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FinTech Futures: Determinants and Challenges of Mobile Money Adoption in The Algerian Context

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ABSTRACT

The purpose of this study is to identify the key factors influencing the adoption of financial technologies (FinTech) in Algeria, with a particular focus on mobile money services. The research adopts a quantitative approach grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT) model. Aligned with a positivist epistemological stance and guided by deductive reasoning, the study empirically tests the proposed hypotheses. Data were collected through a structured questionnaire administered to a sample of 415 Algerian postal card holders, drawn from a total population of approximately 1,500,000 individuals. The sample size was considered statistically sufficient to ensure the representativeness and validity of the results, based on standard sampling calculation methods. Multivariate statistical techniques were employed to analyze the data and evaluate the relationships among the key explanatory variables influencing FinTech adoption.

The findings indicate that ease of use, perceived security, institutional trust, and expected performance are the main drivers of mobile money adoption. Conversely, social influence appeared to have little effect in the Algerian context. These results have important managerial implications, particularly in terms of service design, financial education, and building digital trust. The study concludes that promoting FinTech solutions requires adapting them to the local context to ensure sustainable financial inclusion.

Key words: Financial Technology (FinTech), Mobile money, Financial Literacy, Digital Financial Services, Adoption Intention.

RESUMÉ

L'objectif de cette étude est d'identifier les principaux facteurs influençant l'adoption des technologies financières (FinTech) en Algérie, en particulier les services de mobile money. La recherche adopte une approche quantitative fondée sur le modèle UTAUT (Unified Theory of Acceptance and Use of Technology). S'inscrivant dans une posture épistémologique positiviste et suivant un raisonnement déductif, l'étude vise à tester empiriquement les hypothèses formulées. Les données ont été collectées au moyen d'un questionnaire structuré, distribué auprès d'un échantillon de 415 détenteurs de cartes postales algériennes, issu d'une population estimée à environ 1 500 000 individus. La taille de l'échantillon est jugée statistiquement suffisante pour garantir la représentativité et la validité des résultats, conformément aux méthodes standards de calcul d'échantillonnage. Les données recueillies ont été analysées à l'aide de techniques statistiques multivariées afin d'examiner les relations entre les variables explicatives clés et l'adoption des services FinTech.

Les résultats montrent que la facilité d'utilisation, la sécurité perçue, la confiance dans l'institution et la performance attendue sont les principaux facteurs qui influencent l'intention d'adopter le mobile money. À l'inverse, l'influence sociale a montré un impact faible dans le contexte algérien. Ces résultats présentent des implications managériales importantes pour les acteurs du secteur financier, notamment en matière de conception des services, d'éducation financière et de stratégie de confiance numérique. En conclusion, l'étude met en évidence les leviers à activer pour promouvoir une inclusion financière durable à travers les solutions FinTech adaptées au contexte local.

Mots-clés : Technologie financière (FinTech), Argent mobile, Littératie financière, Services financiers numériques, Intention d'adoption.

ملخص

تهدف هذه الدراسة إلى تحديد العوامل الرئيسية التي تؤثر على تبني التقنيات المالية (FinTech) في الجزائر، لا سيما خدمات الدفع عبر الهاتف المحمول .(Mobile Money) تعتمد الدراسة على منهج كمي يستند إلى نموذج "UTAUT" نظرية التوحيد لقبول واستخدام التكنولوجيا). وتتبع الدراسة موقفا إبستيمولوجيًا وضعاني (Positivist) وتستند إلى منهج استدلالي (Deductive) لاختبار الفرضيات البحثية تجريبيًا. تم جمع البيانات من خلال استبيان منظم وُزّع على عينة مكونة من 415 من حاملي بطاقات البريد الجزائرية، تم اختيارهم من مجتمع إحصائي يُقدّر بحوالي 1,500,000 فرد. وتُعد هذه العينة كافية من الناحية الإحصائية لضمان تمثيل النتائج وموثوقيتها، وفقًا للمعايير المعتمدة في حساب حجم العينة. تم تحليل البيانات باستخدام تقنيات إحصائية متعددة المتغيرات من أجل دراسة العلاقات بين المتغيرات التفسيرية الرئيسية وسلوك تبني خدمات التكنولوجيا المالية.

أظهرت النتائج أن سهولة الاستخدام، الأمان المدرك، الثقة في المؤسسة، والأداء المتوقع تُعد من أبرز العوامل المؤثرة على نية استخدام خدمة Mobile Money، بينما كان تأثير العامل الاجتماعي ضعيفًا في السياق الجزائري. وتطرح هذه النتائج دلالات إدارية مهمة، خاصةً فيما يتعلق بتصميم الخدمات، والتثقيف المالي، وتعزيز الثقة الرقمية. وتخلص الدراسة إلى أن تطوير حلول FinTech يتطلب تكييفها مع الواقع المحلي لتحقيق شمول مالي مستدام.

الكلمات المفتاحية :التكنولوجيا المالية (FinTech)، المال عبر الهاتف المحمول، الثقافة المالية، الخدمات المالية الرقمية، نية الاستخدام.

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I am profoundly thankful to my family, who have been my primary source of strength, support, and motivation throughout this journey. A special thanks to my mother, my source of strength, whose patience, love, and constant encouragement have been invaluable to me. To my brothers and my sister, your encouragement and belief in my potential have pushed me to keep going.

And to my father's soul, whose high expectations and unwavering belief in me continue to guide and inspire me.

To the one who has always been present to support me, my friends.

Finally, I want to thank myself for enduring and for never giving up.

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List of Abbreviations

FinTech: Financial Technology

POS: Point Of Sale

UTAUT: Unified theory of Acceptance and use of Technology

MM: Mobile Money

CBDC: Central Bank Digital Currency

PCA: Principal Component Analysis

SPSS: Statistical Package for the Social Sciences

ATM: Automated Teller Machine

AI: Artificial Intelligence

KYC: Know Your Customer

Introduction

As digital transformation continues to reshape financial ecosystems globally, FinTech services have emerged as essential tools for enhancing financial inclusion, improving convenience, and increasing operational efficiency. In contrast to the success seen in Sub-Saharan Africa with mobile money adoption, Algeria remains behind in terms of user uptake, despite ongoing reforms aimed at modernizing its banking sector and promoting digital financial services. This discrepancy raises critical questions regarding the factors that influence FinTech adoption and whether globally recognized adoption models, such as UTAUT, hold contextual validity within the Algerian environment.

The core research problem centers on Algeria's low adoption rates of mobile money services, despite their growing availability. This issue necessitates an in-depth exploration of the key technological, economic, sociodemographic, and psychological factors that may influence user behavior. Furthermore, it compels an evaluation of the applicability of widely used technology adoption frameworks and the extent to which these models capture context-specific dynamics present in Algeria.

Accordingly, the primary objective of this research is twofold. First, it aims to identify and categorize the major determinants that shape the adoption of FinTech services in Algeria. Second, it seeks to assess the relevance and limitations of existing theoretical models, particularly the Unified Theory of Acceptance and Use of Technology (UTAUT), in explaining the adoption of mobile money within the country. This evaluation will also consider whether additional or unique contextual factors must be incorporated to improve the explanatory power of these models.

This research contributes to the broader understanding of digital financial service adoption in environments characterized by low trust in financial institutions, uneven digital infrastructure, and limited user familiarity with financial technology. It offers practical implications for FinTech developers, financial institutions, and policymakers by providing evidence-based insights that can inform targeted interventions aimed at increasing adoption and promoting financial inclusion.

To guide this investigation, the study is driven by the following research questions: What are the key determinants influencing FinTech adoption in Algeria, nd what unique factors specific to the Algerian setting must be considered to refine these models for local relevance?

Methodologically, the study adopts a quantitative strategy rooted in a post-positivist epistemological stance. Data collection was carried out using a structured questionnaire distributed to a representative sample of Algerian postal card holders. Statistical analysis techniques, including factor analysis and regression modeling, were employed to explore the relationships between key variables and evaluate the fit of the selected theoretical frameworks within the Algerian context.

This Dissertation is organized into three chapters. Chapter 1 presents a comprehensive literature review on FinTech and mobile money adoption, including the theoretical models commonly used to explain such phenomena. Chapter 2 outlines the research methodology, including sampling techniques, instrument design, and data analysis procedures. Chapter 3 presents the empirical findings, discusses their implications in light of the literature, highlights model limitations, and proposes practical and theoretical recommendations for improving FinTech adoption strategies in Algeria.

1. Outline of the research

Bibliometric, citation, and co-citation analyses of scientific articles have been performed to identify FinTech research tendencies. Bibliometric analysis is good in identifying frequent terms, evolving concepts, and future trends. It uses objectivist quantitative measurements and inquiry methods on textual data. Citation and co-citation analysis indicate patterns and the effect of journals, authors, keywords, and shared ideas. It also traces the growth of a scientific field through writers and partnerships.

Bibliometric analysis (citation and co-citation analyses) can reveal document patterns and attributes. By examining growth, institutional scholarship strengths, and possible schools of thought, bibliometric studies help explore, organize, and articulate works on any topic during any era. Citation and co-citation analyses allow scholars to use analytical capabilities, techniques, and tools to study academic journals, books, and articles to study any topic or subfield. The history, present, and future of a topic or area are covered in bibliometric research.

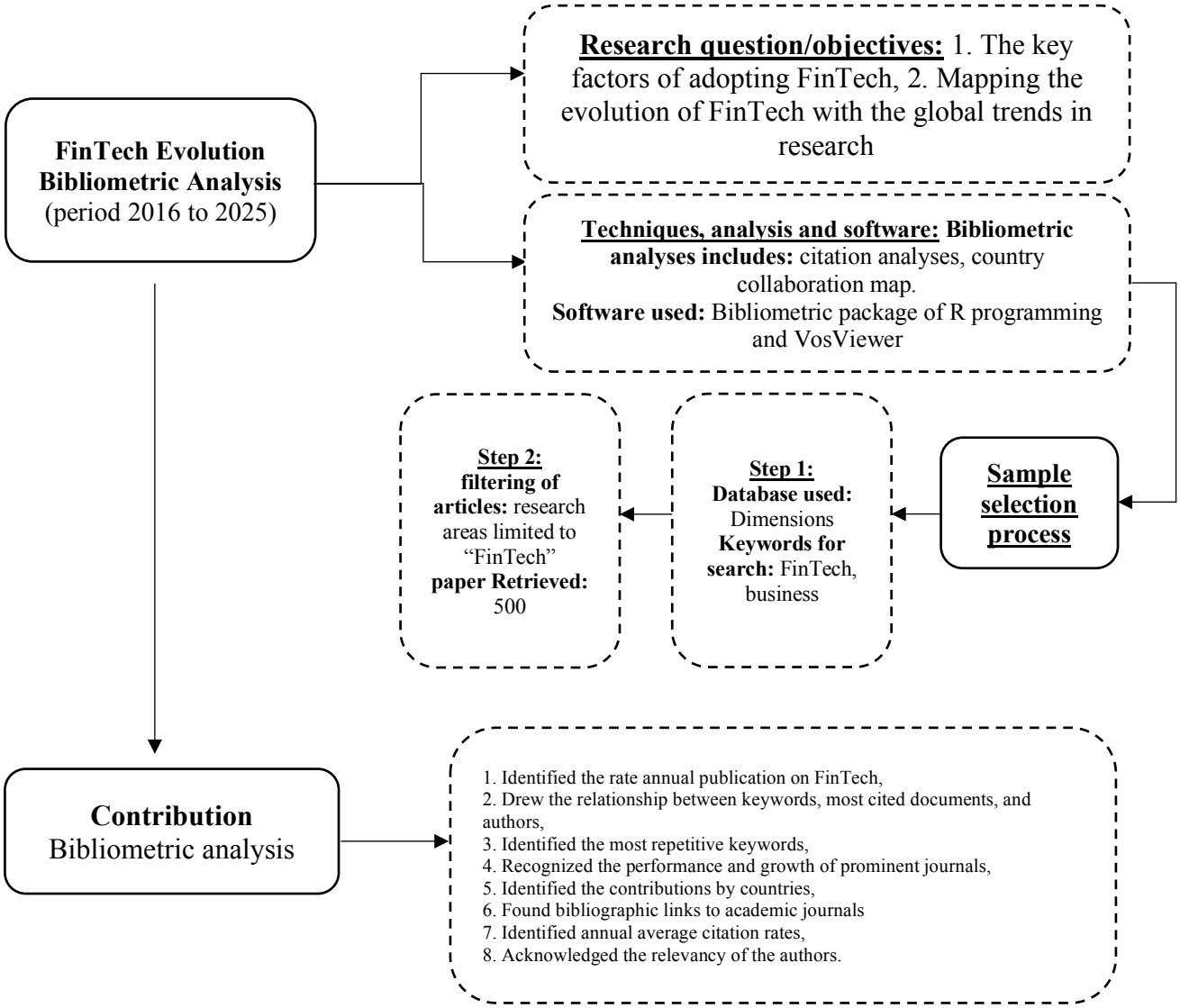
Bibliometric research methodologies allowed academics to follow the objectivist research ethic and analyze published written texts by applying quantitative tools and evaluating skills.

The history of FinTech began in early 1988. FinTech's historical evaluation period comprises three phases, according to Consumer International. FinTech advancements began in early 1986. From 1986 to 1967, FinTech was evaluated. The telegraph created and the transatlantic cable was established, an astonishing advancement. ATMs and internet banking were important achievements in the second period, 1967-2008. The 2008 third phase introduced a new digitization paradigm.

One of the most impactful FinTech innovations is mobile money (MM), a system that allows users to conduct financial transactions via mobile phones without the need for a traditional bank account. Mobile money has revolutionized financial access in regions with low banking penetration, particularly in Sub-Saharan Africa, where the industry reported 234 million active accounts and processed over $912 billion in transactions in 2023.(*GSMA-SOTIR-2024_Report*, n.d.) However, in the Middle East and North Africa (MENA) region, mobile money adoption has remained slow despite favorable conditions such as high mobile phone penetration and government-backed financial inclusion initiatives.(Reppas & Muschert, 2024)

Mobile money uptake in Algeria has been difficult despite its promise to improve financial inclusion. Over 47 million mobile users and rising internet penetration give Algeria the infrastructure for mobile financial services (*ARPCE 2013*, n.d.). Regulatory obstacles, a preference for cash transactions, and low trust in digital financial systems have slowed implementation. Algeria has yet to grow mobile money services, unlike Egypt and Morocco. Addressing regulatory barriers, expanding digital literacy, and encouraging financial service provider interoperability might maximize mobile money's potential in Algeria, boosting economic participation and financial stability.

Figure 01: Outline of the methodology

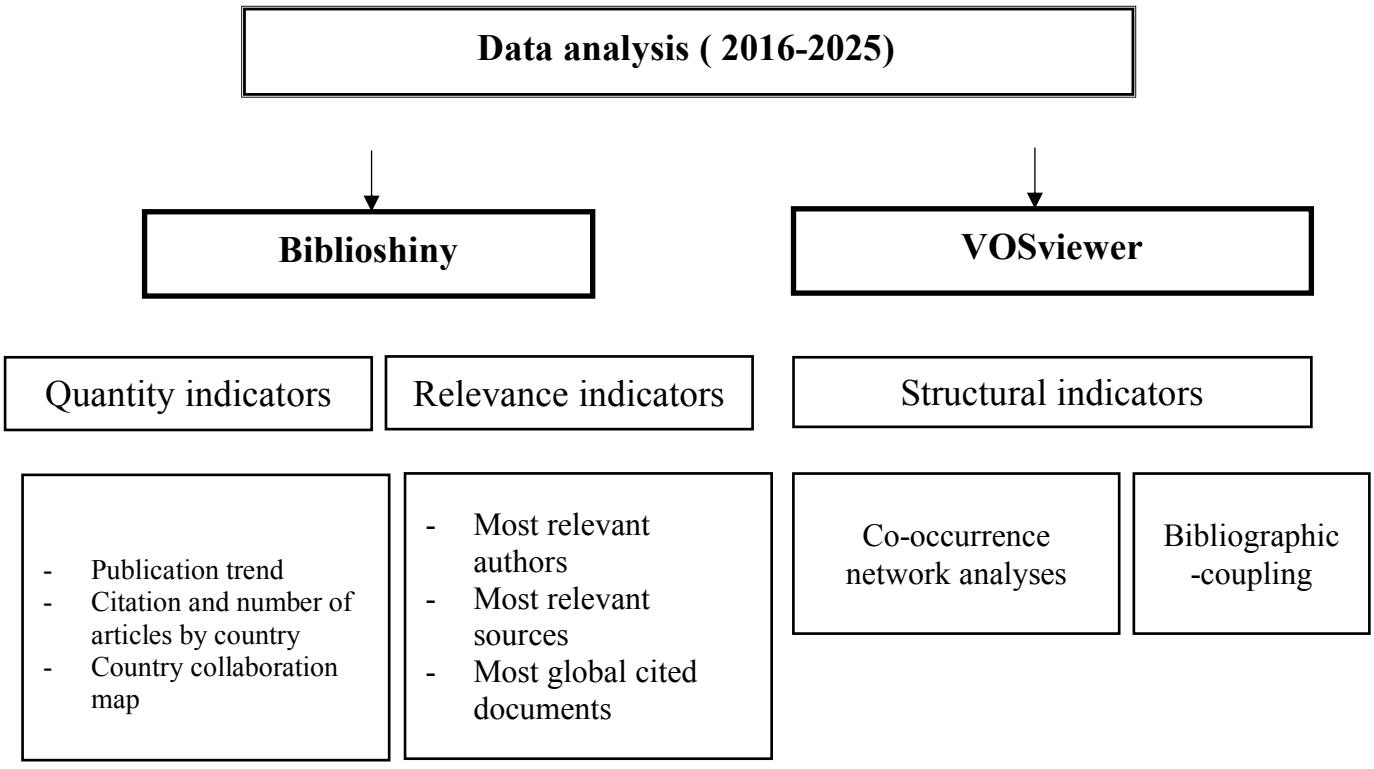


Source: the author

Figure 01 presents the bibliometric analysis framework for studying the evolution of FinTech research from 2020 to 2025. It clearly defines the research objectives, identifying key adoption factors and mapping global trends. The methodology follows a structured approach, starting with database selection (OpenAlex) and keyword-based filtering, narrowing down to 1632 relevant papers. The use of bibliometric techniques such as citation analysis, keyword relationships, and country collaboration mapping ensures a comprehensive evaluation of research impact. Additionally, tools like R's bibliometric package and VOSviewer are appropriately chosen for visualization and network analysis. However, minor formatting inconsistencies (e.g., uneven font emphasis and misplaced underlining) could be improved for clarity. Overall, this methodology provides a robust foundation for analyzing FinTech's scholarly progression.

