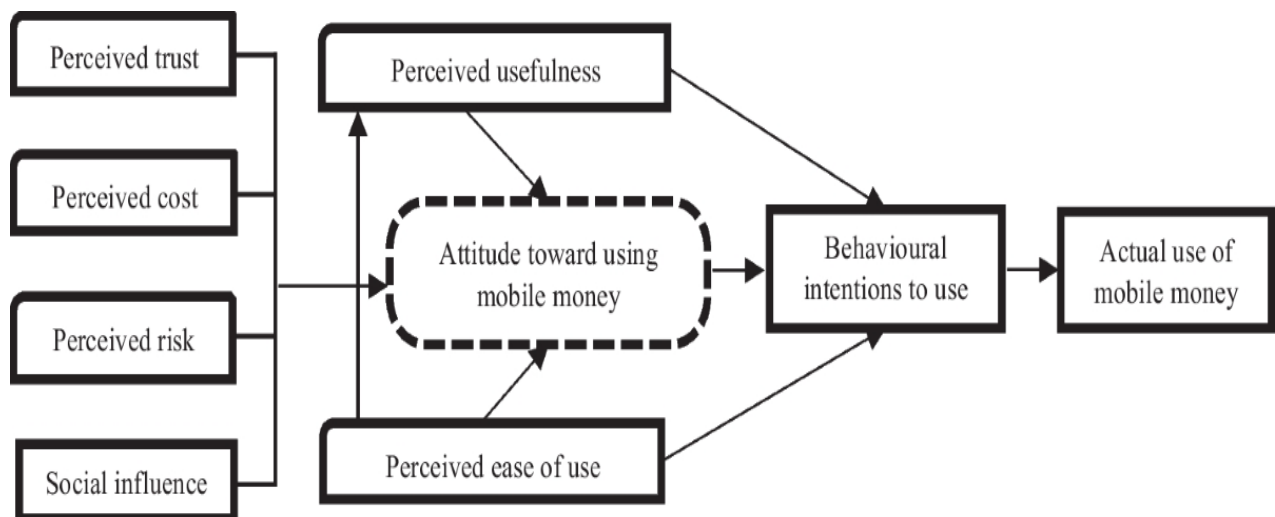
The second requirement:Study sample and questionnaire design

➢ **Study sample:** The questionnaire was published electronically on the social networking platforms Facebook and Telegram, and we obtained a sample size of 200 people. The questionnaire was answered by people by communicating with them indirectly, that is, electronically.

➢ **Questionnaire design**: The questionnaire form was built using the TAM method, as we mentioned previously, and included 15 questions. The questionnaire was divided into four sections: a section related to perceived ease of use, the second section related perceived usefulness, and the third section included perceived risk. As for the The last section was relates to the Attitude towards using, where we used Google Forms to collect the results and used SPSS and Excel to analyze the data. And we used the 5-Point Likert Scale.

Stronglyagree	Agree	Neutral	Disagree	Stronglydisagree	Category
5	4	3	2	1	**Degree**

The third requirement: method used in Analysis of the results of the questionnaire

In order to achieve the goal of the study and analyze the data that we collected; we used several statistical methods using the statistical program **(IBM SPSS Statistics 22).**

➢ **The following statistical methods were used:**
- Cronbach's alpha coefficient to ensure the degree of reliability of the measurement tool.
- pearson correlation
- Percentages and frequencies.
- Automatic Linear Modeling

Topic Two:Analysis of the results of the questionnaire

The First requirement: Stability of the study tool. (Alpha Cronbach)

The reliability coefficient alpha, according to the scientist Cronbach, is one of the most important means of measuring internal consistency. It takes values ranging from zero to the correct one. The closer the value of the reliability coefficient is to one, the higher the reliability is, and the closer it is to zero, the lower the reliability.

Reliability Statistics	
Alpha de Cronbach	Nombre d'éléments
,733	15

Source : spss program output

A value of 0.733 is considered acceptable, indicating that the scale has a good level of internal reliability. This suggests that the study tool has a very acceptable reliability coefficient, ensuring that the items are consistent in measurement and capable of achieving the study's purposes. Consequently, the tool is valid for analyzing results, answering study questions, and testing hypotheses.

Alpha Kronbach for each axis in the questionnaire:
  o **Toperceived ease of use:**

Reliability Statistics	
Cronbach's alpha	Number of elements
,483	4

Source : spss program output

In this case, the Cronbach's alpha value of 0.483 is irrelatively. This suggests that the four items are not measuring the same underlying construct very well. This could be due to a number of factors, such as:

  • The items may be measuring different aspects of the same construct.
  • The items may be too similar to each other.
  • The items may be poorly written or confusing.

o **Perceivedusefulness :**

Reliability Statistics	
Cronbach's alpha	**Number of elements**
,500	4

<p align="center">Source : spss program output</p>

The Cronbach's alpha value of 0.500 suggests that the test or scale has **low reliability**. This means that the items on the test or scale are not measuring the same underlying construct very well. It is possible that the items are measuring different aspects of the construct, or that they are simply not very well-worded.

o **Perceived risk**:

Reliability Statistics	
Cronbach's alpha	**Number of elements**
,501	3

<p align="center">Source : spss program output</p>

The Cronbach's alpha for this set of 3 items is .501. This score is generally considered low and indicates that the items on the scale are not reliably measuring the same concept.

o **The behavioral intention to use**

Reliability Statistics	
Cronbach's alpha	**Number of elements**
,696	4

<p align="center">Source : spss program output</p>

The Cronbach's Alpha in this axie is 0.696. Generally, a value above 0.7 is considered acceptable. In this case, the obtained value (0.696) is close to this threes hold, suggesting the items in this scale are somewhat consistent in measuring the same underlying construct.