1.1 Data analysis

Figure 02: Data analysis process



Source: The author

1.2 Bibliometric analysis

Bibliometric analysis has proven to be a powerful methodological tool for understanding the academic landscape related to FinTech adoption. Using quantitative techniques such as citation analysis, co-citation mapping, keyword co-occurrence, and collaboration networks enables researchers to uncover research trends, influential publications, and thematic structures within a specific field. In the context of this study, bibliometric analysis helped identify key factors influencing the adoption of FinTech, such as trust, perceived usefulness, security, and digital financial literacy terms that consistently emerged across highly cited papers and frequently used keywords.(Singh & Sinha, 2020) (Venkatesh et al., 2012a)

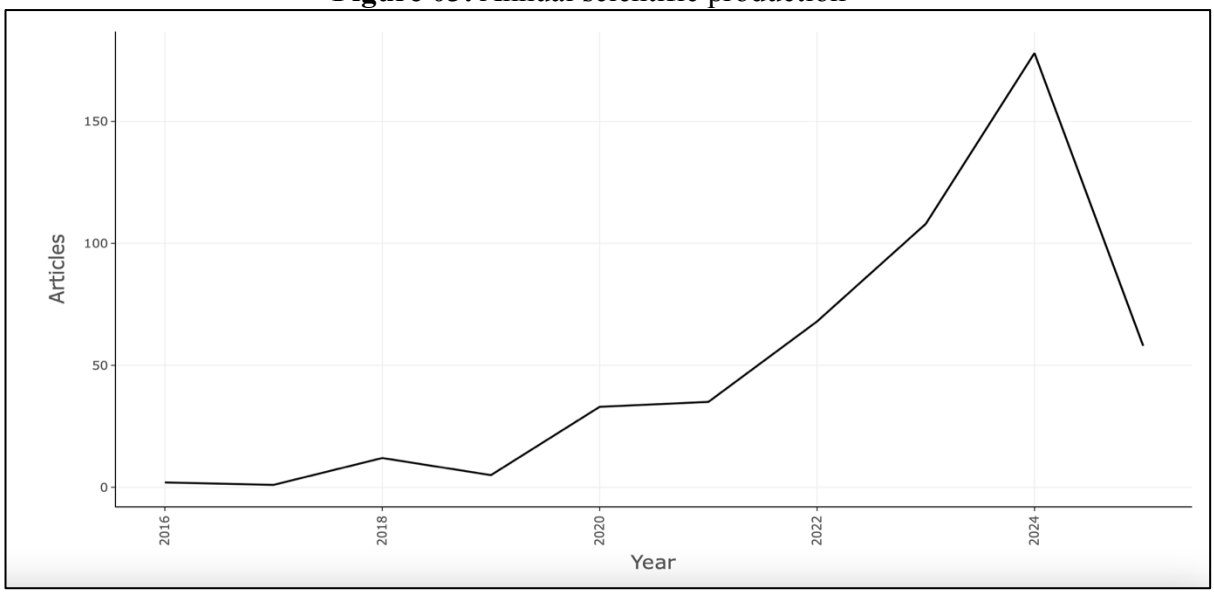
Tools like Biblioshiny (from the R Bibliometrix package) and VOSviewer facilitated the visualization of the research structure by generating insightful figures such as the keyword co-occurrence map, thematic maps, country collaboration networks, and citation impact diagrams. These visual outputs helped identify both established research domains and emerging themes such as blockchain integration, mobile money adoption, and AI-driven FinTech solutions.

Moreover, the Three-Field Plot (authors, keywords, and sources) revealed the interdisciplinary nature of FinTech research, involving fields such as economics, computer science, and regulatory studies. By revealing gaps in the literature, especially in regions like North Africa, the bibliometric approach added strategic value by shaping future research directions and guiding the empirical phase of this study.

Overall, bibliometric analysis enhanced the objectivity of the literature review and provided a comprehensive and data-driven foundation for understanding the evolution, influence, and adoption dynamics of financial technologies. (Aria & Cuccurullo, 2017; Van Eck & Waltman, 2010)

1.2.1 Scientific production trends

Figure 03: Annual scientific production

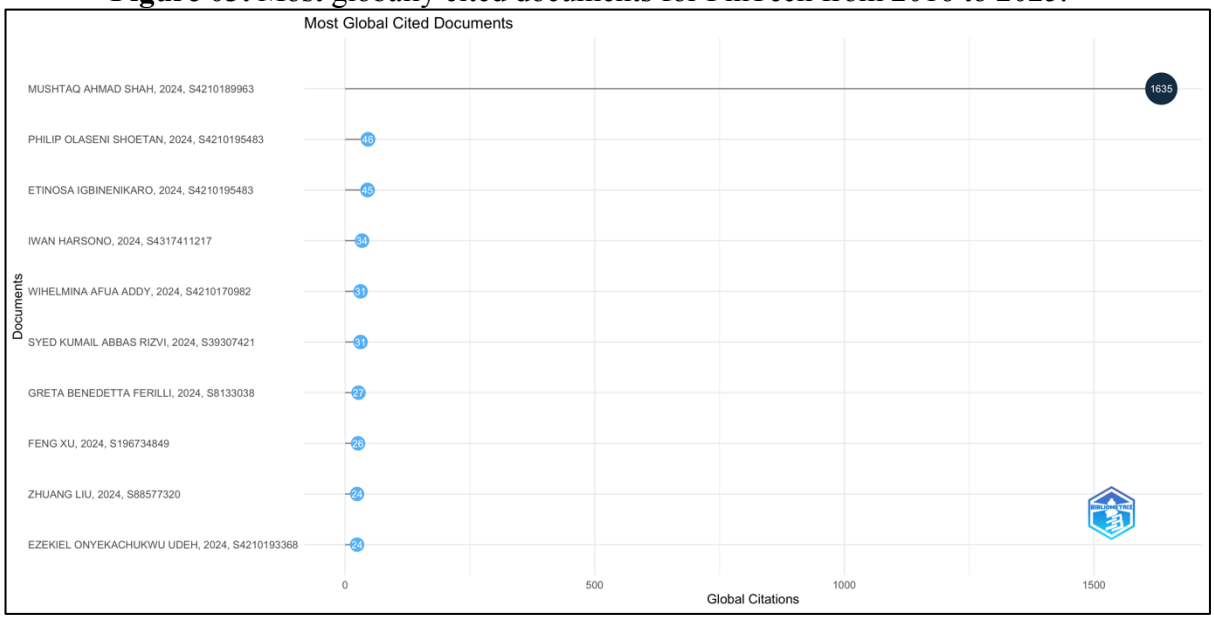


Source : Bibliometrix

Figure 03 illustrates the annual growth in FinTech-related academic publications from 2016 to 2025. The data show a steady rise in output beginning in 2019, with a sharp increase from 2021 onward, culminating in a peak of over 150 articles in 2024. This surge likely reflects heightened academic interest driven by technological advancements, policy initiatives, or broader socio-economic developments. In contrast, 2025 shows a notable decline in publication volume. This drop may be due to incomplete data, as the year may not have concluded at the time of collection, or it may indicate a saturation point or shift in research focus toward new emerging themes.

1.2.2 Research impact and influence

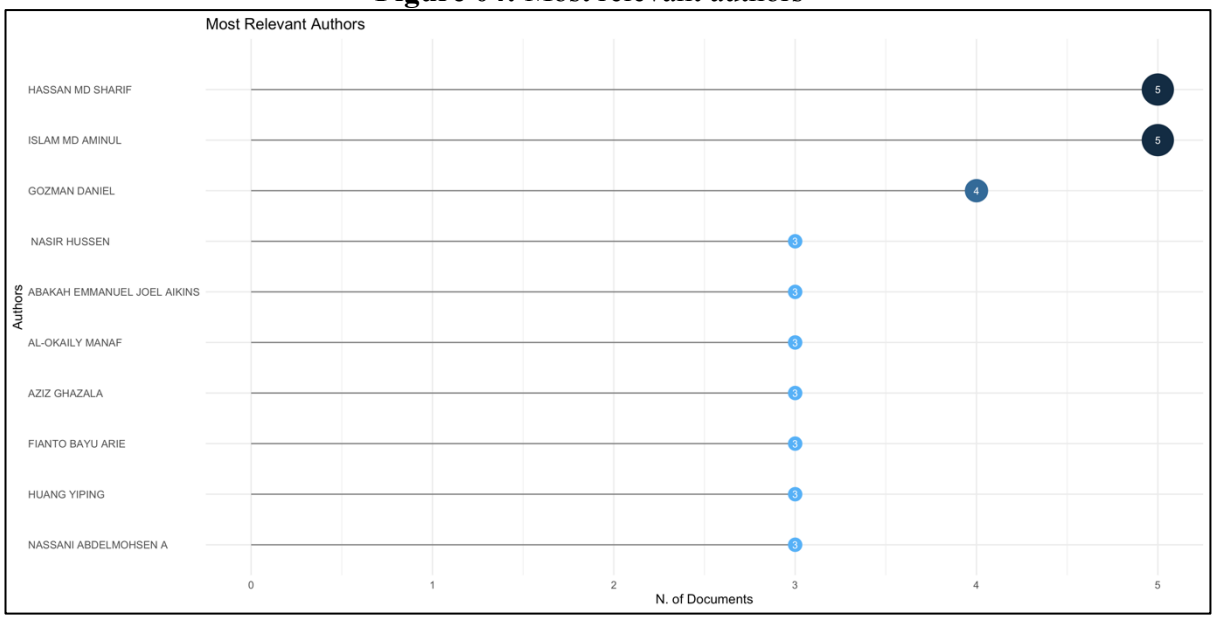
Figure 03: Most globally cited documents for FinTech from 2016 to 2025.



Source : Bibliometrix

This figure displays the most globally cited FinTech research documents for 2024, emphasizing the varying impact of academic contributions. One publication by Mushtaq Ahmad Shah stands out with 1,635 citations, far exceeding all others, indicating a significant influence on the field, likely due to novel concepts or methodologies. In contrast, the next most cited work received only 46 citations, highlighting a steep disparity. This uneven distribution suggests that a small number of key studies dominate scholarly discourse, while many others have limited visibility or impact.

Figure 04: Most relevant authors

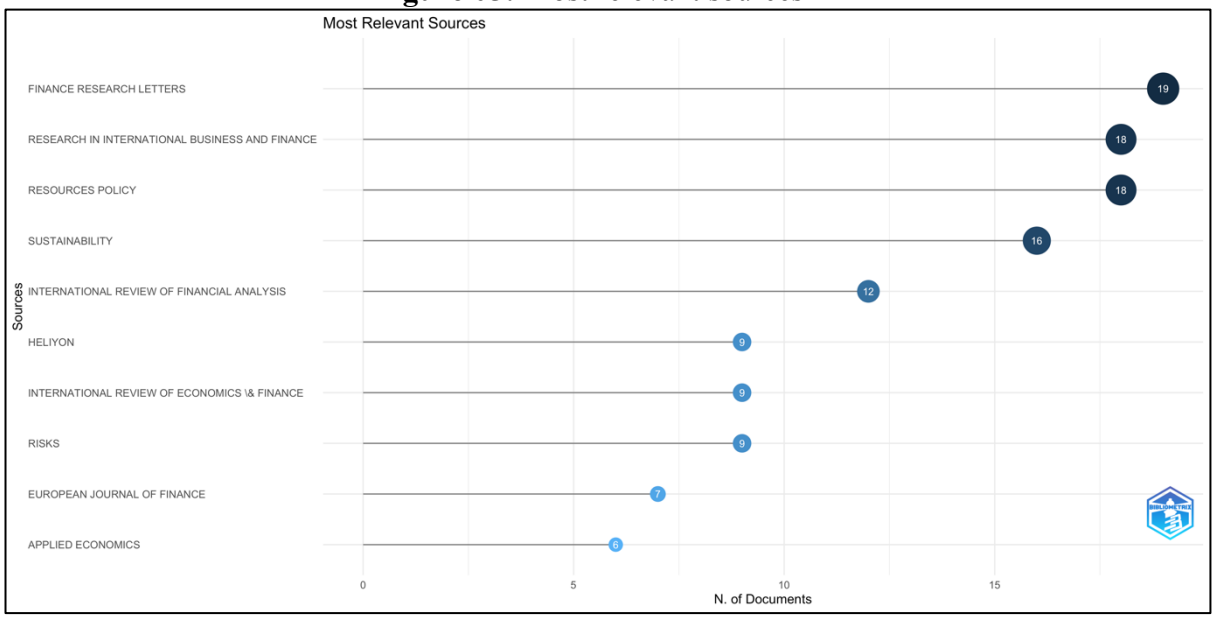


Source : Bibliometrix

Figure 05 illustrates the most relevant authors in the field based on publication count. The data reveals a concentration of scholarly output among a few leading contributors, notably Hassan Md Sharif and Islam Md Aminul, each with five publications, followed by Gozman Daniel with four. These authors appear to play a central role in shaping the research agenda within this domain. A second tier of contributors, including Nasir Hussen, Abakah Emmanuel Joel Akins, Al-Okaily Manaf, Aziz Ghazala, Fianto Bayu Arie, Huang Yiping, and Nassani Abdelmohsen A. Each with three publications, reflects continued academic engagement and broadens the field's research base. The overall pattern suggests a moderate concentration of authorship, characteristic of emerging or specialized research areas, where early thought leaders often establish foundational frameworks that guide subsequent studies.

This authorship distribution provides valuable insights for mapping the intellectual structure of the field and identifying potential collaborators, thought leaders, or key references for further research.

Figure 05: Most relevant sources



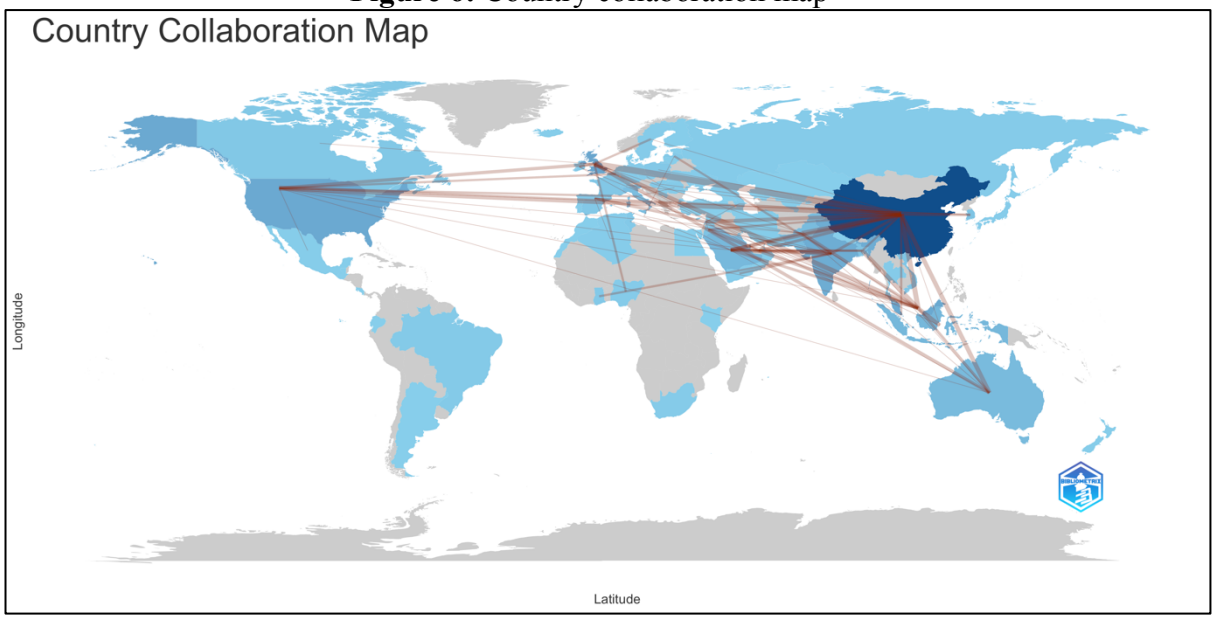
Source : Bibliometrix

Figure 06 presents the most frequently cited academic journals in the reviewed literature, revealing a concentration of FinTech research within a few key publications. *Finance Research Letters* leads with 19 articles, followed by *Research in International Business and Finance* and *Resources Policy*, each with 18. These journals serve as primary dissemination channels, reflecting their thematic alignment with FinTech topics. The journal *Sustainability* also shows strong relevance, contributing 16 articles and indicating growing interdisciplinary interest, particularly in environmental, social, and governance (ESG) dimensions. Other notable sources include the *International Review of Financial Analysis* (12 articles), *Heliyon*, *International Review of Economics & Finance*, and *Risks* (9 each), along with the *European Journal of Finance* (7) and *Applied Economics* (6).

This distribution underscores the interdisciplinary nature of the field, spanning finance, economics, sustainability, and policy. While finance-oriented journals remain dominant, the increasing presence of ESG-related outlets suggests a widening scope. These insights help map the intellectual landscape and guide researchers toward appropriate publication venues.

1.2.3. Collaboration networks

Figure 6: Country collaboration map

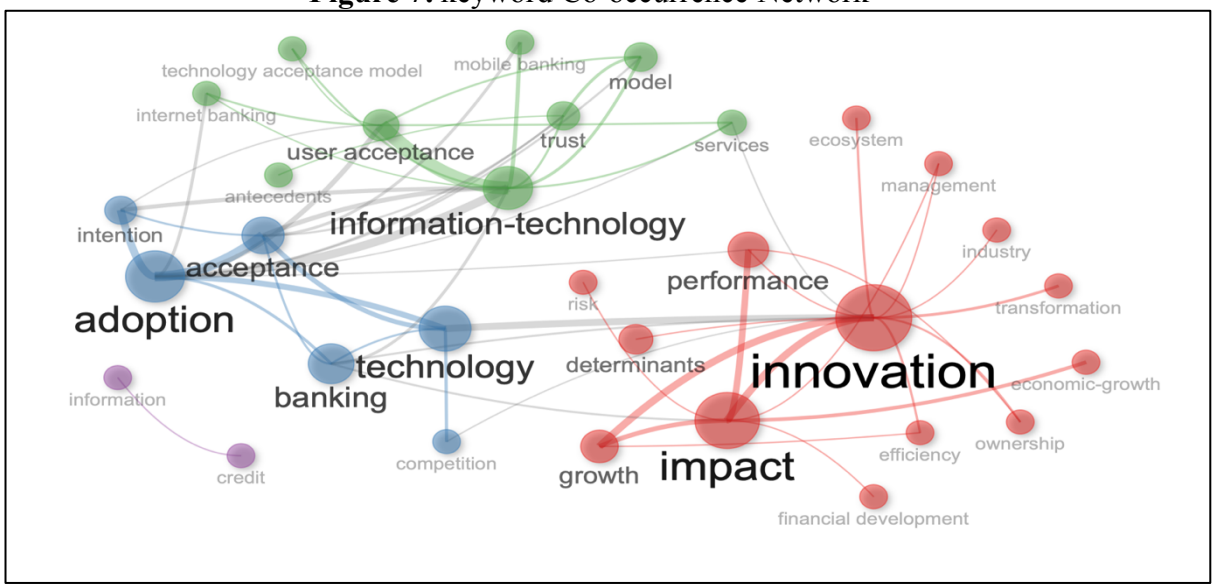


Source : Bibliometrix

Figure 07 shows how academic and technological advances in financial technology are interconnected globally. Their deep blue tint and broad collaboration lines show how much the US and China have shaped FinTech. North American, European, and Asian research links reveal a highly linked ecosystem where innovation, regulation, and technical progress are shared. However, lighter tints in portions of Africa and South America suggest decreased engagement, maybe due to research financing, legal, or market adoption concerns.

1.2.4 Keyword and thematic analysis

Figure 7: keyword Co-occurrence Network



Source : Bibliometrix

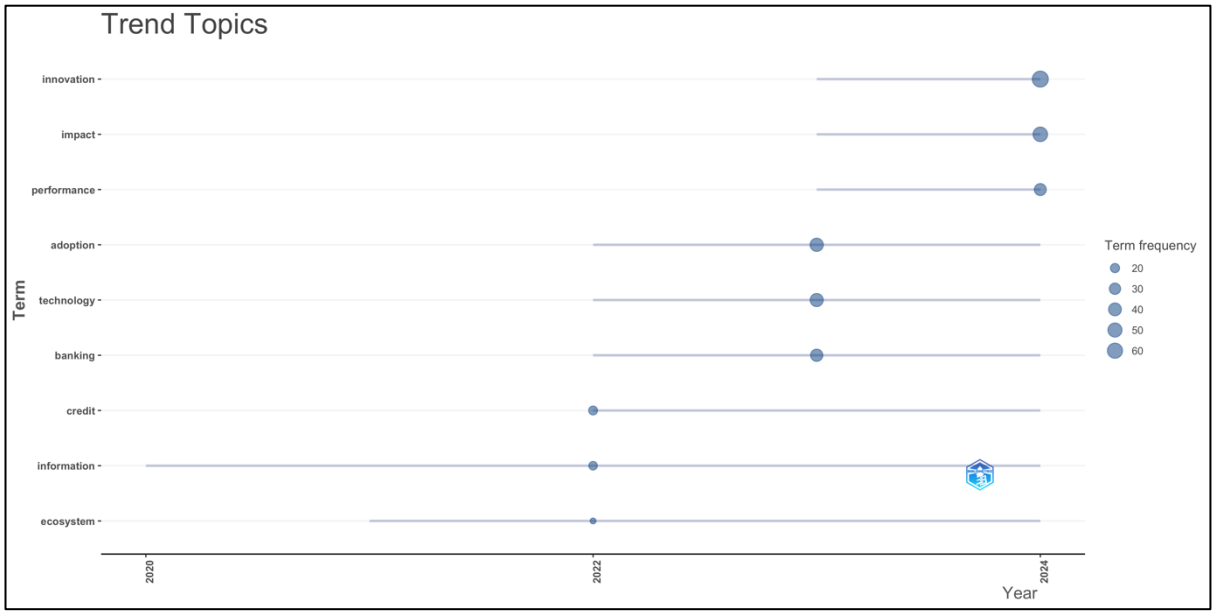
Figure 08 shows FinTech research's conceptual structure as a term co-occurrence network. The map shows three key theme clusters:

The red cluster, led by “innovation,” is heavily researched in relation to “performance,” “impact,” “economic growth,” and “transformation.” This suggests that FinTech scholarship prioritizes innovation for value generation and systemic transformation.

The blue cluster on “adoption,” “acceptance,” and “technology” emphasizes technological spread and user behavior in the literature. Its association with “banking” signifies financial sector digital revolution is ongoing.

Based on “user acceptance” and “trust,” the green cluster includes the “technology acceptance model” and “mobile banking,” stressing psychological and trust-related FinTech use drivers.

Figure 8 : Trend topic from 2020 to 2025



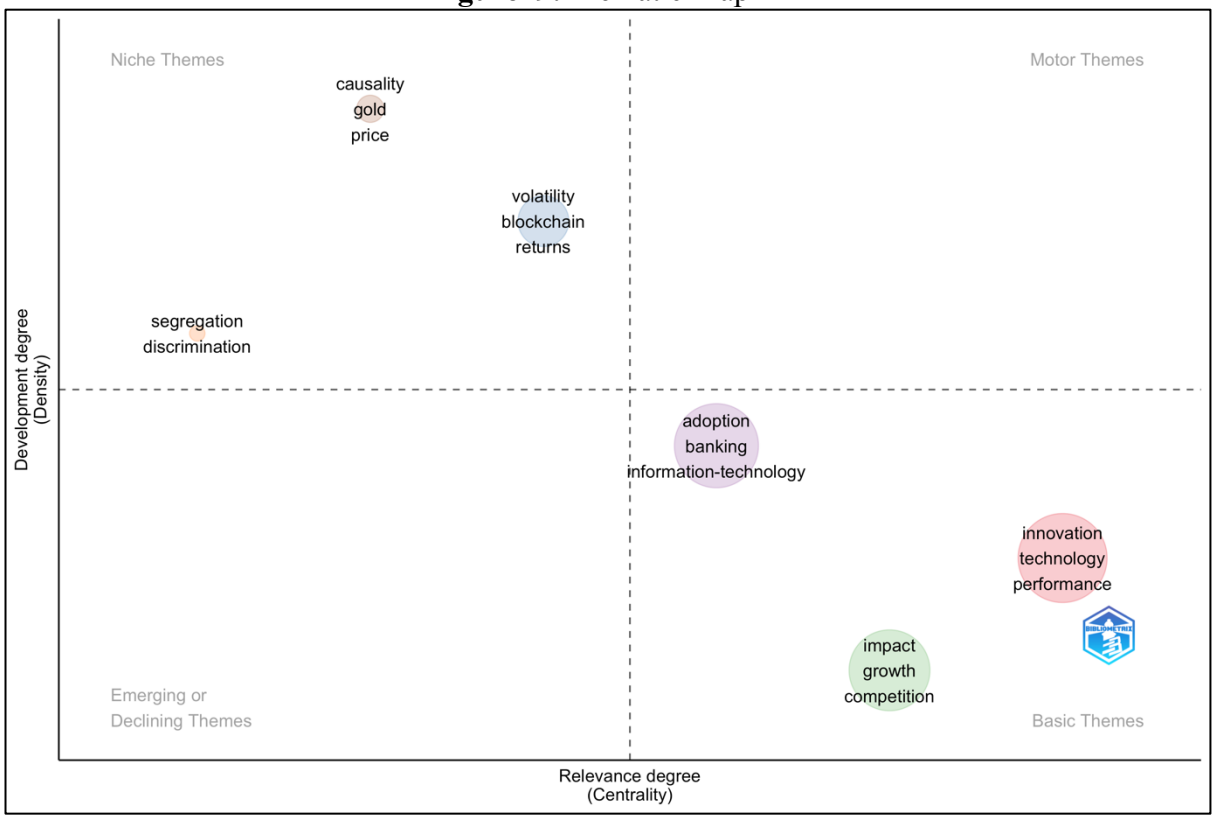
Source : Bibliometrix

This trend analysis illustrates how important research topics have changed throughout time, emphasizing their introduction and rise in popularity. Words like "innovation," "impact," and "performance" exhibit a notable uptick beginning in 2023 and extending into 2024, indicating a growing emphasis on technological and financial innovations in both academia and business. The emergence of earlier concepts such as "information," "ecosystem," and "credit" between 2021 and 2022 suggests that the fundamental study laid the groundwork

for more recent discussions. According to the size of the bubbles, which represent phrase frequency, "innovation," "impact," and "performance" are currently among the most popular subjects.

Identifying changing research goals and comprehending changes in theme focus within ecosystem development, technology, and funding are made easier with the help of this visualization.

Figure 9: Thematic Map



Source : Bibliometrix

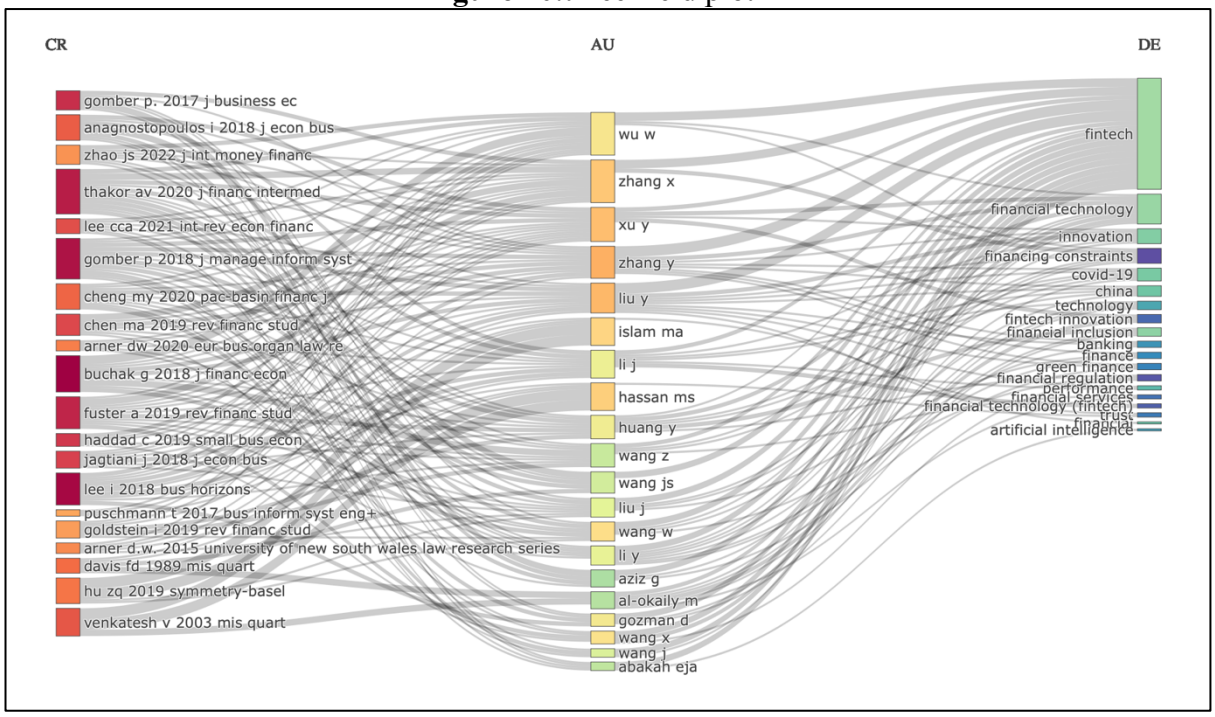
Figure 11 presents a thematic map from Bibliometrix, illustrating the positioning of research themes based on their relevance (centrality) and development (density). The lower-right quadrant (Basic Themes) includes “innovation,” “technology,” and “performance,” indicating foundational but underdeveloped topics central to FinTech research. Similarly, “impact,” “growth,” and “competition” are relevant but fragmented. “Adoption,” “banking,” and “information-technology” appear in a transitional zone, suggesting growing relevance but still moderate development, likely to become key themes as the field matures.

In contrast, “segregation” and “discrimination” in the lower-left (Emerging or Declining Themes) reflect either underexplored or declining interest, while “blockchain,” “volatility,”

and “returns” in the upper-left (Niche Themes) show depth but limited overall influence. Notably, the absence of any Motor Themes (high relevance and development) suggests that FinTech research is expanding but still lacks fully mature, dominant focal points.

1.2.5 Intellectual and Conceptual Structure

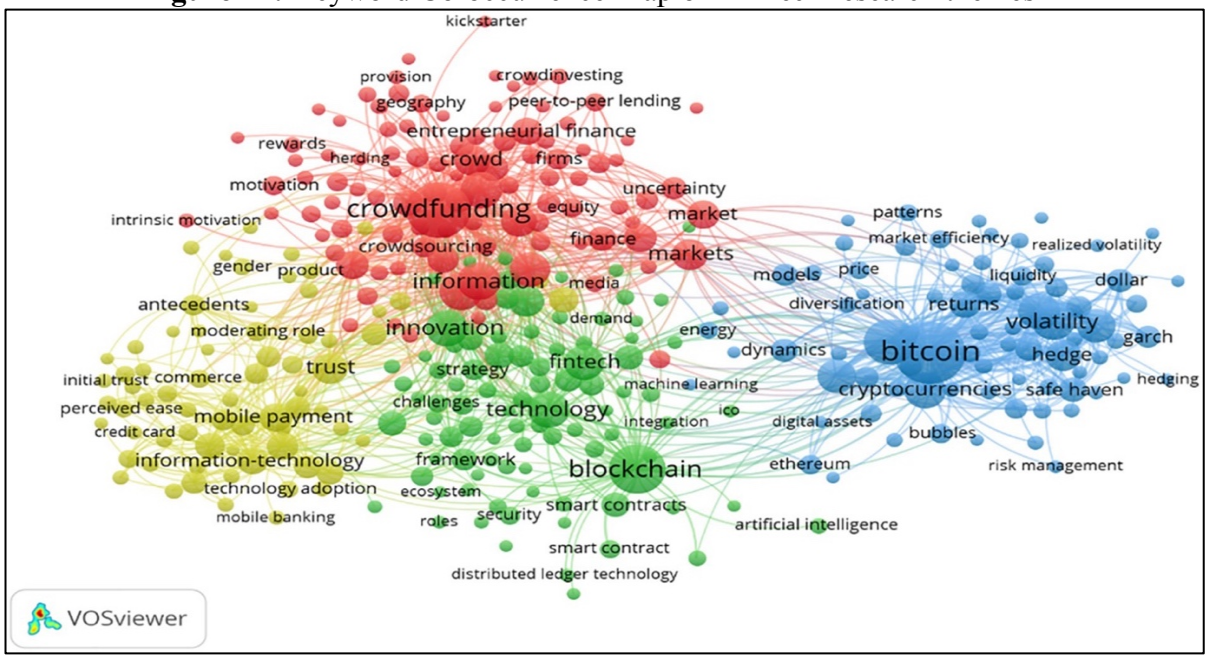
Figure 10:three-field plot



Source : Bibliometrix

Figure 12 presents a three-field plot generated using Bibliometrix, illustrating the relationships among cited references (CR), contributing authors (AU), and keywords (DE) within the analyzed literature. This visualization highlights how prominent authors, such as Wu W., Zhang X., and Xu Y., draw upon influential works including Gomber et al. (2017; 2018) and Thakor (2020), and contribute significantly to central research themes such as *FinTech*, *financial technology*, *innovation*, and *financial inclusion*. The thickness of the connecting lines indicates the strength of association between the three fields, revealing key intellectual linkages and thematic concentrations within the field. This mapping provides insight into the intellectual structure and thematic orientation of the domain and helps identify both seminal contributions and active research clusters.

Figure 11: Keyword Co-occurrence Map of FinTech research themes



Source: VOSviewer software

The figure shows the cartography analysis through VOSviewer software. The purpose of the analysis is to identify the keywords under each research stream. (Bajwa et al., 2022)

The bibliometric network visualization highlights key research themes in FinTech, crowdfunding, blockchain, and cryptocurrencies, showing their interconnections. The red cluster (crowdfunding) focuses on entrepreneurial finance, motivation, and peer-to-peer lending, emphasizing behavioral and market dynamics. The yellow cluster (trust & mobile payments) highlights the role of consumer confidence and technology adoption in financial transactions. The green cluster (blockchain & FinTech) serves as a bridge, showcasing smart contracts, security, and integration. Lastly, the blue cluster (Bitcoin & cryptocurrencies) links to market volatility, risk management, and diversification strategies. This visualization underscores the interdisciplinary nature of FinTech research, emphasizing the need for further study on trust, risk mitigation, and regulatory frameworks for sustainable financial innovation.

2. Problematic and Research Question

While extensive research has examined the adoption of FinTech services, gaps remain in understanding the specific factors driving user adoption, particularly in emerging markets. Existing studies often focus on technological readiness and economic benefits but overlook behavioral, psychological, and regulatory influences (Venkatesh et al., 2012b) (Thakur & Srivastava, 2014).