The second requirement:statistic alanalysis of questionnaire data and testing of hypotheses.

1) : **Analyzing the personal information of the sample members:**

A. Gender :

Gender			
		Frequency	**Percentage**
Valid	**Males**	**98**	**49,0**
	Females	**102**	**51,0**
	Total	**200**	**100,0**

Source : spss program output

Source : Prepared by studentsbased on the program Excel

In this table and figure, we see the gender distribution of those who responded to the questionnaire: 49% males and 51% females.

B. Age :

		Frequency	**Percentage**
Valide	**20-30**	**103**	**51,5**
	30-40	**39**	**19,5**
	40-50	**40**	**20,0**
	More than 50	**18**	**9,0**
	Total	**200**	**100,0**

Source : spss program output

AGE
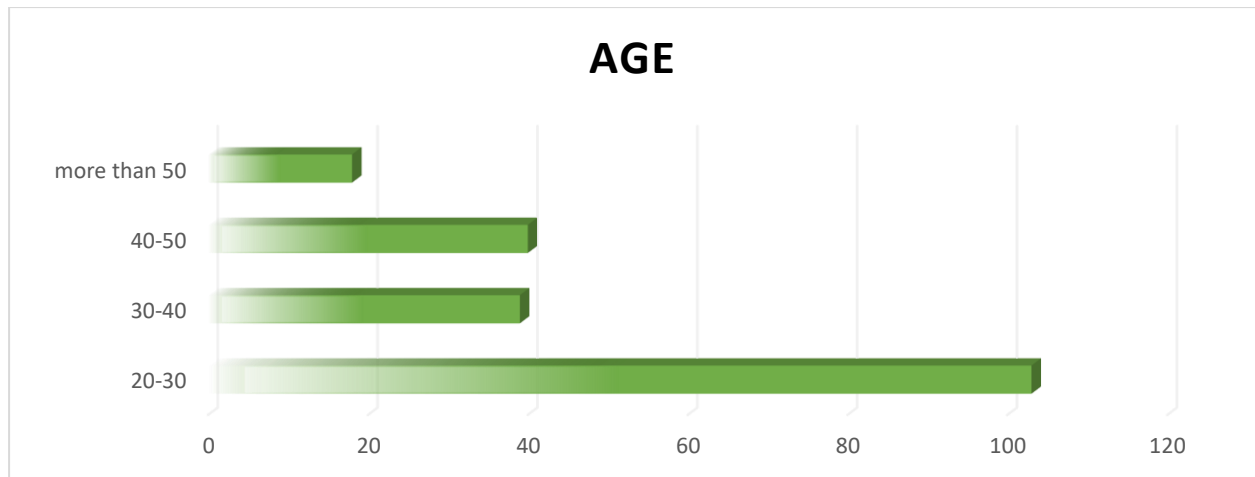
Source: Prepared by studentsbased on the program Excel

The provided bar graph and the table illustrates the distribution of people across different age groups. The graph depicts the number of individuals with ineachage bracket, ranging from 20 to 50 years and above 50. We observe that the majority of respondents fell within the 20-30 age range, comprising approximately 102 individuals. Following this, the categories of 30-40 and 40-50 show a similar level of response. Finally, the category of individuals above 50 years old had the lowest response rate, with only 18 respondents.

C. Level of education

		Frequency	Percentage
Valide	**MiddelSchool**	1	,5
	High School	16	8,0
	University	183	91,5
	Total	200	100,0

Source : spss program output

Level of Eduction
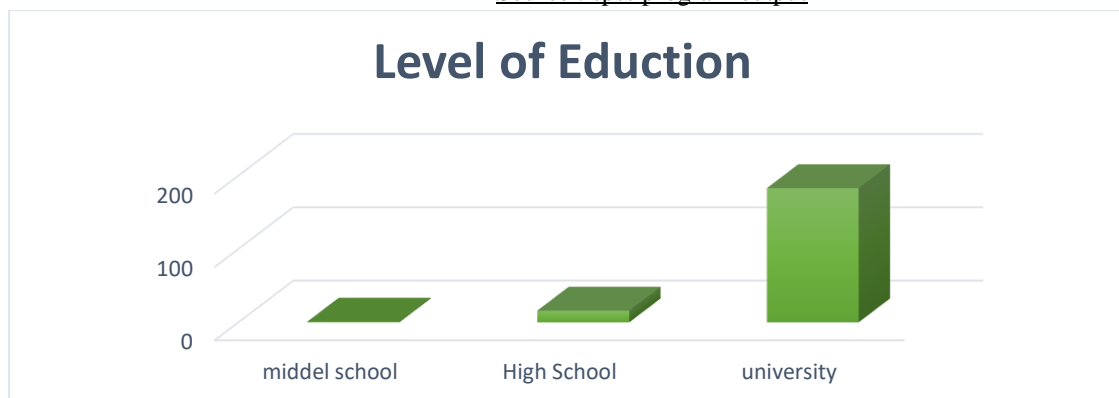
Source: Prepared by studentsbased on the program Excel

That interpretation of the table is correct. If the table shows education level of respondents and it has:

- 183 respondents with a university level education
- 16 respondents with a high school level education

Then the majority (more than half) of the respondents are indeed at the university level.