Moreover, the adoption of mobile money as a subset of FinTech has unique determinants that require further exploration. Addressing these gaps is crucial for designing policies and strategies that enhance FinTech adoption and financial inclusion. Therefore, this research seeks to address the following fundamental question:

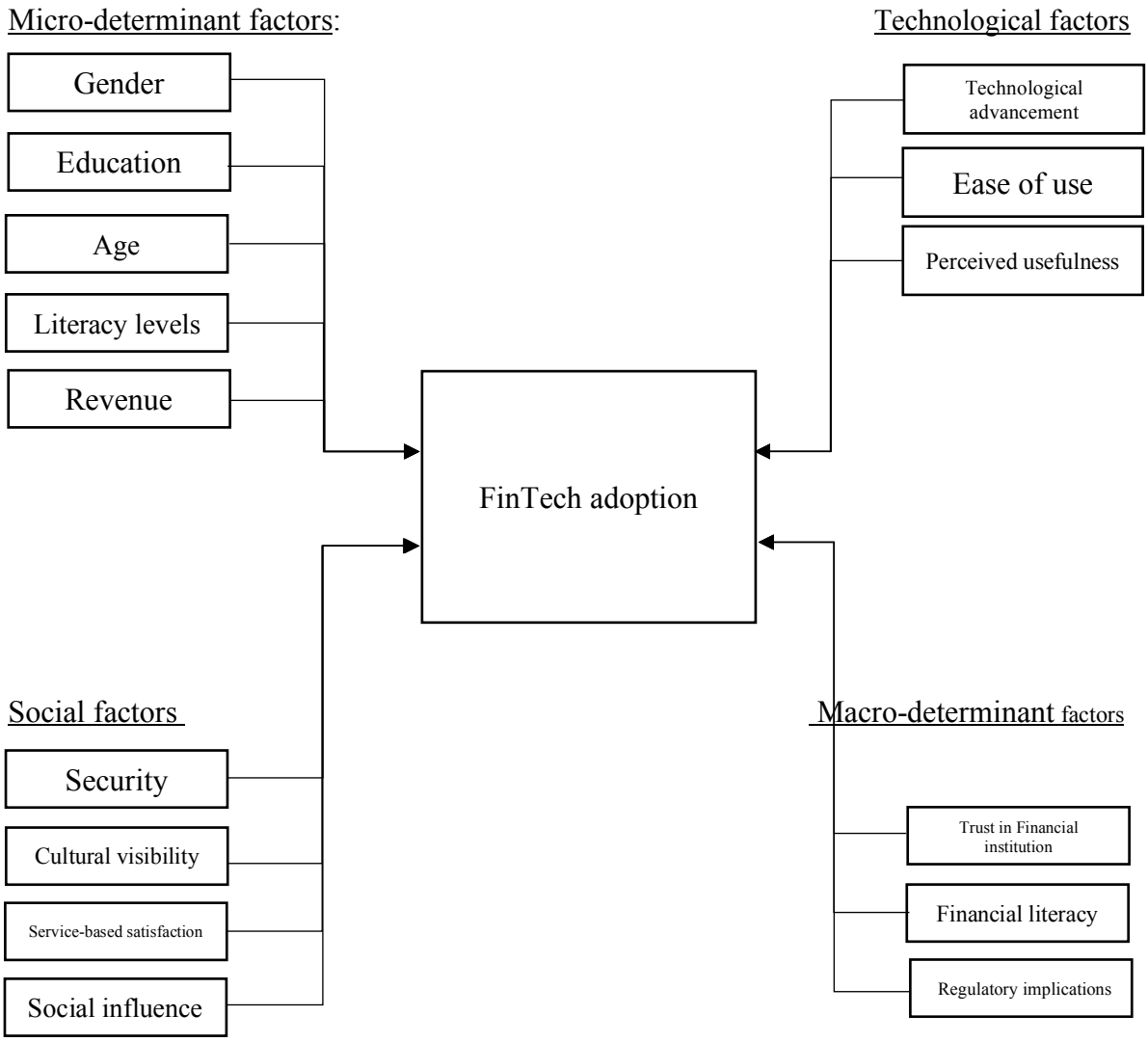
What are the key determinants influencing FinTech adoption in Algeria? The objective is to identify and categorize the main factors affecting the adoption of FinTech services, including technological, economic, sociodemographic, and psychological determinants.

To support the main research inquiry, the study also addresses the following sub-question:

To what extent are existing models suitable for assessing mobile money adoption? The objective is to evaluate the relevance and effectiveness of existing FinTech adoption models in explaining mobile money adoption, highlighting unique factors and potential model limitations.

3. Hypotheses:

Figure 12: Hypotheses



Source: the author, inspired by (Bellahcene & Khedim, n.d.)

Therefore, the subsequent hypotheses are formulated:

H1: Micro-determinants influence the adoption of FinTech.

H1a: Gender influences the adoption of FinTech.

H1b: Education level affects the adoption of FinTech.

H1c: Age has a significant effect on the adoption of FinTech.

H1d: Literacy levels influence the adoption of FinTech.

H1e: Revenue level influences FinTech adoption.

H2: Social factors influence the adoption of FinTech.

H2a: Security influences the adoption of FinTech.

H2b: Cultural visibility influences the adoption of FinTech.

H2c: Service-based satisfaction influences the adoption of FinTech.

H2d: Social influence affects users' intention to adopt FinTech.

H3: Macro-determinant factors influence the adoption of FinTech.

H3a: Trust in financial institutions influences the adoption of FinTech.

H3 b: Financial literacy influences the adoption of FinTech.

H3c: Regulatory implications influence the adoption of FinTech.

H4: Technological factors influence the adoption of FinTech.

H4a: Technological advancements influence the adoption of FinTech.

H4 b: Ease of use influences the adoption of FinTech.

H4c: Perceived usefulness influences the adoption of FinTech.

Chapter 01: Literature review and conceptual framework

Preamble

This chapter discusses Algeria's largely cash-based economy. Payment card penetration rate is low but rising as consumers become more comfortable using cards as a payment method. For example, in 2021, there were 1,782,213 internet transactions carried out by CIB and EDAHABIA cards, a 340.65% increase on the same period in 2020. Value rose from DZD 634 million to DZD 2.2 billion.

The government is keen to encourage the use of electronic payments, and as such, in September 2020, made the use of all electronic payments free of charge. As of 31 December 2020, all merchants were required to set up infrastructure to enable cashless transactions. Merchants without the means to receive electronic payments are required to set up a remote payment service, i.e., the POS QR Code, by the end of 2021.

Limited online and mobile banking services are provided by the country's leading banks. The use of digital financial services is low: 16% of adults use digital payments. (*ALGERIA | Cash Management*, n.d.)

- There are approximately 3,030 ATMs in Algeria. (*ALGERIA | Cash Management*, n.d.) And for Algeria post 2855.
- There are 38,144 very small enterprises using POSs (electronic payment terminals) in Algeria. In May 2021, there were 195,440 POS payments transacted, with a value of DZD 1,297.8 million.
- Electronic money schemes are available in the form of reloadable prepaid cards.
- In 2020, Algeria Poste launched its electronic payments system for mobile phones. Barid PAY allows users to pay for items using just their phones.
- In March 2021, the National Bank of Algeria launched a contactless mobile payment app, Wimpay-BNA, based on a QR code.

Literature review

The literature can be divided into five main trends depending on the topic discussed. The first approach is to focus on the factors of adopting FinTech, depending on the countries. Geographically, the existing literature about the factors of adopting FinTech changes according to each country and continent. The literature is heavily concentrated in certain regions, such as sub-Saharan countries, China, etc…) where mobile money is often driven by high mobile penetration and weak traditional banking infrastructure A third trend emerging from the literature is the geographical disparity in FinTech adoption, shaped by regional conditions such as mobile penetration, banking infrastructure, and crisis-driven digitization. In Europe, COVID-19 outbreak has also accelerated digital finance services and the rapid development of FinTech companies. Before the COVID-19 outbreak, mobile banking adoption was slow in Europe. The pandemic outbreak has promoted the shift from offline payments to online payments in the Netherlands, while (Lucian Blaga University of Sibiu et al., 2024) reveals that the literature on FinTech in the European Union reveals a dynamic landscape characterized by rapid innovation and growth driven by technological advances. For over two decades, Sub-Saharan Africa has been the epicenter of MM systems (particularly Kenya, Tanzania, Uganda, Ethiopia, Nigeria, and Ghana), where the industry registered 234 million active accounts in 2023, with over US$912bn in transactions processed (Reppas & Muschert, 2024), Mobile Money (MM) has also gained popularity in parts of South Asia (e.g. Afghanistan, Pakistan, Indonesia, and Bangladesh) and Latin America (e.g. Colombia and Paraguay). Nevertheless, Middle East and North Africa (MENA) countries still exhibit a lower adoption rate. In 2023, only 30 live services, seven more compared to 2019 (the majority in Jordan, Tunisia, Egypt, and Morocco). MENA is lagging compared to other developing regions regarding financial inclusion.

There are various types of FinTech services available for a wider consumer base, such as peer-to-peer (P2P) lending, marketplace lending, and other FinTech-based credit platforms.(Hasan et al., 2024) And (Shakir, 2022) FinTech is defined as the application of technology to improve financial services such as payments, lending, and transfers, offering users enhanced accessibility, affordability, and reliability. Largely owing to Alipay's active local marketing efforts. Collaborative initiatives with municipal authorities for the deployment of QR code-based mobile payment systems, alongside efforts to build consumer trust, have significantly strengthened Alipay's standing (Cai et al., 2024). Mansour Houda

revealed that key product-related factors affecting adoption include the geographical proximity to POS terminals, which significantly reduces transaction friction and cost, and consumer awareness and communication strategies (Mansour, 2021).

The second approach is focusing on the methodology, most of the authors used the unified theory of acceptance and use of technology (UTAUT) as a model to identify the factors that influence the adoption of FinTech or mobile money, (Shakir, 2022) the user adoption of FinTech services based on model selected (TAM, UTAUT, TRA, TPB and TPR). The model of the unified theory of acceptance and use of technology (UTAUT) with its three original constructs: performance expectancy (PE), effort expectancy (EE), and social influence (SI) adding additional factors like trust, perceived security, and service quality of the Value-based Adoption Model (VAM) (Chaudhary & Chaudhary, 2024). (Mansour, 2021) Studied the factors affecting users' adoption intentions of mobile money in Egypt during COVID-19. The study aims to examine the role of the product's specific factors in adopting mobile money in Egypt following the COVID-19 pandemic. The Unified Theory of Acceptance and Use of Technology (UTAUT) model is used to understand the adoption of this modern mobile application. The methodologies across the reviewed studies share some coherence but also reflect a range of sophistication, and explicit adoption of quantitative methods dominates all.

A fourth trend involves comparative analysis of adoption factors across different countries, demographics, and socio-economic groups. These comparisons reveal nuanced patterns and variations in user behavior. Studies reveal that technological advancements, gender, income levels, and political stability are significant factors influencing Mobile Money (MM) adoption (Reppas & Muschert, 2024), Studies show that when considering gender, women highlight the benefits offered and ease of use. At the same time, men add the time taken for a transaction and proximity to points of sale. For individuals with lower income, ease of use is the primary determinant, while for those with higher income, it is the proximity point of sale and Safety that are the significant variables in adopting this service. Finally, for individuals under the age of 30, benefits offered and ease of use, the point of sale's proximity are the significant variables in adopting this service (Mansour, 2021). The findings, according to Chaudhary, revealed that PE, EE, TR, PS, and SQ significantly affect FinTech adoption, whereas social influence (SI) had no significant impact. Furthermore, digital financial literacy (DFL) was found to mediate the relationship between FinTech usage (FU)

and financial inclusion (FI), underscoring the importance of digital competence in enhancing access to formal financial services (Chaudhary & Chaudhary, 2024). According to Cai, in China, FinTech adoption enhances the income level within rural households. The exploration involves disaggregating total household income into four categories: operating income, wage income, property income, and transfer income (Cai et al., 2024). In the Nepal context, the findings revealed that FinTech use has a significant correlation with each variable. Also, TR, SQ, PS, PE, and EE have a substantial impact on the adoption of FinTech use. While SI doesn't have a substantial impact on the adoption of FinTech services.

China's financial system suffers from excessive regulation and distortions, adversely impacting the accessibility of financial services in rural areas and aggravating the pre-existing imbalance between supply and demand (Cai et al., 2024) .

A fifth recurring theme is the identification of barriers and gaps to FinTech adoption. Despite the increasing relevance of FinTech in promoting financial inclusion, numerous studies underscore significant limitations that hinder its widespread adoption across different socio-economic and regional contexts. A common limitation identified is the lack of regulatory clarity, which hampers the operational integration of FinTech in traditional banking environments. For instance, (Rania, 2024) highlights that 48% of Algerian banking professionals attribute the slow adoption of FinTech to the absence of a coherent regulatory framework, alongside a general lack of awareness and technical expertise within institutions (Rania, 2024).

Similarly, Mansour (2021) finds that perceived benefits can paradoxically discourage adoption due to users' limited understanding of mobile money functionalities, indicating a gap in digital financial literacy (Mansour, 2021). This theme is echoed in (Chaudhary & Chaudhary, 2024) that it demonstrates that digital competence mediates the relationship between FinTech use and financial inclusion, especially in developing economies like Nepal. However, the study is constrained by convenience sampling and geographic focus, limiting generalizability. Lucian also points to demographic bias in his Romanian sample, dominated by younger, urban, and digitally literate respondents, thereby excluding insights from underrepresented groups such as older or rural populations. (Belascu et al., 2023)

(Reppas & Muschert, 2024), along with (Siddika & Sarwar, 2024) broadening the discussion by incorporating macro-level barriers to mobile money adoption, such as infrastructure gaps,

affordability, and political instability across MENA and Sub-Saharan Africa. However, macroeconomic studies remain scarce, and psychological or cultural factors are often underexplored.

The reviewed literature presents several targeted recommendations aimed at overcoming barriers and fostering broader adoption of FinTech and mobile money (MM) services. A central recommendation across studies is the need for digital and financial literacy enhancement.(Chaudhary & Chaudhary, 2024) Argue that digital financial literacy (DFL) is a key mediating factor in FinTech usage and financial inclusion. They recommend user education initiatives to improve trust, comprehension, and engagement with digital platforms. In the Algerian context, (Rania, 2024) recommended to develop a supportive regulatory framework and foster FinTech-bank partnerships to bridge the technological gap. The study also calls for capacity-building initiatives within banks to address the technical expertise deficit that inhibits collaboration with FinTech providers.

Mansour (2021) emphasizes the importance of awareness campaigns and better user communication to close the gap between perceived and actual benefits of mobile money. Similarly with (Shakir, 2022) recommends context-specific product design, informed by local behavioral data, to ensure FinTech services are aligned with user needs and risk perceptions.

At a broader level, (Reppas & Muschert, 2024) along with the study of (Siddika & Sarwar, 2024) proposed investments in digital infrastructure, expansion of point-of-sale (POS) networks, and enhanced regulatory harmonization across regions. These macro-level strategies are seen as vital for integrating underserved populations and promoting financial inclusion in the MENA region and Sub-Saharan Africa. According to (Belascu et al., 2023) advocates focusing on Romania, advocates for user-centric design and data-driven segmentation strategies are needed to better serve varying demographic groups, particularly older adults and those less familiar with technology.

Section 01: The Evolution of FinTech

FinTech, by combining finance and technology, has revolutionized the financial industry by offering new, innovative, and accessible solutions. This section explores
The evolution of this dynamic sector and its major transformations over the years.

Box 01: The Emergence and Evolution of FinTech

To define the concept of "FinTech" and its foundations, it is essential to explore its origins and examine what the literature says about it.
Over the years, financial literature has provided numerous definitions of FinTech. Although the words used to describe it have evolved, they reflect the ongoing transformation and development of FinTech concepts.
The objective of this literature review is to examine the evolution of the subject, starting approximately in the mid-1800s, and to explain how modern approaches have emerged.

1. Historical evolution of FinTech

Technology has always been part of financial services; technological innovations started occurring much earlier, such as the introduction of the telegraph (1838) and the construction of the first transatlantic cable in 1866, which were the basics for financial globalization of the late 1800s. (Chaudhary & Chaudhary, 2024)

The banking industry is one of the first industries that have used computers to improve their daily operations. One of the greatest financial technology innovations of the last century is the automatic teller machine (ATM).
Moreover, a shift from analog to digital technologies for the financial services industry started in 1990, and it was marked by the development of the World Wide Web and one of the first experiments in internet banking. In addition, the industry of financial services has moved to digitalization starting in the twenty-first century. Also, the mobile phone has brought significant changes to the FinTech industry in terms of using financial services via a mobile phone.(Manasov et al., 2018)

Finance and technology came together to give life to what has been called the first period of financial globalization. (Giglio, 2021)

Once the global economy exited the crisis, it became clear that many customers, especially the younger generation, had lost their trust in banks. (Anyfantaki, 2016)

2. The stages of FinTech evolution

2.1. FinTech 1.0 analogue industry (1866-1967)

When the financial services industry remained largely analogue despite being heavily interlinked with technology." (Manasov et al., 2018).

This stage involves building the infrastructure that will support globalized financial services. The first transatlantic cable (1866) and Fedwire (1918) in the USA enabled the first electronic fund transfer system using technologies such as telegraph and Morse code. (scott, 2020)

2.2 FinTech 2.0 digitalization (1967-2008)

which encompasses digitalization of financial services (Bernardo, 2017), "beginning with the first ATM and culminating in e-banking" (Manasov et al., 2018).

This period is also known for the appearance of the Interbank Payment System in 1970. Also, online banking was introduced in the United States in 1980 and in the United Kingdom in 1983 (Giglio, 2021). Also, Giglio stated that internet banking has advantages, most notably better data organization, which leads to an understanding of the real credit risk of borrowers, and also the elimination of the numerous lines at the branches and dealing operations from home.(Giglio, 2021)

2.3. FinTech 3.0 (has started since 2009)

The third era has been characterized by new startups and tech giants that have begun to "deliver financial products and services directly to businesses and consumers."(Manasov et al., 2018). Post-financial crisis, lack of trust in banks aligned with regulatory change opens up the market to new providers. Bitcoin was born in 2009, followed by other cryptocurrencies using blockchain technology.

It's the era of the start-up, with an appetite for innovation amongst investors and consumers driving a wave of new products and services. Even established banks are starting to act and brand themselves like start-ups, and this move away from the established banks of the FinTech 2.0 era has been the defining element of FinTech 3.0.

To support this, new technologies have opened up to make it easier to create digital banking products using Open Banking, which allows third-party companies access to financial data. Banking as a Service (BaaS) platforms, including “Treezor” and “Solaris Bank,” have made it easier for banks and other financial institutions to get away from complicated legacy systems to enable them to launch “neo-banks,” digital banks that have emerged based on improving the customer experience.(*Fintech: The History and Future of Financial Technology | The Payments Association*, n.d.; scott, 2020)

2.4. FinTech 3.5

FinTech 3.0 emerged as a reaction to the financial crisis in the West, but in Asia and Africa, recent FinTech developments have been primarily prompted by the pursuit of economic development. We characterize the era in these two regions as FinTech 3.5.(Arner et al., 2015)
FinTech 3.5 has been defined to account for the changes in consumer behavior and how they access the internet in the developing world. (*Fintech: The History and Future of Financial Technology | The Payments Association*, n.d.)
FinTech 3.5 signals a move away from the Western-dominated financial world and acknowledges the advances that are being made in digital banking around the world.(*Fintech: The History and Future of Financial Technology | The Payments Association*, n.d.; scott, 2020)

2.5 FinTech 4.0

It is possible to imagine a FinTech era 4.0, which will include the integration of FinTech companies with traditional financial institutions. Namely, it is a "vision of an increased connection between physical and virtual industrial machines"(Manasov et al., 2018)

Moreover, the advancement of finance and technology is closely related to the Industry 4.0 revolution, including Blockchain, Big Data, Robo-Advisor, Internet of Things (IoT), Cybersecurity, Cloud Computing, and Crowdsourcing.(Sahabuddin et al., 2023)

FinTech 4.0 represents the integration of AI, blockchain, and cloud computing into financial services, leading to hyper-personalized and automated banking.

3. FinTech landscape in Algeria

Several organizations are involved in the effort to generalize the use of electronic payments across the country.

Table 1: Organizations that promote the development of electronic payment in Algeria

Ministry of Finance	*Ministry of Commerce and Export Promotion*	*Ministry of Knowledge Economy and Startups*
Monitoring and control of revenue collected via the electronic payment system	Facilitates the integration of merchants into the online payment platform and encourages merchants to have TPO's	Support and provide expertise to micro-enterprises and startups in order to promote FinTech and the electronic payment system

Source : (Ibeghouchene & Mokrane, 2022)

3.1. The Legal Framework for Electronic Payment Methods in Algeria

A payment method is defined in Article 69 of Ordinance No. 03-11 of August 26, 2003, which pertains to currency and credit. It is any instrument that enables any individual to transmit funds, irrespective of the medium or technical process employed. The ordinance does not specify the type of payment method that is authorized by this definition.

Therefore, Law No. 18-05 of May 10, 2018, which pertains to electronic commerce, delineates a specific form of payment method: the "electronic payment method." Article 6 of this law defines electronic payment methods as follows: "any payment instrument, authorized by current legislation, that enables its holder to make face-to-face or remote payments through an electronic system." This definition specifies the legally permissible payment method; however, it does not specify the payment method. The categories of electronic payments that are legally permissible within the context of electronic payments are not specified in this definition. (Ibeghouchene & Mokrane, 2022)

3.2. Electronic payment intermediaries in Algeria

Electronic payment in Algeria involves key players such as SATIM and Algeria Post. The Interbank Transaction and Electronic Payment Automation Company (SATIM) is a subsidiary of seven Algerian banks (BADR, BDL, BEA, BNA, CPA, CNEP, and

ALBARAKA) and the insurance institution CNMA. Established in 1995 by the banking community, SATIM serves as the interbank electronic payment operator for domestic and international cards. Its mission includes promoting electronic payment methods, managing a fully interoperable platform, supporting banks, and customizing checks and payment cards (Ibeghouchene & Mokrane, 2022). Also, Algeria Post, a public industrial and commercial institution, plays a crucial role in the development of electronic payments through the modernization of postal financial services and the enhancement of service quality for citizens. Underscoring the growing importance of ALGERIA POST's digital financial services in Algeria. The consistency in core operations, combined with seasonal spikes in certain services, illustrates a well-functioning platform that meets the evolving needs of its customers. The continued growth in digital payments, particularly mobile recharges and account transfers, is likely to further solidify ALGERIA POST's position as a key player in the digital financial ecosystem. As digital adoption continues to rise, further research into the drivers of these trends and their long-term implications will be essential for understanding the future of mobile financial services in Algeria.

Table 2: The impact of Transaction Fees on Digital Payment Adoption and FinTech Development in Algeria

Payment Method	*Transaction Fee (%)*	*Impact on Merchant Adoption*	*Potential for FinTech Growth*
POS Terminals	Low (%)	Encourages Adoption	High - Supports Cashless Economy
Mobile Payments	Low (%)	Medium Adoption	Growing - Expansion Potential
Bank Transfers	Moderate (%)	Mixed Adoption	Moderate - Traditional Preference

Source: The author

Transaction fees strongly impact Algerian retailers' use of digital payment options, as seen in Table 2. POS terminals' minimal costs encourage cashless payments and promote a more inclusive and efficient digital economy. Mobile payments have moderate acceptance due to rising payment ecosystem expansion, whereas bank transfers have mixed adoption due to moderate costs and entrenched conventional preferences. These data show that reducing transaction costs is crucial for digital payment adoption, especially among SMEs. Therefore, governments and industry stakeholders must work on regulatory and economic solutions to lower digital payment costs. Such activities will help Algerian FinTech expand and improve financial inclusion.

Table 3: Payment by POS (The tax is applied to the merchant)

Fixed value	*Percentage %*	*From*	*To*
1.19 da	0,29	0	5001,00
1.19 da	0,23	5001,00	30001,00
1.19 da	0,17	30001,00	60001,00
1.19 da	0,11	60001,00	500000,00

(max tax = 554 DZD for a payment of 500,000 DZD). POS purchase daily limit 500.000 DZD

Source: The author, ALGERIA POST

The table shows retailers' progressive POS charge structure, where tax rates drop with transaction value. The rate reduces to 0.11% for transactions between 60,001 and 500,000 DZD from 0.29% for quantities up to 5,001 DZD. All levels charge 1.19 DZD, with a maximum tax ceiling of 554 DZD for payments over 500,000 DZD. The relative tax burden is reduced to promote higher-value transactions, and a 500,000 DZD daily purchase cap manages financial risk and system stability. The model balances revenue and consumer spending incentives.

Table 4: Withdrawal from POS (Tax is applied to the customer)

Fixed value	*Variable value*	*From*	*To*
18 DA	2 Da for1000 DA	0	18000
18 DA	3 Da for1000 DA	18001,00	50000,00

(max tax = 168 DA for a withdrawal of 50,000 DA). POS cash advance daily limit 50.000 DA

Source: The author, ALGERIA POST

Algeria Post charges cash advances with fixed and variable fees, depending on the transaction quantities. Withdrawals up to 18,000 DZD attract a set cost of 18 DZD plus 2 DZD every 1,000 DZD. The fee increases to 3 DZD every 1,000 DZD between 18,001 DZD and 50,000 DZD, with a maximum cap of 168 DZD to keep expenses low. To control liquidity, scams, and financial stability, POS terminals limit daily withdrawals to 50,000 DZD. This paradigm strikes a balance between affordability, consumer protection, and institutional sustainability, but may impact financial inclusion and user behavior.

Table 5: Different fees for different operations

Different operations	*fees*
Card reissue fee	350 DZD
Card Epos Topup us-on-us day limit	3000 DZD

Number of cardless withdrawals/week	20 DZD
Re-edition code PIN	200 DZD
Closing card/Change status fee	30 DZD
MB reset password fee	10 DZD
Zakat fee (pay for yearly zakat in BaridiMob)	20 DZD
Online Payment Commission)	0 DZD (*)
ATM Withdrawal Commission AP	30 DZD
ATM Bank Withdrawal Commission	35 DZD

Card life cycle length: 24 months. new "EDAHABIA Classic" will remain valid for four (4) years.

Source: The author, ALGERIA POST

Algeria Post improves efficiency, risk management, and user access with a structured charge system for financial services. Card reissuance (350 DZD) and PIN reset (200 DZD) fees reflect risk and complexity, whereas no online payment fees stimulate digital adoption. Socially relevant services like Zakat (20 DZD) may promote customer participation by matching cultural expectations. Algeria Post ATMs (30 DZD) are cheaper than external bank ATMs (35 DZD), boosting internal network adoption and cost minimization. This pricing model supports financial inclusion and digital transformation through institutional sustainability, client inclusivity, and ease. Based on quantity, Algeria imposes different fees for BaridiMob, BaridiWeb, and ATM transactions. This ensures predictable pricing for consumers, with costs from 12 DZD for transactions up to 10,000 DZD to 24 DZD for transfers between 40,000.01 and 200,000 DZD. A percentage-based fee is avoided to simplify and assist clients understand costs. The 200,000 DZD daily transfer cap regulates money volume and operational risk, while the progressive charge structure encourages smaller transactions. Client accessibility, institutional risk management, efficiency, and predictability are balanced in this method.

3.2.1. BaridiMob Operations:

BaridiMob's high transaction volumes suggest Algeria Post's mobile finance service is growing in use. AI fraud detection, blockchain, and tailored financial products might be improved.

Table 6: Algeria post's operation 2023

Service	*Operations*	*Number of transactions*	*Amount*	*Tax*
BaridiMob	QR Code BaridiMob (BM)	1446	6841890,28	25 868,20
	Mobile recharge	39 034 200	27565616663,15	1 117 034 483,83

	Account-to-account transfer (	17 837 133	241029829033,91	251 013 522,00
	Card status change	37 239	/	1 117 170,00
	Password change (BM)	1 057 421	/	10 574 210,00

Source: ALGERIA POST

In 2023, BaridiMob demonstrated strong transaction volumes across key services such as mobile recharges, account-to-account transfers, QR Code payments, and account management activities. Password changes and card status updates remained stable, with a peak in password changes in December, likely reflecting year-end security adjustments. QR Code transactions showed seasonal fluctuations, indicating growing but variable adoption. Mobile recharges dominated transaction volume and value, highlighting consistent consumer demand, while account-to-account transfers steadily increased, reflecting a shift toward digital money transfers. These patterns confirm Algeria Post's vital role in advancing digital financial inclusion, suggesting further opportunities for enhancement through targeted FinTech innovations.

Table 7: Key Trends in BaridiMob Usage Patterns (2023)

Trends	**Observation**	**Implication**
Seasonal variations	Peak activity in December for password changes and QR code transactions	Linked to year-end reviews**,** security updates**,** or seasonal promotions
Stable growth in core services	Consistent growth in mobile recharges and account transfers	Reflects strong customer demand and ALGERIA POST's central role in digital infrastructure
Increasing digital adoption	Steady rise in account-to-account transfers	Indicates growing consumer trust in digital banking and shift from traditional transactions

Source: Author, Algeria post

4. FinTech

Financial Technology, commonly abbreviated as FinTech, has become increasingly prominent in discussions surrounding the evolution of financial services, necessitating a clear understanding of its scope and meaning.

4.1. Definitions of FinTech

Table 8: Definitions of FinTech

Definitions	*Source*	*Year*
FinTech not only encompasses specific sectors but also covers a whole range of financial services and products.	(Arner et al., 2015)	*2015*
FinTech describes a financial services industry born in the 21st century.	Investopedia	*2016*
FinTech makes use of modern software and technologies.	FinTech weekly	*2016*
FinTech combines different business models to make the financial system better.	Ernst	*2016*
FinTech as a cross-disciplinary subject that combines finance, technology management, and innovation management.	(Leong, 2018)	2018
any innovative ideas that improve financial service processes by proposing technology solutions according to different business situations, while the ideas could also lead to new business models or even new businesses	(Belascu et al., 2023)	2023

Source: The author

4.2. The importance of FinTech

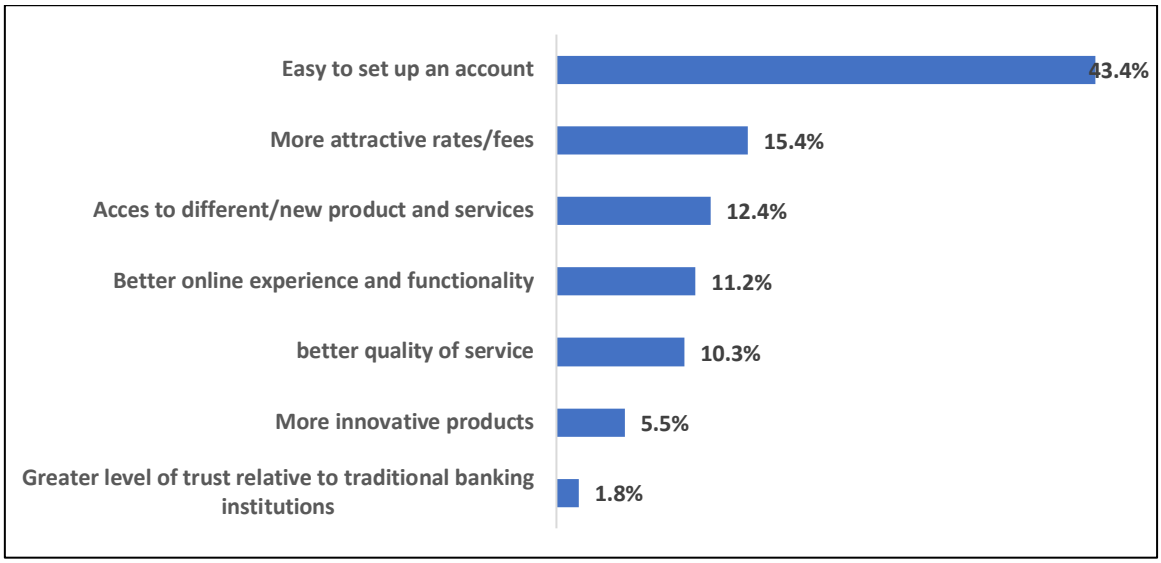
Numerous scholars, institutions, and industry professionals have analyzed the evolving role of FinTech in today's financial landscape. Over the past two to three years, FinTech has attracted substantial attention and investment, reflecting its transformative potential. The surge in billion-dollar funding rounds underscores its disruptive impact, intensifying competition within the financial services sector and delivering more innovative, cost-effective, and faster solutions to consumers. Recent research indicates that 50.2% of banking clients globally now use at least one FinTech service, highlighting the sector's growing mainstream adoption.(Manasov et al., 2018). Awareness of FinTech, even among non-adopters, is now very high. Worldwide, for example, 96% of consumers know of at least one alternative FinTech service available to help them transfer money and make payments. (*Ey-Global-FinTech-Adoption-Index.Pdf*, n.d.)

4.3. The uses of FinTech

FinTech provides a variety of applications that are transforming the interaction between consumers, corporations, and financial services. Its applications range from facilitating daily transactions through digital payments and mobile banking platforms to offering access to

more sophisticated financial instruments. Consumers engage with FinTech to obtain distinct benefits. Principal factors influencing its usability encompass improved ease, shown by expedited account setting procedures, and prospective economic advantages, such more favorable rates or diminished costs. Moreover, FinTech platforms are employed to access diverse or innovative financial goods and services, accompanied by initiatives to enhance the online user experience and functioning. The perceived quality of service, the availability of new solutions, and the degree of confidence relative to established institutions influence the utilization of these technologies, hence enhancing their significance in the financial sector.

Figure 13: Top seven reasons consumers are using FinTech



*Total responses: 1,485

Source: EY FinTech adoption index.

4.4 The key actors of FinTech

The World Economic Forum (2017) distinguishes between and divides the FinTech sector into seven segments: payments, insurance, digital banking, lending, investment management, equity Crowdfunding, and market infrastructure.(Manasov et al., 2018) Functions include Banking and Payments, Credit and Lending, Insurance (InsurTech), Retail Investments and Pensions, Investment Management, and Wholesale Banking and Capital Markets. Each sector has unique characteristics and technologies that affect innovation and regulation. Understanding these groupings helps examine the roles and interactions of traditional financial institutions, FinTech startups, Big Tech businesses, and regulators in this changing environment.

4.4.1. Financial Institutions and Traditional Banks

Traditional financial institutions have undergone significant transformations due to the disruptive force of FinTech. Initially perceived as competitors, FinTech firms are now often viewed as collaborators. Banks are increasingly integrating FinTech solutions to enhance service delivery, optimize internal processes, and meet the demands of digital-native consumers(*Anagnostopoulos-Y-41340-AAM-1*, n.d.). Numerous banks have pursued partnerships, acquisitions, or internal development of FinTech capabilities. For instance, JPMorgan Chase launched its blockchain-based payment system Onyx, while institutions like BBVA and ING have opened their APIs to third-party developers under open banking regimes. Goldman Sachs partnered with Apple to launch the Apple Card, exemplifying the convergence of banking and technology.(*The Future of Banking: A $20 Trillion Opportunity | McKinsey*, n.d.) These developments indicate a shift from siloed financial models toward platform-based service ecosystems. Traditional banks now often serve as infrastructure providers for FinTech startups, leveraging their regulatory status and customer base.

4.4.2. FinTech Startups

Due to their agility, niche targeting, and strong use of AI, blockchain, and cloud computing, FinTech enterprises drive financial innovation. Startups are leaner and innovate quickly than established companies. Revolut offers banking, exchange, and investment. Chime is a low-fee digital bank, and Klarna is a leading "Buy Now, Pay Later" (BNPL) supplier. Most B2B or B2C FinTech enterprises interface with current players or platforms via APIs. According to Hu and Downie, in the FinTech industry, many startup FinTech companies focus on software development, and then they collaborate with large banks, investment firms, and payment companies in the financial sector.(Hu & Downie, n.d.)

4.4.3. Big Tech Companies

Apple, Google, Amazon, and Meta have gradually included financial services to their digital ecosystems. These organizations employ their large user networks, data analytics, and technology infrastructure to deliver payments, loans, and asset management. Apple Pay and Google Pay offer secure, contactless payments and are embedded in digital wallets and wearables; Amazon Lending provides working capital loans to SMEs selling on its platform. Big Tech's expansion into financial services raises regulatory concerns regarding competition, consumer privacy, and systemic risk. Their use of alternative data for credit

assessments and personalized pricing could lead to issues related to algorithmic bias and data protection.(Zetzsche et al., n.d.)

4.4.4. Governments and Regulatory Authorities

Governments and financial regulators play a central role in shaping the FinTech landscape. Their responsibilities range from fostering innovation through supportive policies to safeguarding financial stability and consumer protection. Key regulatory priorities include: Cybersecurity and data privacy; Anti-money laundering (AML) and Know Your Customer (KYC) compliance; Licensing of digital banks and crypto-asset providers; Development of regulatory sandboxes and innovation hubs. Countries such as the United Kingdom (FCA sandbox), Singapore (Monetary Authority of Singapore's FinTech Regulatory Sandbox), and the United Arab Emirates (Abu Dhabi Global Market) have implemented frameworks that allow startups to test innovative financial products under relaxed regulatory conditions (Zetzsche et al., n.d.). Central banks are also exploring central bank digital currencies (CBDCs) as a response to digital currency proliferation. Moreover, international bodies such as the Financial Action Task Force (FATF) have updated their guidelines to monitor virtual assets and mitigate associated risks.