D. Job

		Frequency	Percentage
Valide	**Student**	67	33,5
	An employee in the public sector	81	40,5
	An employee in the privatesector	52	26,0
	Total	200	100,0

Source : spss program output
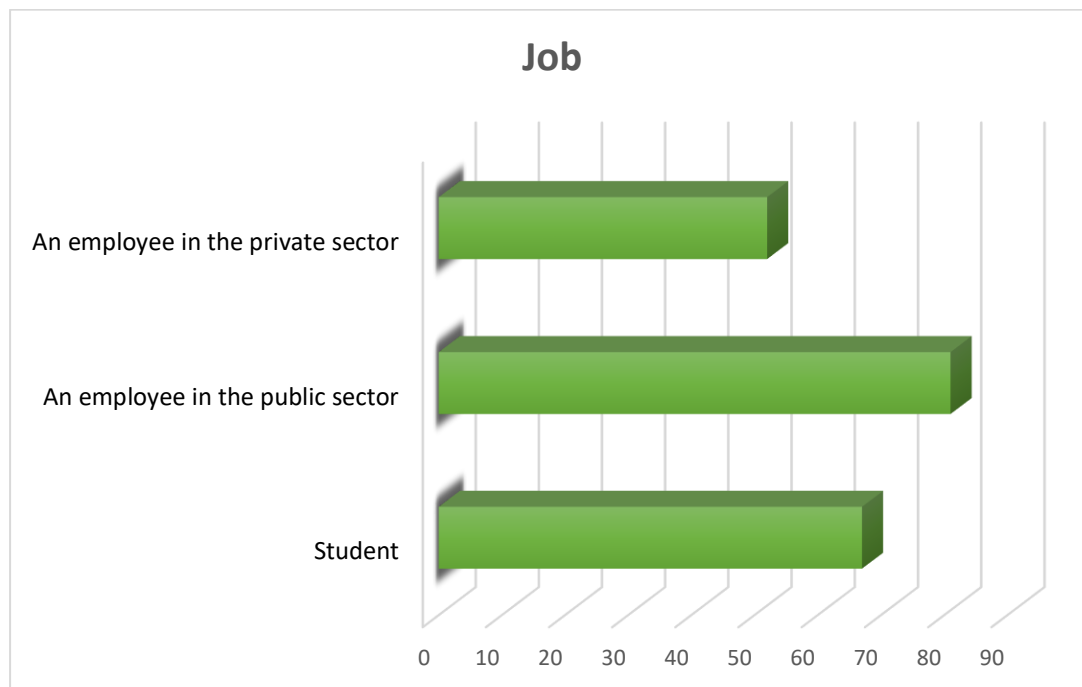
Source: Prepared by studentsbased on the program Excel

Given this data, we can see that:

- The largest group of respondents are employees in the public sector, making up 40.5% of the total.
- Students are the second largest group at 33.5%.
- Employees in the private sector make up the smallest group at 26.0%.

2- **Pearson correlation**

➢ **The validity of the internal consistency of paragraphs perceived ase of use (Part One):**

Correlation		perceived ease of use	I find using the digital Banking application/ website to be easy to use.	Learning how to use The features offered by Digital banking Is easy	Completing tasks such as transferring Money paying bills through digital banking Is very easy.	I consider using Digital banking Features tobe a time-saver.
perceived ease of use	Pearson correlation	1	,769**	,375**	,848**	,141*
	Sig.		,000	,000	,000	,046
	N	200	200	200	200	200
I find using the digital Banking application/ website to be easy to use.	Pearson correlation	,769**	1	,456**	,313**	,100
	Sig.	,000		,000	,000	,158
	N	200	200	200	200	200
Learning how to use the features offered by Digital banking is easy.	Pearson correlation	,375**	,456**	1	,179*	,058
	Sig.	,000	,000		,011	,417
	N	200	200	200	200	200
Completing tasks such as transferring Money or paying bills through digital banking is very easy.	Pearson correlation	,848**	,313**	,179*	1	,127
	Sig.	,000	,000	,011		,073
	N	200	200	200	200	200
I consider using Digital banking features to be a time-saver.	Pearson correlation	,141*	,100	,058	,127	1
	Sig.	,046	,158	,417	,073	
	N	200	200	200	200	200
**. The correction rate is 0.01 (digital).						
*. The correction issignificant at a distance of 0.05 (bilatéral).						

This axis consists of a group of paragraphs (from 01 to 04), and in order to determine the stability of these axes as a whole, we touched on the use of the Pearson correlation coefficient in order to determine the extent of internal consistency between its paragraphs.

We can see from the above table that:

- For statistical significance: All correlation coefficients are statistically significant ($p < 0.05$) except for the relationship between application use and necessary features ($p = 0.158$).
- Direction of correlation: All correlations are positive, meaning that the value of one variable increases as the value of the other variable increases. Correlation analysis shows strong relationships between digital banking usage variables.
  o H0: I do not find the digital banking app/web site easy to use.
  o H1: H0 I find the digital banking app/web site easy to use.

❖ Comment: From the table above, it is clear to us that's ig=0.00, which is less than the 5% level of significance. Therefore, we reject the null hypothesis and accept the proposed alternative hypothesis.