Table 9: Monetary situation

(Values in billions of dinars - End of period)

Period	External assets (net)	Central bank	Commercial banks	Domestic credits	State credits (net)	Central bank	Commercial banks	Other credits	Economy credits	Central banks	Commercial banks
2018	9485,6	9572,4	-86,8	16302,1	6325,7	3857,8	1362,4	1105,5	9976,3	2,3	9974,0
2019	7 598,7	7 638,6	-39,9	17 877,7	7 019,9	4 782,4	1 051,1	1 186,4	10 857,8	2,2	10 855,6
2020	6 518,2	6 576,3	-58,1	20 535,7	9 353,5	6 480,3	1 319,7	1 553,5	11 182,3	2,1	11 180,2
2021	6 559,1	6 596,5	-37,4	22 703,4	12 908,7	6 116,1	5 192,6	1 599,9	9 794,7	2,6	9 792,1
2022	8 650,4	8 716,2	-65,8	23 148,5	13 033,3	4 806,9	6 522,7	1 703,7	10 115,2	3,0	10 112,3
2023 April	9 364,5	9 428,7	-64,2	23 642,9	13 404,8	4 497,6	7 000,6	1 906,6	10 238,2	2,9	10 235,3
2023 may	9 486,7	9 542,7	-56,0	23 446,8	13 152,3	4 134,9	7 077,5	1 939,9	10 294,5	2,9	10 291,6
2023 June	9 448,3	9 502,3	-54,0	23 646,2	13 182,6	4 147,2	6 962,6	2 072,8	10 463,7	2,9	10 460,8
2023 July	9 483,8	9 524,5	-40,6	23 314,0	12 783,7	3 727,5	6 982,3	2 073,9	10 530,3	2,9	10 527,4

Period	External assets (net)	Central bank	Commercial banks	Domestic credits	State credits (net)	Central bank	Commercial banks	Other credits	Economy credits	Central banks	Commercial banks
2023 August	9 478,5	9 510,1	-31,6	23 846,3	13 189,7	4 058,6	7 039,9	2 091,2	10 656,5	3,0	10 653,5
2023 sept	9 532,4	9 565,4	-33,0	23 800,0	13 103,3	3 972,5	7 111,9	2 018,8	10 696,8	3,0	10 693,8
2023 oct	9 499,6	9 539,5	-39,9	23 655,7	12 952,9	3 790,5	7 128,7	2 033,8	10 702,8	3,0	10 699,8
2023 Nov	9 556,4	9 581,1	-24,8	23 742,3	13 008,1	3 768,9	7 131,9	2 107,3	10 734,2	3,0	10 731,2
2023 Dec	9 427,3	9 472,6	-45,3	23 996,0	13 298,2	3 865,1	7 307,0	2 126,1	10 697,9	3,0	10 694,9
2024 January	9 385,1	9 437,2	-52,1	24 653,0	13 973,8	4 553,0	7 275,7	2 145,1	10 679,2	2,9	10 676,3
2024 Feb	9 409,3	9 443,2	-34,0	24 546,1	13 841,4	4 787,3	6 999,2	2 054,9	10 704,7	3,3	10 701,4
2024 march	9 431,7	9 464,1	-32,4	24 939,6	14 239,8	5 148,1	7 098,5	1 993,2	10 699,8	3,3	10 696,5

Source: Bank of Algeria (statistical bulletin)

Table 10: Monetary situation

year	MONEY SUPPLY	CASH					QUASI-MONEY	Deposit prior to import (*)	STATE LOAN FUNDS	COMMITTED MEDIUM- & LONG-TERM ECTS	OTHER POSITIONS (net)
			H/BA fiduciary circulation	Demand deposits	Deposits with the Treasury	Deposits with CCPs					
2018	16 636,7	11 404,1	4 926,8	5 371,8	241,9	863,6	5 232,6	582,0	19,6	3,7	8 545,6
2019	16 506,6	10 975,2	5 437,6	4 351,2	273,3	913,1	5 531,4	559,8	13,3	3,6	8 195,5
2020	17 659,6	11 901,8	6 138,3	4 210,0	340,3	1 213,2	5 757,8	597,9	13,3	4,3	8 550,5
2021	20 053,5	13 590,3	6 712,2	5 278,2	398,8	1 201,2	6 463,2	569,7	13,0	4,2	8 024,4
2022	22 964,5	15 379,5	7 392,8	6 273,9	365,0	1 347,8	7 584,9	503,0	10,3	3,9	7 764,0
2023 April	23 601,6	15 677,3	7 804,9	5 965,8	453,6	1 453,0	7 924,3	480,9	376,5	4,0	7 983,5
May	23 769,3	15 813,8	7 778,6	6 095,3	450,7	1 489,2	7 955,6	479,0	338,7	3,9	7 781,5
June	23 966,9	15 970,3	7 946,4	5 951,1	544,7	1 528,0	7 996,6	510,4	341,5	3,9	7 716,2

year	MONEY SUPPLY	CASH					QUASI-MONEY	Deposit prior to import (*)	STATE LOAN FUNDS	COMMITTED MEDIUM- & LONG-TERM ECTS	OTHER POSITIONS (net)
			H/BA fiduciary circulation	Demand deposits	Deposits with the Treasury	Deposits with CCPs					
July	24 081,6	16 087,0	7 984,9	6 028,2	544,7	1 529,2	7 994,6	435,4	328,3	4,0	7 393,0
August	24 547,8	16 527,8	7 991,0	6 445,6	556,5	1 534,7	8 020,0	371,4	399,4	3,9	7 446,5
Sept	24 368,4	16 325,6	8 026,2	6 280,6	477,0	1 541,8	8 042,7	390,2	422,3	3,9	7 592,6
Oct.	24 383,3	16 394,0	8 044,8	6 315,5	494,6	1 539,2	7 989,2	393,9	400,5	3,8	7 418,9
Nov.	24 369,2	16 393,9	8 029,8	6 256,8	556,8	1 550,5	7 975,3	419,5	476,8	3,9	7 474,3
Dec	24 330,8	16 318,8	8 030,8	6 162,0	556,8	1 569,3	8 012,0	507,1	430,1	3,9	7 597,8
2024 Jan	24 816,6	16 791,1	8 127,2	6 518,8	556,9	1 588,2	8 025,5	521,8	431,2	3,9	7 711,0
Feb	24 663,8	16 602,9	8 173,7	6 374,3	429,9	1 625,0	8 060,9	460,5	428,1	3,9	7 845,5
March	25 038,7	16 926,9	8 289,9	6 643,7	207,4	1 785,8	8 111,9	442,8	384,5	3,9	7 953,5

(*) As of January 2007, deposits before importation are excluded from the Money Supply.

Year 2024: Provisional Situations

Source: Bank of Algeria (quarterly statistical bulletin /first quarter 2024)

The Bank of Algeria's 2018-2024 data reveals a consistent growth, indicating structural liquidity expansion and cash-loving behavior. The money supply increased 46% over these six years due to fiduciary circulation and demand deposits. Algeria relies on cash despite regulatory measures to enhance financial intermediation, with cash holdings rising from 11,404.1 billion DZD in 2018 to 16,318.8 billion in 2023. Demand deposits have increased, while quasi-money has stagnated due to inflation and low returns, indicating poor interest in long-term savings. Treasury and CCP deposits rose in 2023 and early 2024, indicating government liquidity and formal payment system activity. The preliminary 2024 amount of 25,038.7 DZD suggests that accommodative policies and banking sector liquidity will expand monetary supply. These patterns indicate a shallow financial system with structural biases for cash and underutilization of banking channels, highlighting the need for financial inclusion and digital payment modernization measures.

5. Modern FinTech Applications

5.1 Digital Payments & Mobile Money

Mobile payment or mobile money is defined as a monetary transaction between two parties, through a mobile device capable of securely processing financial transactions over a wireless network. (Ondrus & Pigneur, 2005) Mobile money is a set of mobile telephone network services, allowing users to deposit funds in their SIM card, transfer funds by short messages, make withdrawals, and pay bills. According to IFC in 2011Through mobile money, financial and banking transactions such as remittance transfers, airtime purchase, utility bills, school fees payments, savings, and mobile banking can occur. (*IFC Mobile Money Study 2011*, n.d.)

5.1.1 Mobile Payment Stream

In recent years, mobile phone devices have surpassed routine communication requirements. Now, more and more value-added services, including mobile commerce and payments, are outdoing the regular mobile uses. Moreover, the mobile phone is the most widely used device for product sales and purchases, product delivery, and other e-commerce services (Peon et al., 2024). Smartphone mobile payment has grown rapidly in recent years. Mobile phones can pay utility bills, transfer money, make point-of-sale payments, and more. This revolutionary mobile payment trend is growing. This invention has helped mobile payments succeed. In 2015 Zhong and Nieminen found that inter-organizational co-innovation worked for mobile payment service innovation.

5.1.2 Trust of mobile payments.

Trust in mobile payments is crucial (Singh & Sinha, 2020) examined how perceived utility, compatibility, cost, awareness, consumer value addition, and trust affect merchants' mobile wallet adoption. Their findings showed that merchants' intention was most affected by perceived customer value addition, followed by technological usability. Considerable mediating influence of trust on perceived usefulness. Shao examined gender disparities in mobile payment trust-building methods in 2019. Security was the biggest predictor of consumer trust, followed by platform reputation, mobility, and customization. Mobility and reputation build trust more for men. However, security and customization increased confidence in female clients.

5.1.3 Adoption and acceptance of mobile payments.

In terms of the adoption of mobile payments, the authors (Humbani & Wiese, 2019) assessed the adoption and the intention to continue the use of mobile payment applications. They found the ‘‘drivers’’ better explained adoption as compared to the ‘‘inhibitors,’’ whereas satisfaction emerged as the strongest predictor of continuance intentions. Mobile payment behavior could not be applied globally. Mobile payment is an innovative system from banks or proxy financial companies (e.g., Ideal, Paypal and Apple Pay) where customers use the payment apps in smartphones to buy goods or services or to pay bills, Smartphones or other mobile devices connect customers, payment providers and merchants to complete payments to merchants using apps available in smartphones or via a quick response (QR) code, along with authentication and authorization.(Hasan et al., 2024)

Table 11: Example of FinTech services and applications

Digital and mobile payments	*examples*	*The importance*
Mobile Money	M-Pesa, Orange Money	Enables money transfers and payments via mobile phones
Digital Wallets	PayPal, Apple Pay, Google Pay	Store digital funds and facilitate online/offline transactions
Cryptocurrency Payments	Bitcoin, Ethereum	Enable decentralized digital transactions

Source: The author

Table 12: Activity on mobile payments in Algeria

Years	*“mobile payment”*	*Amount “mobile payment”*	*Total*	*Total P2P (DZD)*
Nov 2022	2019180	1462237873,38	765550	9388682740,95
Dec 2022	2165941	1491356478;36	813291	10381124624,28
2023	39283478	27855521037,78	17841108	241073627614,25
2024	58465858	43590424114,00	36236137	503679854885,90
Jan 2025	6369702	5276273518,35	3611466	48176893347,56

Source: GIEmonetique 2025

Table 13 shows that Algerian mobile payment activity increased substantially from November 2022 to January 2025, according to GIEmonetique (2025). Mobile payment volume and value rose over time. Mobile payment transactions increased from 2 million in late 2022 to over 58 million in 2024, worth 1.46 billion to 43.5 billion DZD. P2P mobile

payments increased from 765,550 transactions costing 9.39 billion DZD in November 2022 to 36 million transactions costing 503.7 billion DZD in 2024. Nearly 6.3 million transactions totaling 5.27 billion DZD in January 2025 suggest growth. Due to better digital infrastructure, mobile technology access, and user trust, Algerian mobile payment systems are becoming widespread. The 2023–2024 spike may be due to targeted governmental initiatives or fintech ecosystem developments. Mobile payments are growing in Algeria.

5.2. Banking & Neobanks

The banking industry is undergoing a major transformation toward digital-first services, led by neobanks, online platforms, and Buy Now, Pay Later (BNPL) solutions. Neobanks like Revolut, Chime, and N26 operate entirely online without physical branches, offering services such as checking and savings accounts, payments, and money transfers through intuitive mobile apps. These digital banks typically provide lower fees and improved user experiences, positioning themselves as agile alternatives to traditional banking institutions. (Arner et al., 2015). By eliminating the overhead costs of maintaining physical branches. Neobanks can pass on these savings to consumers through lower transaction fees and more competitive exchange rates. Additionally, Buy Now, Pay Later (BNPL) services such as Klarna and Afterpay have become increasingly popular in the e-commerce space, allowing consumers to make purchases and pay for them in installments. BNPL services provide short-term financing solutions that cater to customers seeking flexible payment options, particularly for online shopping. This model not only enhances consumer purchasing power but also offers merchants a competitive advantage by increasing conversion rates and average order values.(Alessa & Alabdan, 2025)

Table 13: Cards in exploitation

	CIB		*EDAHABIA*
Year	Number of particular cards	Number of Business cards	Number of EDAHABIA cards
2023	3 834 219	187 984	12 487 304
2024	4 021 237	217 784	15 605 882
Jan 2025	4 050 067	220 456	15 756 333

Source: GIEmonetique 2025

The steady rise in CIB and EDAHABIA cards from 2023 to January 2025 reflects Algeria's shift toward digital finance. CIB cards, issued by traditional banks for business use, show growing commercial adoption, while EDAHABIA cards, with faster growth and higher volume. Postal banking's key role in financial inclusion. Their use in daily transactions aligns with national digitization goals. However, issues like merchant acceptance, and digital literacy remain, pointing to FinTech opportunities in mobile money and e-commerce.

Table 14: The withdrawal activity on the cash machine

Year	*withdrawal transactions*	*Total amount of withdrawal transactions (DZD)*
2016	6868031	98 822 524 500.00
2017	8310170	126 398 291 000.00
2018	8833913	136 233 452 000.00
2019	9929652	164 116 233 000.00
2020	58428933	1 073 004 953 000.00
2021	87722789	1 728 937 064 000,00
2022	128 035 361	2 182 896 695 000,00
2023	174 415 895	3 262 245 367 500,00
2024	197 323 07	3 691 600 492 000,0
Jan 2025	16 631 024	311 929 133 000,00

Source: GIEmonetique, 2025

The table shows that the total number of withdrawal transactions increased by 94% between 2016 and 2021. In addition, the total number of withdrawal transactions increased by 92% over the same period. The total number of functioning ATMs can be illustrated through the following table:

Table 15: ATM in functioning

Years	*2016*	*2017*	*2018*	*2019*	*2020*	*2021*	*2022*	*2023*	*2024*	*Jan 2025*
Total number of functioning ATMs	1 370	1 443	1 441	1 621	3 030	3 053	3 640	3 848	3 942	3 950

Source: GIEmonetique 2025

The table indicates that the number of operational banking ATMs was 3950 in January 2025, compared to 1,370 in 2016 and just 544 in 2008.The steady growth in active bank accounts in Algeria, driven mainly by individual accounts, reflects improved financial inclusion and

digital banking progress. In contrast, legal entity accounts show volatility and a sharp decline in 2023, possibly due to economic or regulatory pressures. This disparity highlights the need to strengthen commercial banking and modernize the financial sector through inclusive policies to support broader economic participation.

5.3 Lending & Credit

FinTech has redefined lending by introducing inclusive and technology-driven alternatives to traditional credit systems. Peer-to-Peer (P2P) lending platforms like "LendingClub*"* and *Prosper* enable direct borrowing between individuals, offering faster access to credit while bypassing conventional banks (Jagtiani & Lemieux, 2019). In parallel, microfinance platforms such as *Kiva* and *Tala* target underbanked populations by providing small loans that support entrepreneurship and financial inclusion, especially in emerging markets.(Ghosh, n.d.)

Table 16: Number of borrowers (banks)

	2017	*2018*	*2019*	*2020*	*2021*	*2022*	*2023*
Public administrations	40	265	66	61	62	131	62
Public Non-Financial Corporations	2692	36309	35422	35213	35657	23914	34,441
Privat Non-Financial Corporations	586943	601850	542464	519819	543339	377651	457350
Private Non-Profit Institutions	1185	2909	3635	4221	3739	4242	4792
Households	592592	738272	878629	891063	905949	899741	989895
Men	273501	633675	721106	730687	727228	712214	781923
Women	46204	104597	157523	160376	178721	187527	207972
Total	1183452	1379605	1460216	1450377	1488746	1305679	1486540

Source: Bank of Algeria

5.4 Investment & Wealth Management

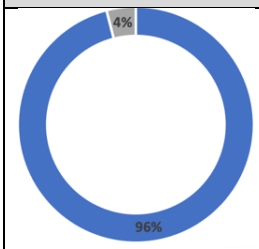
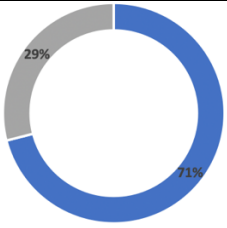
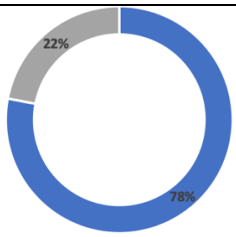
FinTech innovations have significantly reshaped the investment and wealth management industry by introducing accessible, low-cost, and automated financial solutions. Robo-advisors such as "Wealthfront" and "Betterment" provide algorithm-driven portfolio management with minimal human intervention, offering personalized investment strategies based on user preferences, risk tolerance, and financial goals (Sironi, 2016). These tools have democratized wealth management, especially for younger or less affluent users. Similarly, crowdfunding platforms such as Kickstarter and GoFundMe provide alternative funding models, enabling individuals and startups to raise capital directly from the public.

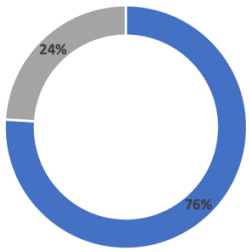
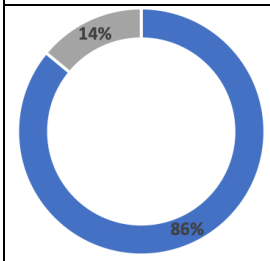
While fostering innovation and entrepreneurship, these platforms also raise concerns around investor protection and transparency.(Hornuf & Schwienbacher, 2017)

5.6 InsurTech (Insurance Technology)

InsurTech is transforming the insurance industry by leveraging AI and telematics to enhance operational efficiency, customer experience, and risk assessment. AI-driven algorithms are replacing traditional models by automating risk appraisal processes. Data from EY (Ernst & Young) illustrates how areas such as payments, budgeting, savings and investments, and borrowing behavior shape consumer awareness of FinTech services. While the EY Global FinTech Adoption Index (2019) outlines core categories payments, budgeting, savings, borrowing, and insurance a key challenge remains: the disconnect between available FinTech solutions and user awareness. Despite the maturity of digital financial ecosystems, adoption rates are often hindered not by technological barriers but by limited user familiarity. Many individuals equate FinTech with basic services like money transfers, overlooking advanced offerings such as digital lending, investment platforms, or InsurTech

Table 17: Consumer Awareness Levels Across Key FinTech Service Categories

Services	Consumer awareness of FinTech services
	**Money transfer and payments** An overwhelming 96% of consumers indicated awareness in this category, leaving only a small 4% unaware. This suggests that FinTech solutions related to transferring money and making payments have achieved near-universal recognition
	**Budgeting and financial planning** 71% of consumers reported being aware of budgeting and financial planning, while 29% remained unaware.
	**Savings and investments** A significant awareness level at 78%, with 22% of consumers being unaware of saving and investments service

	**Borrowing** Borrowing services, encompassing peer-to-peer lending, online loan applications, and buy-now-pay-later schemes, have a comparable awareness level, with 76% aware and 24% unaware.
	**Insurance** with 86% of consumers aware and 14% unaware. This indicates a strong recognition of FinTech innovations within the insurance sector, often referred to as InsurTech services like online policy comparison, digital claims processing, and usage-based insurance.

Source: The author, inspired from EY Global FinTech adoption index 2019(*Ey-Global-Fintech-Adoption-Index.Pdf*, n.d.)

Table 19: Evolution of Electronic Payment Transactions in Algeria by Sector (2016-January 2025)

Year	*Phone/telecom*	*Transportation*	*insurance*	*Electricity /water*	*Administrative service*	*services*	*Selling products*	*Total of transactions*	*Total amount (DZD)*
2016	6536	388	51	391	0	0	0	7366	15009842
2017	87286	5677	2467	12414	0	0	0	107844	267993423.40
2018	138495	871	6439	29722	1455	0	0	176982	332592583.28
2019	141552	6292	8342	38806	2432	5056	0	202480	503870361.61
2020 (*)	4210284	11350	4845	85676	68395	213175	235	4593960	5423727074.80
2021	6993135	72164	8372	120841	155640	457726	13468	7821346	11176475535,68
2022	7490626	195490	23571	302273	153957	705114	24169	9048125	18151104423,96
2023	8400869	371317	36996	640485	4086659	1055672	51154	15351354	32196672024,03
2024	9838682	758764	61739	1447168	5248922	1386790	106219	19594482	51945560351,45
Jan 2025	932758	89505	15446	87739	470188	275346	10214	19071244	3682339913,77

Source: GIEmonetique 2025

The table shows that the total amount of payment transactions on the electronic payment terminal increased by 97% between 2016 and 2021, while the total number of payment transactions on the electronic payment terminal increased by 96.9% during the same period.

year	*2016*	*2017*	*2018*	*2019*	*2020*	*2021*	*2022*	*2023*	*2024*	*Jan 2025*
POS	5 049	11 985	15 397	23 762	33 945	37 561	46 263	53 191	68 140	73 607

Source: GIEmonetique 2025

Since October 2016, online payment by CIB card has been officially operational in Algeria. In the first phase, the service was opened to major billers: water, energy (gas and electricity), landline and mobile telephone companies, insurance and air transport companies, and some government agencies. Today, 582 online merchants are members of the interbank card online payment system. and a total of transactions since the launch of online payment is 58,811,183.

6. The Strengths of FinTech

Financial Technology (FinTech) has revolutionized the financial services industry by introducing innovative solutions that enhance convenience, promote financial inclusion, and drive economic growth. This overview delineates the primary strengths of FinTech, supported by recent literature and empirical studies.

Table 18: The strengths of FinTech

Key strength	Description
Enhanced Convenience and Speed	FinTech platforms offer users the ability to access financial services anytime and anywhere, streamlining processes such as payments and money transfers. This 24/7 availability significantly improves user experience and operational efficiency (*The 2024 Investopedia Terms of the Year*, n.d.).
Personalized Services through AI and Big Data	Utilizing artificial intelligence and machine learning, FinTech companies provide tailored financial products and advice, meeting individual customer needs more precisely than traditional banks (Kanaparthi, n.d.).
Promotion of Financial Inclusion	FinTech expands access to financial services for underserved populations, including those in remote or underprivileged areas, by leveraging mobile technology and alternative credit assessment methods (Woodsville & TechBullion, 2024).
Cost Reduction and Operational Efficiency	By automating processes and reducing reliance on intermediaries, FinTech reduces operational and transactional costs for businesses and consumers, while expediting services such as lending and payments (Deloitte, n.d.).
Improved Security and Transparency	Technologies like blockchain and biometric authentication enhance transaction security and provide transparency, increasing consumer protection and trust in financial systems (Woodsville & TechBullion, 2024).

Innovation and Introduction of New Financial Products	FinTech has introduced novel financial products and services, including mobile payments, peer-to-peer lending, and robo-advisors, reshaping traditional financial landscapes and offering consumers more options (GRATTON, n.d.)
Data-Driven Decision Making	Leveraging big data analytics, FinTech companies gain insights into customer behavior and market trends, enabling smarter, more strategic business decisions (Cao & Yu, n.d.).
Economic Opportunities and Support for SMEs	FinTech facilitates alternative funding sources and supports small and medium enterprises (SMEs) by providing easier access to credit and financial management tools, fostering economic development (*The-Role-of-Financial-Technology-FinTech-in-Overcoming-Msmes-Financing-Gap-in-Algeria4*, n.d.).

Source: The author

Table 19: FinTech strengths in Banking sector

Strength	*Impact area*
Cost reduction	Bank operations
Improved risk control	Risk management
Enhanced customer experience	Service delivery
Increased profitability	Financial performance

Source: The author

7. The Limits of FinTech

While FinTech has introduced transformative changes in the financial sector by enhancing accessibility, convenience, and innovation, its adoption remains constrained by several critical limitations. Among these is the growing vulnerability to cyberattacks, as FinTech platforms often cloud-based, API-integrated, and mobile-reliant, are attractive targets for malicious actors. The World Economic Forum (2020) reported that financial services were the most attacked sector globally, underscoring the sector's exposure to sophisticated cyber threats. Moreover, FinTech's cross-border operations expose regulatory gaps; the absence of a harmonized international cybersecurity framework creates uneven protection levels and leaves systems fragmented.(Arner et al., 2015). In addition to structural issues, human error and insider threats continue to pose serious risks, with the Financial Stability emphasizing that even advanced cybersecurity systems are undermined without adequate user awareness and training. As highlighted by (Deloitte, n.d.) maintaining strong cybersecurity practices is fundamental to sustaining user confidence and ensuring the long-term viability of FinTech platforms.

8. The future of FinTech

8.1. The future of FinTech in Algeria.

While FinTech remains largely undeveloped in Algeria, its future potential is significant and will depend on the convergence of regulatory readiness, digital infrastructure, and technological adoption. A foundational step will be the introduction of comprehensive legal frameworks that support innovation while ensuring financial stability and consumer protection. National digital ID systems, for example, could be pivotal in improving access for unbanked populations estimated to represent the majority of Algerians. (*Digital Financial Inclusion*, n.d.)

The future of FinTech in Algeria also hinges on embracing technologies such as open banking, blockchain, and artificial intelligence. Although still at an early stage, open banking could enable secure data-sharing between financial institutions and third-party providers, fostering competitive and user-centric financial ecosystem (*Open Banking around the World*, n.d.). Similarly, machine learning and AI are expected to personalize financial services, creating a "segment of one" approach that enhances user experience (*FinTech and RegTech in a Nutshell, and the Future in a Sandbox*, 2017). Blockchain technology also holds promise in improving transparency and trust, particularly in peer-to-peer transactions and digital contracts (Blockchain at the Frontier, 2022). Algeria has high mobile penetration and a young, tech-savvy population. Shopify and Lightspeed are changing how retail and service companies handle payments and customer interactions globally. These examples may help Algeria incorporate financial services into digital ecosystems. Algerian financial inclusion, innovation, and economic resilience may benefit from FinTech.

Table 20: List of Algerian FinTech companies (non-exhaustive list)

Name	Description	Main Activity
KEPLER Technologies	Founded in 2009 as a subsidiary of a major European group, Kepler Technologies provides international financial services and solutions, with a strong presence across Africa. The company supports a range of prominent banks, including FRANSABANK, SOCIÉTÉ GÉNÉRALE, BNP PARIBAS, ABC BANK, AL SALAM BANK, NATIXIS, CNEP Banque, Housing Bank, Gulf Bank, and ARAB Bank.	Enables financial institutions and large accounts to automate their digital communication (SMS and Email) in compliance with Algerian regulations and with a service quality that meets their expectations.

UBEX-PAY Technologies	Ubexpay, established in 2020, is the first electronic bank in Algeria using the latest FinTech technologies. It is the first winner of the Algerian FinTech event and has been awarded the "Startup Label" by the Ministry of Microenterprise.	- Payments and transfers to/from: CNEP Banque, BNA, BNP Paribas - Online and in-store payments - SMS notifications - Web and e-commerce integration - Enables sending and receiving money online via smartphone or computer
GEODAB	A platform focused on the management of electronic payment terminals (POS) and automated teller machines (ATMs). It offers real-time geolocation and activity monitoring, as well as a dashboard showing live deployment data.	-Helps SATIM and banks manage and optimize the deployment of POS terminals and ATMs in real time and determine their exact locations across the national territory. -Facilitates navigation and visualization of various field operations. -Meets the requirements of electronic payment systems in Algeria.
SLICK-PAY	Slick-Pay is an Algerian FinTech with international ambitions, specializing in payment solutions for online merchants and individuals looking to send and receive money. It was awarded Best FinTech of the Year 2022 at the FinTech Challenge by Soolvit and SATIM. It partners with numerous banks including ARAB BANK, BNP Paribas, CNEP Banque, NATIXIS, Société Générale, Gulf Bank Algeria, BEA, BNA, etc.	- Enables use of CIB/Dahabia cards for money transfers and payments anytime, anywhere - Supports contactless payments via QR code scanning

Source: (Rania, 2024)

8.2. The creation of mobile money

Mobile money was originally deployed in Kenya in 2007 and soon spread across Africa due to restricted access to traditional banking services and poor financial infrastructure, according to Skaleet in 2023. Mobile money expanded quickly across the continent due to extensive mobile phone use, especially in distant and underdeveloped areas. Users may deposit money into a mobile account and transfer money securely via SMS using a PIN. This basic yet successful technique launched a pan-African financial inclusion movement (Skaleet, n.d.-a). MM operates outside the formal banking system. Unlike mobile banking, where customers access their formal bank accounts via mobile devices, MM enables users to make financial transactions without needing a formal bank account. These transactions, including person-to-person remittances, person-to-business, person-to-government, business-to-person, and government-to-person payments, play a pivotal role in increasing financial inclusion and driving economic growth. (Reppas & Muschert, 2024).

According to the article (*Les-Nouveaux-Modeles-de-Mobile-Banking-En-Afrique-Un-Defi-Pour-Le-Systeme-Bancaire-Traditionnel*, n.d.), In Africa, FinTech led by mobile payment systems like M-Pesa is reshaping financial services by bypassing traditional banks. With over 75% mobile coverage and widespread unbanked populations, mobile technology has enabled financial inclusion where banking infrastructure is weak. Rather than disrupting, FinTech often builds the financial system itself, and some argue it can support banks in extending services to underserved areas. According to Golbert Zongo's 2016 in his book "The Work" (Mobile banking and financial inclusion, mobile financial services and the challenge of financial inclusion in Burkina Faso), Safaricom's M-Pesa, which has been around since 2007, is an example of the technological revolution in money transfers and mobile payments (Zongo, 2016).

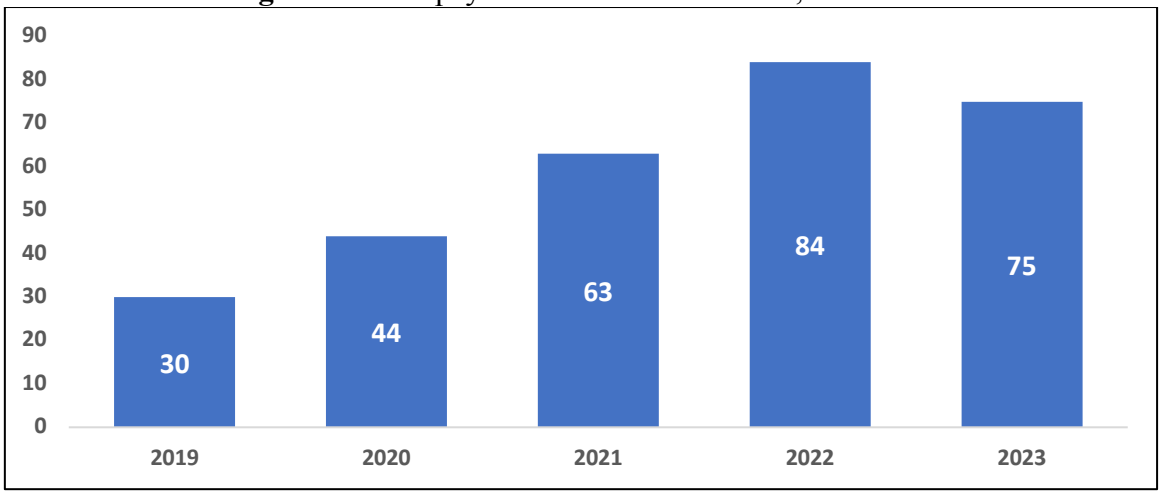
8.3. The use cases

There are several top-line categories that FinTech offerings fall into: digital banks and wallets, digital payments, personal finance, investing, and lending.(Hu & Downie, n.d.)
Hence, there are some products that FinTech services offer.

8.3.1. Bill payments

Global bill payment transaction values shrank for the first time in 2023, falling by 11% year-on-year to $75 billion. However, transaction volumes increased by 23% year-on-year. This led to a significant drop in average transaction value from $14 in 2022 to $10 in 2023.

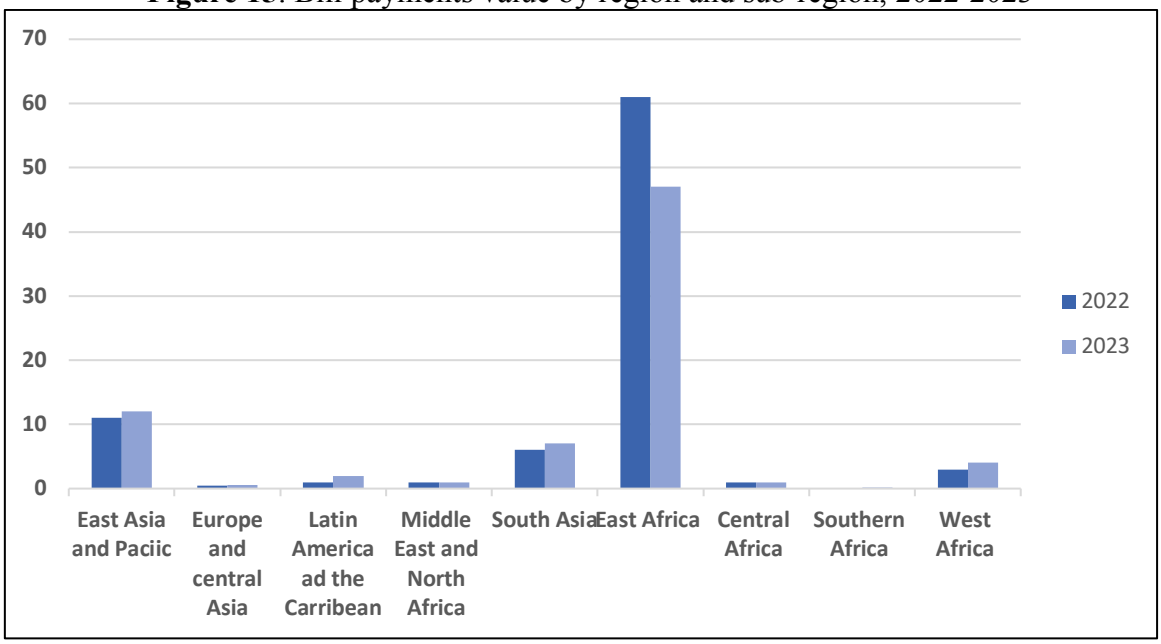
Figure 14: Bill payments transaction values, 2019-2023



Source: GSMA, (*GSMA-SOTIR-2024_Report*, n.d.)

The drop-in bill payment values were not evenly spread across all regions worldwide. Bill payment values grew everywhere except for East Africa, where they fell by 22%. This drop was driven primarily by consumer behavior changes in Kenya.

Figure 15: Bill payments value by region and sub-region, 2022-2023



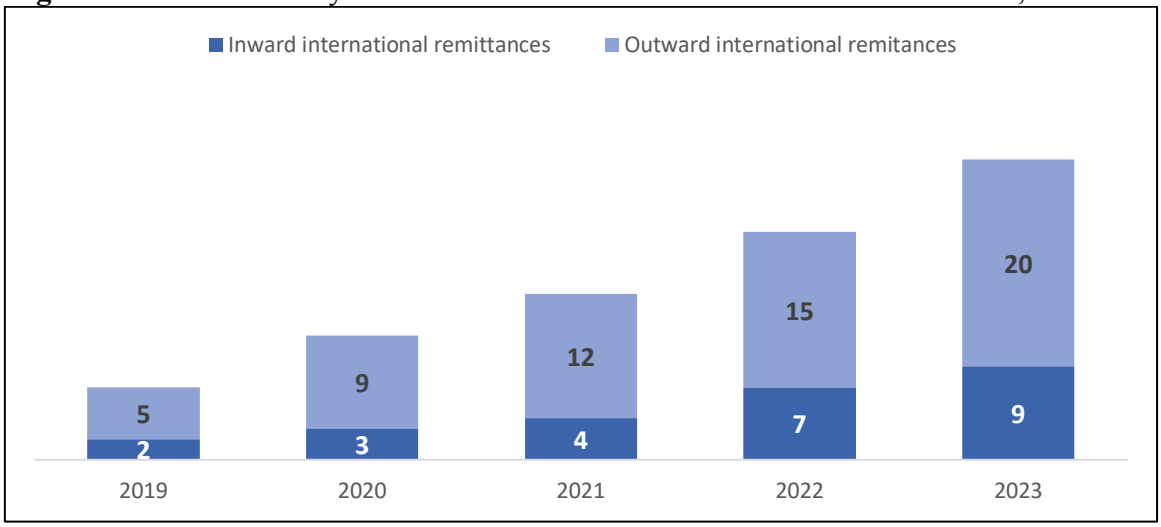
Source: GSMA, (*GSMA-SOTIR-2024_Report*, n.d.)