➢ **The validity of the internal consistency of paragraphs perceived usefulness (PartTwo):**

Correlation		perceived usefulness	Using digital banking Services allows me to manage my finances more efficiently than traditional Methods."	Digital banking services save me time.	The digital banking App/web site offers Features that meet most of my banking needs.	I find that digital Banking is an Indispens-able tool for managing finances in today world.
perceived usefulness	Pearson correlation	1	,766**	,201**	,283**	,784**
	Sig.		,000	,004	,000	,000
	N	200	200	200	200	200
Using digital banking Services allows me to Manage my finances more efficiently than traditional Methods.	Pearson correlation	,766**	1	,276**	,250**	,203**
	Sig.	,000		,000	,000	,004
	N	200	200	200	200	200
Digital Banking Services save me time.	Pearson correlation	,201**	,276**	1	,201**	,040
	Sig.	,004	,000		,004	,577
	N	200	200	200	200	200
The digital banking app/web site offers features that meet most of my banking needs.	Pearson correlation	,283**	,250**	,201**	1	,190**
	Sig.	,000	,000	,004		,007
	N	200	200	200	200	200
I find that digital Banking is an Indispensable tool	Pearson correl	,784**	,203**	,040	,190**	1

form managing	ation					
finances in today	Sig.	,000	,004	,577	,007	
world.	N	200	200	200	200	200
**. The correlation is significant at the 0.01 level (two-tailed).						

We can see from the above table that:

- UP with the first variable (use services to pay money and save time). Correlation coefficient: 0.766, p-value: 0.000 (less than 0.05, so the correlation is statistically significant, strong, and positive).
- With the second variable (the effect of facilities on trust in banking services), Correlation coefficient: 0.201; p-value: 0.004 (less than 0.05, so the correlation is statistically significant and positive but weak).
- UP with the third variable (measures to increase confidence in banking services) Correlation coefficient: 0.283 p-value: 0.000 (less than 0.05, so the correlation is statistically significant and positive but moderate).
- UP with the fourth variable (difficulty in using online banking) Correlation coefficient: 0.784 p-value: 0.000 (lesst han 0.05, so the correlation is statistically significant, strong, and positive).

o H0: Using digital banking does not allow me to manage my money more efficiently than traditional methods.
o H1: Using digital banking allows me to manage my money more efficiently than traditional methods.

❖ Comment: From the above table it is clear to see that sig = 0,00 which is less than the 5% level of significance. Therefore, we reject the null hypothesis and accept the proposed alternative hypothesis.

> **The validity of the internal consistency of paragraphs perceived risk (ThirdPart):**

Correlation		perceived risk	I fear the malfunction Of machines anddigitaldev icewhen carrying out a digital banking transaction	You have concerns About using the digital bank due to potential riskssuch as identity theft orfraudwh en using digital banking Services.	You believethat the benefits of digital banking services outweigh the potential risks.
perceived risk	Pearson correlation	1	,718**	,420**	,776**
	Sig.		,000	,000	,000
	N	200	200	200	200
I fear the mal function of machines and Digital devices when carrying out a digital banking transaction.	Pearson correlation	,718**	1	,547**	,118
	Sig.	,000		,000	,097
	N	200	200	200	200
You have concerns About using the digital bank due to potential risks such as identity theft or fraud when using digital banking Services.	Pearson correlation	,420**	,547**	1	,103
	Sig.	,000	,000		,147
	N	200	200	200	200
You believe that the benefits of digital banking services outweigh the potential risks.	Pearson correl	,776**	,118	,103	1

	ation				
	Sig.	,000	,097	,147	
	N	200	200	200	200
**. La corrélation est significative au niveau 0.01 (bilatéral).					

- RP has a strong positive correlation with Variable 1 (r = 0.718, p < 0.001) and Variable 4 (r = 0.776, p < 0.001). This indicates that as RP increases, both Variable 1 and Variable 4 tend to increase significantly.

- RP has a moderate positive correlation with Variable 2 (r = 0.420, p < 0.001), suggesting a significant, but less strong, positive relationship.
- Variable 1 and Variable 2 have a moderate positive correlation (r = 0.547, p < 0.001).
- There was a strong, positive correlation between RP and Variable 1, which was statistically significant, r(200) = 0.718, p < 0.001."
- "A moderate, positive correlation was observed between RP and Variable 2, r(200) = 0.420, p < 0.001

o H0: Do not believe that the benefits of digital banking outweigh the potential risks
o H1: the benefits of digital banking outweigh the potential risks

❖ Comment: From the above table it is clear to us that sig = 0,00 which is less than the 5% level of significance. Therefore, we reject the null hypothesis and accept the proposed alternative hypothesis.

➢ **The validity of the internal consistency of paragraphs the behavioural intention to use (FourthPart):**

Correlation						
		the behavioral intention to use	You are satisfiedwithy ourexperience using Digital banking Transactions.	I have gained complete confidence In using digital banking transactions.	I intend to use digital banking services regularly in the future.	I recommend using The digital banking Services offered by The bank I deal with to my friends and family.
the behavioral intention to use	Corrélation de Pearson	1	,893**	,385**	,504**	,877**
	Sig. (bilatérale)		,000	,000	,000	,000
	N	200	200	200	200	200
You are satisfied with your experience using Digital banking Transactions.	Corrélation de Pearson	,893**	1	,437**	,453**	,568**
	Sig. (bilatérale)	,000		,000	,000	,000
	N	200	200	200	200	200
I have gained complete confidence In using digital Banking transactions.	Corrélation de Pearson	,385**	,437**	1	,182*	,239**
	Sig. (bilatérale)	,000	,000		,010	,001
	N	200	200	200	200	200
I intend to use digital banking services regularly in the future.	Corrélation de Pearson	,504**	,453**	,182*	1	,440**
	Sig.	,000	,000	,010		,000

|						
	(bilatér ale)					
	N	200	200	200	200	200
I recommend using The digital banking Services offered by The bank I deal with to my friends and family.	Corrél ation de Pearso n	,877**	,568**	,239**	,440**	1
	Sig. (bilatér ale)	,000	,000	,001	,000	
	N	200	200	200	200	200
**. La corrélation est significative au niveau 0.01 (bilatéral).						
*. La corrélation est significative au niveau 0.05 (bilatéral).						

- RP has a strong positive correlation with Variable 1 (r = 0.718, p < 0.001) and Variable 4 (r = 0.776, p < 0.001). This indicates that as RP increases, both Variable 1 and Variable 4 tend to increase significantly.
- RP has a moderate positive correlation with Variable 2 (r = 0.420, p < 0.001), suggesting a significant, but less strong, positive relationship.
- Variable 1 and Variable 2 have a moderate positive correlation (r = 0.547, p < 0.001).
- There was a strong, positive correlation between RP and Variable 1, which was statistically significant, r(200) = 0.718, p < 0.001."
- "A moderate, positive correlation was observed between RP and Variable 2, r(200) = 0.420, p < 0.001
- There was a very strong, positive correlation between ATT and Variable 1, which was statistically significant, r(200) = 0.893, p < 0.001."
- "A moderate, positive correlation was observed between ATT and Variable 3, r(200) = 0.504, p < 0.001.

- o H0 I do not have complete trust in digital banking transactions
- o H1 I have full trust in digital banking transactions

- ❖ Comment: From the table above, it is clear to us that sig=0.00, which is less than the 5% level of significance. Therefore, we reject the null hypothesis and accept the proposed alternative hypothesis.

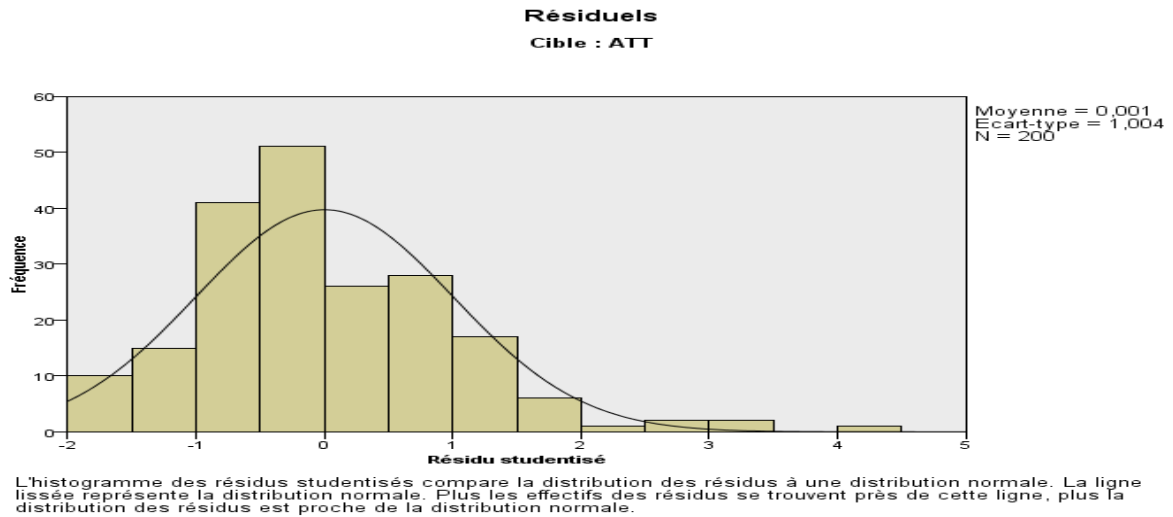## The third requirement: Automatic linear modeling

Linear modeling is a statistical method used to model the relationship between a dependent variable and one or more independent variables. The automatic linear modeling process in SPSS aims to select the best model by evaluating various predictors and their interactions.

We used two methods in Automatic linear modeling the first output were as the following:

➤ **First method :**

Importance des prédicteurs
Cible : ATT

Le moins important   Le plus important
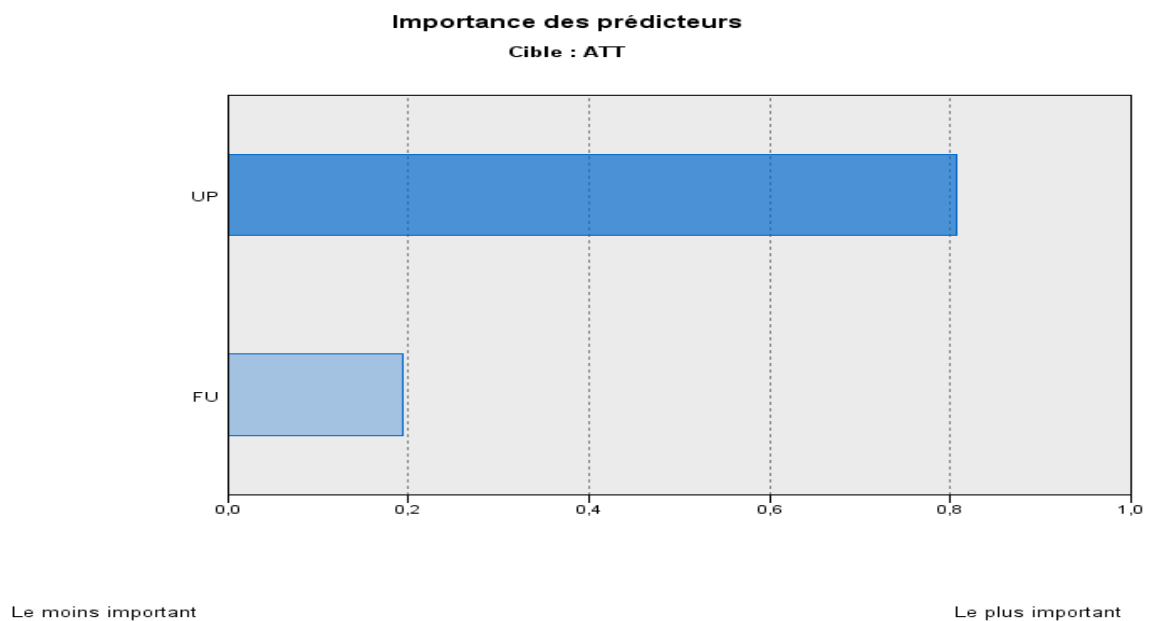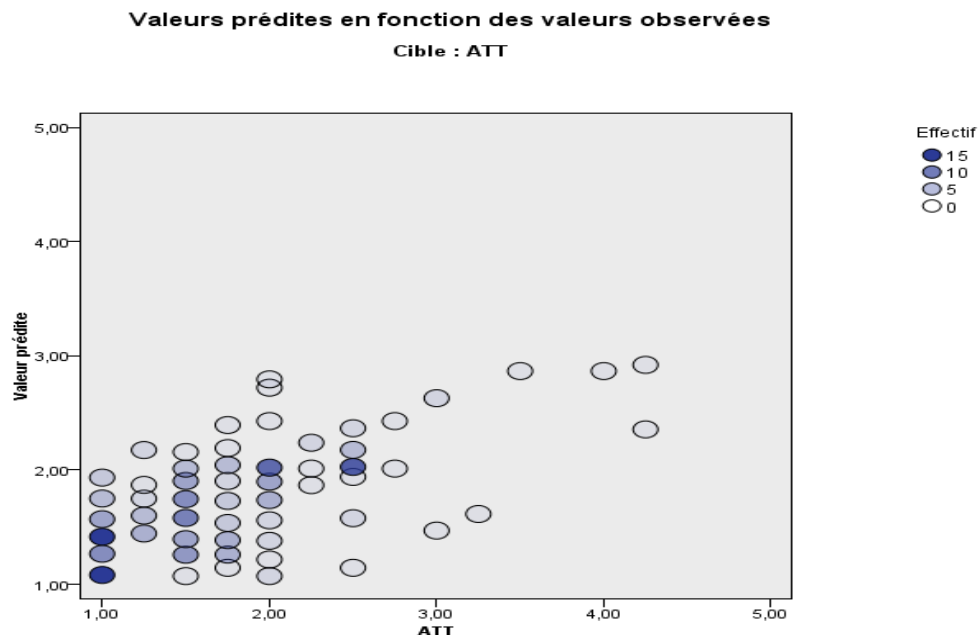
❖ Comment: This line graph shows the relative importance of different factors in a study. The blue line represents the most important predictor ease of use, while the white square like lyre presents the least important one perceived usefulness.
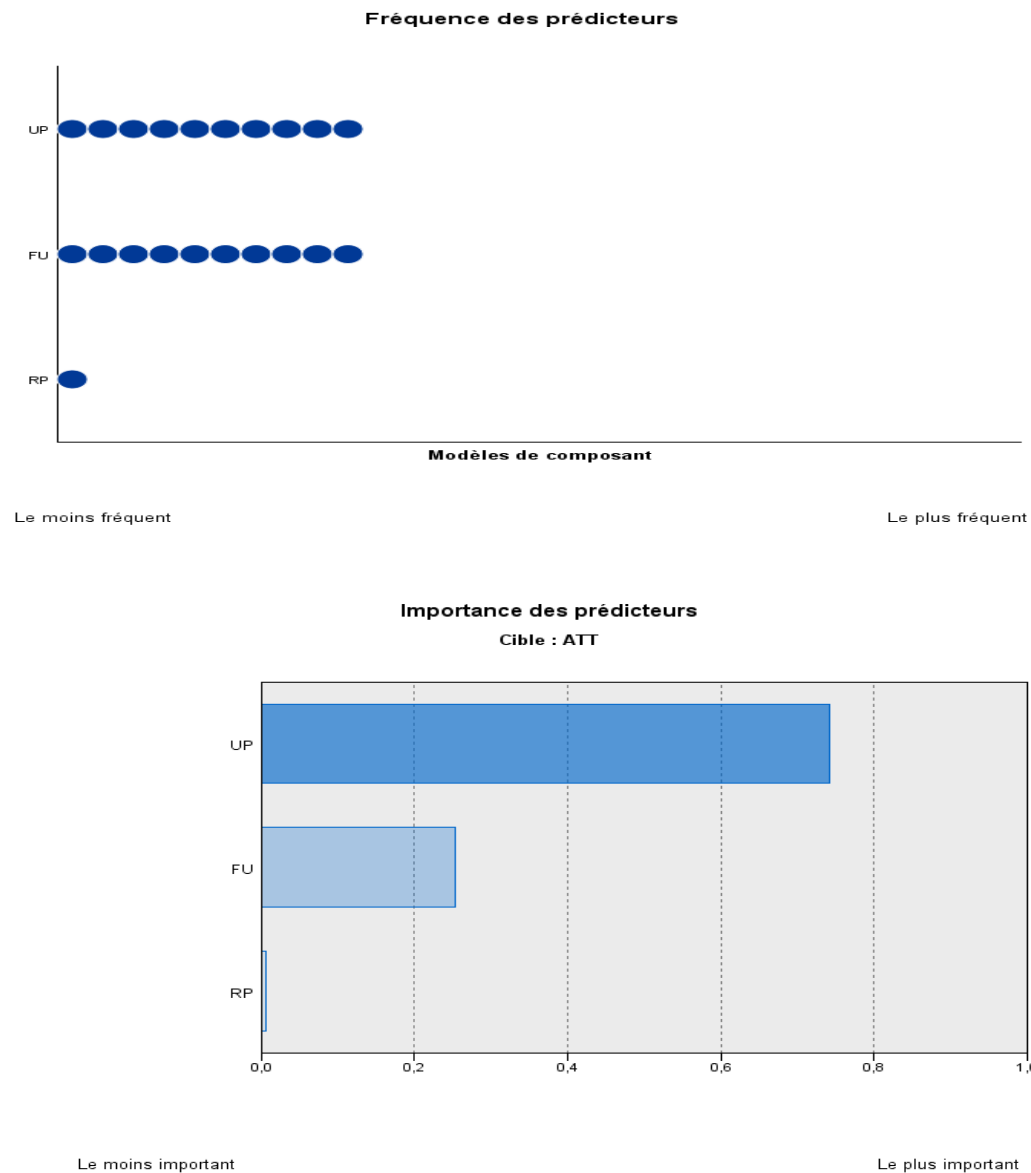
Résiduels
Cible : ATT

Moyenne = 0,001
Ecart-type = 1,004
N = 200

L'histogramme des résidus studentisés compare la distribution des résidus à une distribution normale. La ligne lissée représente la distribution normale. Plus les effectifs des résidus se trouvent près de cette ligne, plus la distribution des résidus est proche de la distribution normale.

❖ Comment: From this graph the histogram of residuals compares the distribution of residuals to a normal distribution. The smoothed line represents the normal distribution. The closer the numbers of residuals are to this line, the closer the distribution of residuals is to the normal distribution. As for linearity, we see it graphically in the following scatterplot:

Valeurs prédites en fonction des valeurs observées
Cible : ATT

.

❖ Comment: The observations tend to follow the regression line, by their approximation in a positive direction, which is justified by the significantly strong positive correlation.

In the second method the resultswere as the following :

Fréquence des prédicteurs

Le moins fréquent   Le plus fréquent

Importance des prédicteurs
Cible : ATT

Le moins important   Le plus important

❖ Comment: In these two graphs showed the relative importance of different factors in a study. The first one and the second one represents the most important predictor are ease of use and perceived usefulness, while the last one represents the least important one which is perceived risk.

Références

Djamel, B., & Redha, D. (April 2023). Verification Of the Technology Acceptance Model in The Adoption of Internet Banking Services in Algeria. مجلة الاقتصاد والبيئة

Kelly, A. E., & Palaniappan, S. (2023). Using a technology acceptance model to determine factors influencing continued usage of mobile money service transactions in Ghana. *Journal of Innovation and Entrepreneurship*.

<u>Conclusion</u>

Conclusion

It is remarkable that in recent years, all banks in Algeria have been offering their clients the possibility to conduct banking operations through digital platforms, meaning clients do not need to visit branches. Digitalization has undoubtedly become a necessity for these banks rather than an additional option.

This transformation poses a challenge for these banks to maintain their position in the market. To achieve this, banks must undertake profound changes ; These transformations contribute positively to the banking industry, offering advantages such as increased convenience, faster execution, cost reduction, and profitability. To reach these goals, banks must strategize with innovative ideas to revolutionize their existing models .

It is also faced by many hard ships most coming from the clients, Since the services digitalized must be offering convenience to them making it worth the transformation and accepted by society, which can projected on our hypothesis providing us with the following results after a through questioning :

- The digitalization of banks is widely accepted in the society
- It provides an easy to use interface making it usable by anyone
- The experience is satisfying inceit covers most if the needs
- The only worry inducing downside is the security from different threats while using the app/website; mainly the risk of piracy which leads to losingassetes or the risk of losing the banking account.
- But the outcome of research shows that most view the benefits to be more pleasentenough to ignore the security risks, And view it trust worhty.

Recomendation:

- The banks have to run surveys to optimize the services and make sure it fulfills the needs of clients.
- Making use of the reward system to attract a bigger client base.
- Reinforce their security by making third party secuirty checks obligatory, As an exampleusing Two-Factor-Authentifcation.
- The Users have to make sure to never connect into insecured networks.
- Make a complicated password and not only using basic info such as bithdays.
- Keeping an eye on anyunsual activities and conracting customer services if there'sany

Study prospects :
- The future of digital banks in Algeria.
- The use of financialtechnology (FinTech) in digital banks.
- Comparison of digital banks in Algeria compared to other countries

References

Références

(s.d.). Récupéré sur Groww: https://groww.in/banking/digital-banking

(2022, 1 6). Récupéré sur RiskOptics: https://reciprocity.com/blog/digital-banking-challenges-opportunities/

Ahmed, M. (2020). *Blockchain in data analytics.* Cambridge Scholars .

Anastasiou, M. (2023). Master Thesis Digital Banking & Financial Technology. *University Piraeus POSTGRADUATE PROGRAMME Department of Management and Business Administration*. Piraeus.

Awelani, R., & Kagiso, M. (2021). DIGITAL BANKING RESEARCH DOCUMENT. *FSCA*.

BOULAHROUZ, G., & BOURABAH, Y. (2021/2022). *La Digitalisation Du Secteur Bancaire.*

Cohen, D. (2022, 09 28). *Cloud Computing : Qu'est-ce que c'est ? Comment ça fonctionne ?* Récupéré sur data scientest : https://datascientest.com/cloud-computing

Djemadi , L., & Khaled , K. (2021/2022). La digitalisation et son impact sur les activités bancaires Cas de la BADR "kherrata" Agence 360.

Mansurovna, M. L. (2023). DIGITAL BANKING, ITS ADVANTAGES AND DISADVANTAGES. *BioGecko, Vol 12 Issue 03 2023*.

Pappu , R. (2018). Digital Banking Services:Customer Perspectives. *researchgate*.

Scott , R., & Alexander, S. (2023, 11). *What are the 5 V's of big data?* Récupéré sur TechTarget: https://www.techtarget.com/searchdatamanagement/definition/5-Vs-of-big-data

Tarik, S., & Bouchria, K. I. (2022). The algerian public banks in the era of the digital transformation. *International journal of economic performance*.

White, D. (2023, 4 5). Récupéré sur tech funnel: https://www.techfunnel.com/fintech/digital-banking-challenges-opportunities/

غريب , ا.&, ., دريد , ح (2022, 12). الصيرفة الرقمية كتوجه حديث للبنوك الجزائرية- دراسة إحصائية. *المجلة العلمية المستقبل الاقتصــادي, المجلد 10(العدد. 01).*

List of reference

ماجدة , ز.,& ,دلال , و. (11 06 ,2022). دراسة كوفيد-19 في ظل جائحة الجزائرية بالبنوك التحول الرقمي (ورقلة ـ تقرت) فروع البنوك الجزائرية ميدانية لعينة من. مذكرة مقدمة لاستكمال متطلبات شهادة ماستر اقتصاد :العلوم الاقتصادية قسم: العلوم الاقتصادية والعلوم التجارية وعلوم التسيير :أكاديمي الميدان نقدي و بنكي.

رضا, س. ف. (2021/2020). رقمنة البنوك و دورها في العلوم السياسية مذكرة تخرج لنيل شهادة الماستر BDL-BADR في مكافحة الفساد المالي في الجزائر دراسة حالة لبنكي. جامعة الدكتور مولاي العلاقات الدولية العلوم السياسية و قسم العلوم السياسية كلية الحقوق و الطاهر -سعيدة-.

Djamel, B., & Redha, D. (April 2023). Verification Of the Technology Acceptance Model in The Adoption of Internet Banking Services in Algeria. جملة الاقتصاد والبيئة.

Kelly, A. E., & Palaniappan, S. (2023). Using a technology acceptance model to determine factors influencing continued usage of mobile money service transactions in Ghana. *Journal of Innovation and Entrepreneurship*.

Appendix

Questionnaire Form

Dear Sir/Madam

We are honored to present to you this questionnaire related to our graduation thesis for the Master's Degree in Management Sciences, specializing in Banking Management. The title of the thesis is: Digital Banking challenges and opportunities.

Therefore, we kindly requestthat you fill it out carefully andaccurately. Please accept our utmost expressions of respect, appreciation, and gratitude.

To answer, simply put an (X) mark in the correct box.

Axis 1: Accessibility					
	Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
I find using the digital banking application/website to be easy to use					
Learning how to use the features offered by digital banking is easy					
Completing tasks such as transferring money or paying bills					

through digital banking is very easy					
I consider using digital banking features to be a time-saver.					
Axis 2:Perceived benefit					
Using digital banking services allows me to manage my finances mo efficiently than tradition methods.					
Digital banking services save me time.					
The digital banking app/website offers features that meet most of my banking needs.					
I find that digital banking is an indispensable tool for managing finances in today's world.					
Axis3: Perceived risks					
I fear the malfunction of machines and digital devices when carrying out a digital banking transaction.					
You have concerns about using the digital bank due to potential risks such as identity theft or fraud when using digital banking services.					
You believe that the benefits of digital banking services outweigh the potential risks.					
Axis4: Position					
You are satisfied with					

your experience using digital banking transactions.					
I have gained complete confidence in using digital banking transactions.					
I intend to use digital banking services regularly in the future.					
I recommend using the digital banking services offered by the bank I deal with to my friends and family.					

Personal Information:

Gender: Male: ☐ Female: ☐

Age:

Between 20 and 30 years old ☐   Between 30 and 40 years old ☐

Between 40 and 50 years old ☐ Over 50 years old ☐

Educational Qualification:

Bachelor's degree ☐   Master's degree ☐   Doctoral degree

Situation:

Student ☐ Public sector employee ☐ Private sector employee ☐

Grateful for your help