Most mobile money providers offer bill payments. In 2023, 93% of survey respondents offered the use case. On average, each survey respondent that offers bill payments is integrated with 196 billers, a 12% rise relative to 2022. As reported in 2022, electricity companies remain the largest billers in 2023.

8.3.3. Remittances

Remittances abroad were the fastest-growing mobile money use case in 2023. The value of transactions rose one-third to about $29 billion. West Africa drove 60% of this expansion. Throughout 2019–2023, inward foreign remittances have at least doubled outbound ones.

Figure 16: Mobile money-enabled international remittances transaction values, 2019-2023



Source: GSMA,(*GSMA-SOTIR-2024_Report*, n.d.)

The average number of unique accounts receiving overseas remittances each month climbed by 41% between September 2022 and June 2023, while unique senders grew by 17%. More mobile money companies offering foreign remittances have increased them. A third more Global Adoption Survey respondents offered overseas remittances in 2023 at 77%.

There was also an uptick in international remittances, especially during the COVID-19 pandemic, with customers sending money to and from various corridors as they couldn't travel home anymore. Eliminating travel costs, reducing potential losses, and easing her worries about her family's well-being. (*Mobile Money, Evolving FinTech: In Conversation with M-Pesa | Mobile for Development*, n.d.)

8.4. The importance of mobile money

This technology has transformed payment habits, particularly in regions where access to traditional banking services is limited. Mobile money, as part of the broader trend of digitalizing financial services, addresses key issues such as financial inclusion, transaction security, and the facilitation of monetary exchanges.(Skaleet, n.d.-b) Mobile money addresses the challenge of financial inclusion by offering an accessible alternative to bank accounts for individuals who have previously been excluded from traditional financial services.

Mats Granréyd, the director general of GSMA, indicated that mobile money also remains a leading driver of the United Nations Sustainable Development Goals (SDGs), contributing to 15 of the 17 goals, including SDG 11 (Sustainable cities and communities) and SDG 12 (Responsible consumption and production).(*GSMA-SOTIR-2024_Report*, n.d.)

Section 02: The factors of adopting FinTech

The adoption of FinTech is driven by several key factors that reflect the changing needs of both businesses and consumers. This section explores the main drivers behind the growing integration of technology in the financial sector and the adoption process.

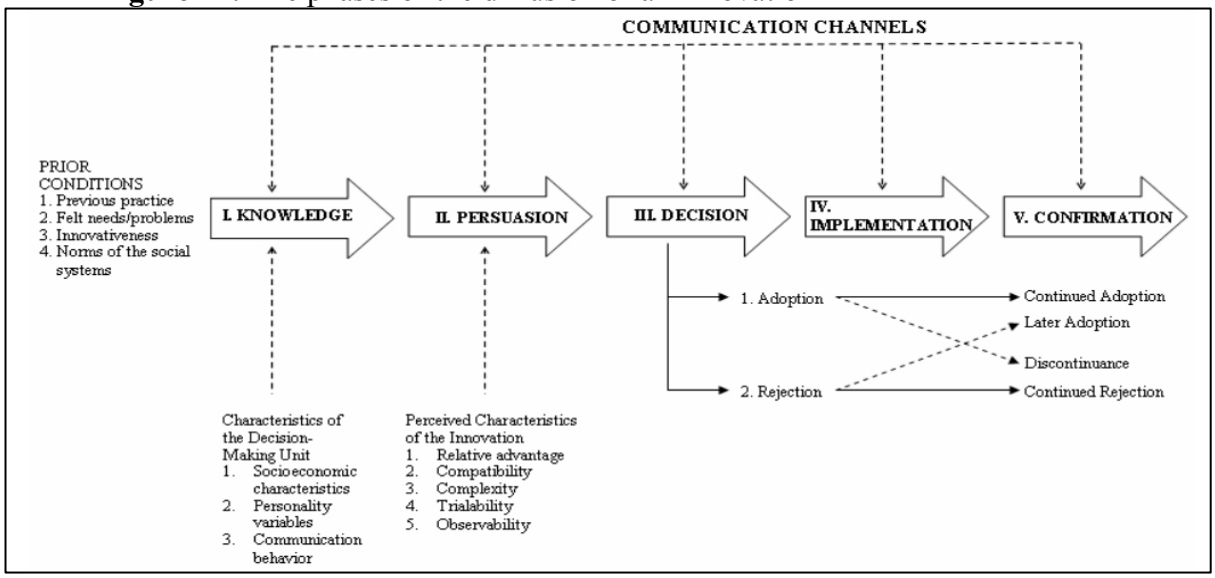
1. The process of adoption

1.1 Meaning of adoption

Managerial science research follows a structured process, beginning with the clarification of philosophical assumptions and progressing through methodological choices tailored to the research context (M. N. K. Saunders et al., 2023). Within this framework, the Rogers Adoption Curve provides a foundational model for analyzing consumer responses to innovation. It segments adopters into five categories: innovators, early adopters, early majority, late majority, and laggards based on their readiness and risk tolerance (E. M. Rogers, 1983). Each segment displays unique behavioral traits that influence diffusion patterns and strategic communication needs. Innovators and early adopters drive initial uptake, while the early and late majorities contribute to mass adoption, and laggards adopt only when necessary. Although widely used, Rogers' model must be applied contextually, as adoption behavior varies across sectors, technologies, and cultural settings (Mahajan et al., n.d.).

1.2 Factors that influence adoption behavior

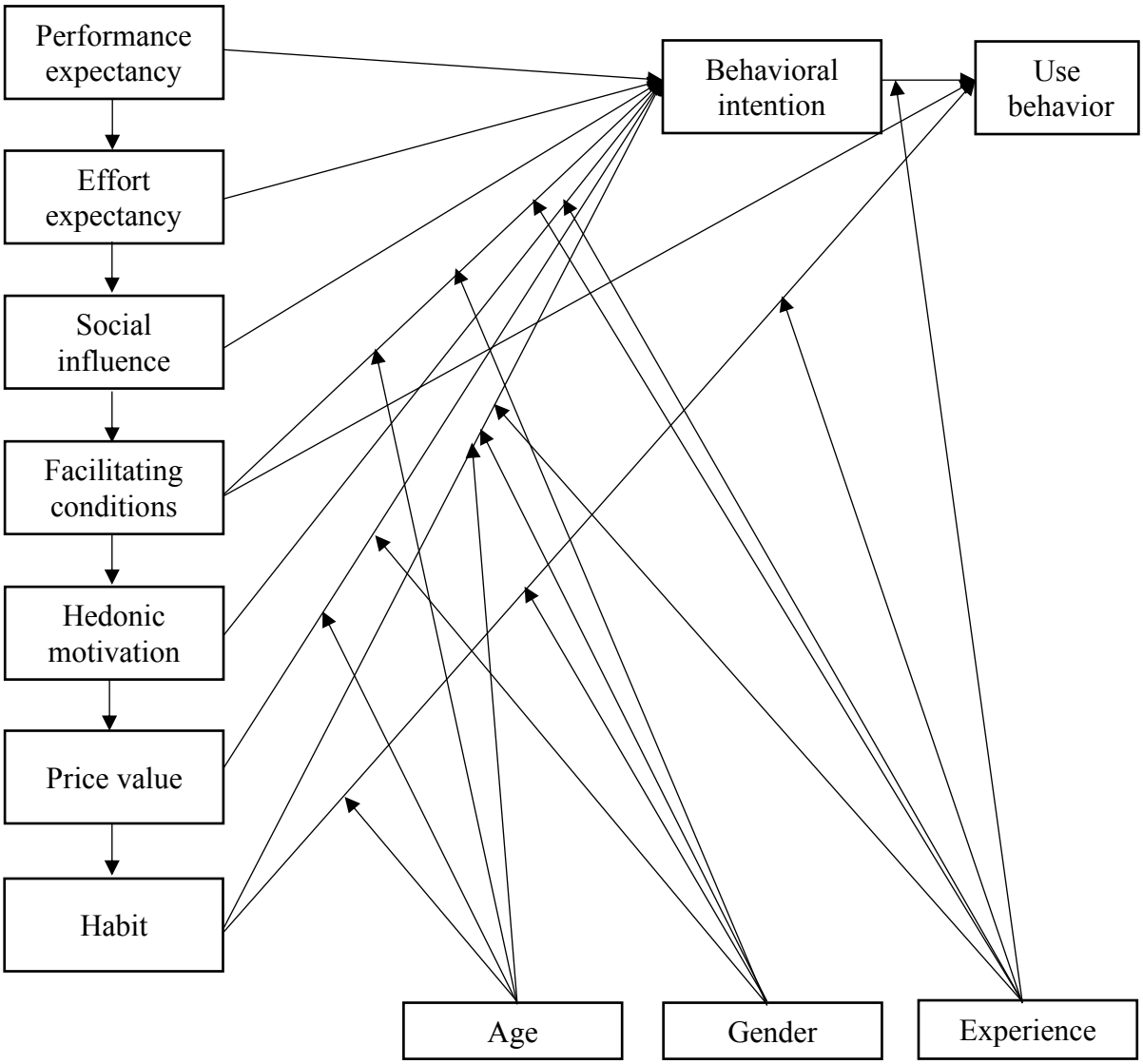
Figure 17: The phases of the diffusion of an innovation



Source: (I. Rogers, 2017)

Rogers' (1962) Innovation-Decision Process Model outlines five stages: Knowledge, Persuasion, Decision, Implementation, and Confirmation that explain how individuals and organizations evaluate and adopt innovations. Central to the model is the influence of communication channels and perceived innovation attributes (e.g., relative advantage, compatibility, complexity, trialability, and observability), which significantly shape the persuasion phase (Tornatzky & Klein, 1982). The model recognizes that adoption is not always linear; users may reject, later adopt, or even discontinue use post-adoption. This framework is widely applied in technology adoption contexts, including FinTech and e-banking, where perception, trust, and user context are critical (Venkatesh et al., 2003). It complements contemporary models like UTAUT, which integrate psychological and situational variables to better predict behavioral intention and usage.

Figure 18: The UTAUT-2 model.



Source: UTAUT2, (Venkatesh et al., 2012b)

This figure provides a clear visual representation of the UTAUT model's core constructs and their influence on user intention and behavior.

2. The factors of adopting FinTech

Table 21: Systematic review about the factors of adopting FinTech

Article	*Factors*
MOBILE MONEY, FINANCIAL INCLUSION AND DEVELOPMENT: A REVIEW WITH REFERENCE TO AFRICAN EXPERIENCE	- technological advancement - pricing - regulatory implications
Editorial: Multi-level socio-economic determinants of mobile money adoption in the Middle East and North Africa (MENA): introduction to the thematic collection	Micro determinants: - Income - age - education -gender Socio-economic factors: - trust in financial institutions - Distance to banks - lack of documentations - service costs (price) - monetary policies - trade - political stability Macro-determinants: - human capital - digital infrastructure - remittances -technological advancement
les nouveau modele de mobile banking en Afrique : un défi pour le système bancaire traditionnel ?	- Mobile Phone Ownership - Cost - Lack of Strong Banking Infrastructure - Flexible Regulation - telecom operators - adoption of new technologies

Source: The author

The expansion of FinTech has significantly contributed to financial inclusion, particularly among underserved populations. Key factors influencing adoption include trust, perceived security, and service quality. Trust in platform integrity and data security reduces

psychological resistance, while service quality, measured by responsiveness and reliability, enhances user satisfaction. Social influence also affects adoption behavior, aligning with constructs from the UTAUT2 model, particularly performance, expectancy, and effort expectancy (Venkatesh et al., 2012b). A critical enabler in this context is digital financial literacy, which empowers users to navigate FinTech platforms effectively, manage risks, and make informed financial decisions. FinTech applications often incorporate informal learning mechanisms such as gamification and user communities that enhance financial competence and promote sustained usage (Chaudhary & Chaudhary, n.d.). The adoption of FinTech will depend on the extent to which perceived benefits and perceived risks are balanced.

Gender

Mobile money has become a popular choice for women in various countries, particularly in Senegal, Kenya, Uganda, and Zambia. This convenience is particularly beneficial for women who struggle with accessing traditional banking due to transportation costs, family duties, or social restrictions. Mobile money allows for daily, low-value savings deposits, eliminating cost, location, and convenience issues. At least 43% of clients use loans for commercial reasons, with 33% being women entrepreneurs. (*GSMA-SOTIR-2024_Report*, n.d.). The "Xitique savings product in Mozambique" shows that more women than men use mobile money for savings. Although women's account ownership has nearly doubled since 2017, men still hold the majority of accounts, indicating persistent gender disparities that require targeted government interventions.

Income

Diversification across savings, investments, credit, and merchant payments is essential for sustained FinTech growth. As users become more digitally engaged, platforms increasingly offer integrated ecosystems that support business transactions, including features like loans and buy-now-pay-later options as seen with M-Pesa. In Algeria, a similar innovation was introduced by CPA Bank through the C-PAYE+ card, a deferred debit solution that offers both convenience and financial flexibility, even when their account lacks sufficient funds, provided they remain within a pre-approved monthly limit based on income. All expenses are consolidated into a single payment deducted on a fixed date, simplifying budgeting and financial planning.

2.1 User experience of mobile money across the world

Table 22: Consumer FinTech adoption across 27 markets
The average adoption rate is 64%.

Country	FinTech adoption %
China	87%
India	87%
Russia	82%
South africa	82%
Colombia	76%
Peru	75%
Netherlands	73%
Mexico	72%
Ireland	71%
United Kindom	71%
Argentina	67%
Hong Kong SAR of China	67%
Singapore	67%
South Korea	67%
Chile	66%
Brazil	64%
Germany	64%
Sweden	64%
Switzerland	64%
Australia	58%
Spain	56%
Italy	51%
Canada	50%
Usa	46%
Belgium & Luxembourg	42%
France	35%
Japan	34%

*The figures show FinTech adopters as a percentage of the digitally active population in each market. All averages are shown on an unweighted basis.

Source: EY, global FinTech adoption index 2019 (*Ey-Global-Fintech-Adoption-Index.Pdf*, n.d.)

There are notable variations in consumer FinTech adoption across 27 markets, according to the EY Global FinTech Adoption Index (2019). Because of their fast digitization and significant demand for alternative financial services, emerging economies like China, India, Russia, and South Africa have the greatest adoption rates. Notable participation is also shown by nations including the Netherlands, Colombia, and Peru. On the other hand, adoption rates are lower in industrialized nations like the US, Belgium, Luxembourg, France, and Japan. This implies that despite technology advances, FinTech adoption may be slowed by established financial infrastructures, cultural preferences, and legal considerations.
It is notable that countries traditionally perceived as technologically advanced, such as Japan and France, exhibit some of the lowest adoption rates among the surveyed markets. Factors such as consumer trust, regulatory barriers, cultural preferences, and satisfaction with existing financial services likely play significant roles in influencing these outcomes.

According to the GSMA report, mobile money has 1.75 billion registered accounts (+12% YoY) and 435 million active 30-day users (+9% YoY). Transaction volume was 85 billion (+23% YoY) and worth $1.4 trillion (+14%). The agent network grew to 18.6 million registered agents (+22% YoY), 8.3 million active agents (+14%), and 642 million active 90-day accounts (+11%). Mobile money is improving livelihoods in locations with limited traditional banking infrastructure by increasing financial inclusion and access to digital services. (*GSMA-SOTIR-2024_Report*, n.d.).

Table 23: Regional growth of mobile money in 2023

Region	***Live service***	***Registered accounts***	***Active (30-day) accounts***	***Transacti on volume***	***Transaction value ($)***
Global 	310	1.75 bn + 12%	435 m + 9%	85 bn + 23%	1.4 tn + 14%
Sub-Saharan Africa 	156	835 m +19%	234 m + 12%	62 bn + 28%	912 bn + 12%

South Asia 	36	401 m +11%	89 m + 8%	12 bn + 13%	214 bn + 17%
East Asia and Pacific 	52	374 m +3%	77 m + 6%	9 bn + 10%	196 bn + 14%
Latin America and the Caribbean 	29	48 m - 13%	19 m - 13%	1 bn + 6%	38 bn + 11%
Middle East and North Africa 	30	71 m +10%	9 m + 41%	719 m + 57%	30 bn + 40%
Europe and Central Asia 	7	26 m + 8%	**3** m + 11%	391 m + 13%	**3** bn + 14%

Source: GSMA, THE STATE OF THE INDUSTRY REPORT ON MOBILE MONEY 2024. (*GSMA-SOTIR-2024_Report*, n.d.)

2.2 African case

Table 24: Growth in Africa

	Live services	Registered accounts	Active (30-day) accounts	Transaction volume	Transaction value ($)
North Africa	13	20 m +17%	2 m +54%	150 m +44%	3bn +48%
West Africa	68	356 m +23%	84 m +19%	19 bn +40%	347 bn +40%
Central Africa	20	83 m +19%	28 m +18%	5 bn +25%	72 bn +19%
Southern Africa	15	23 m +19%	5 m +7%	592 m +10%	6bn +2%
East Africa	53	372 m +16%	118 m +7%	38 bn +23%	488 bn -2%

Source: GSMA, THE STATE OF THE INDUSTRY REPORT ON MOBILE MONEY 2024. (*GSMA-SOTIR-2024_Report*, n.d.)

2.3 Sub-Saharan countries

For over two decades, Sub-Saharan Africa has been the epicenter of MM systems (particularly Kenya, Tanzania, Uganda, Ethiopia, Nigeria, and Ghana), where the industry registered 234 million active accounts in 2023, with over US$912bn in transactions processed (Reppas & Muschert, 2024).

2.4 Middle East and North Africa (MENA)

Reppas and Muschert in 2024 provide a topical collection on the socio-economic drivers of MENA mobile money (MM) adoption. Despite digital infrastructure improvements and high literacy, MENA has lesser MM adoption than other emerging areas. Only 30 live MM services were in MENA in 2023, mostly in Jordan, Tunisia, Egypt, and Morocco. This contrasts with Sub-Saharan Africa, where MM has greatly improved financial inclusion, especially for women and youth. (Siddika & Sarwar, 2024) used generalized least squares to analyze data from 23 MENA and Sub-Saharan African nations. Their data show that gender and income positively impact MM adoption. Political stability in MENA also boosts MM adoption. The affordability index, which measures macroeconomic data, decreases MM adoption. The authors advise studying market rivalry and psychological aspects affecting user behavior to understand MENA's low MM adoption rates. (Reppas & Muschert, 2024).

2.4.1 Mobile money is transforming savings in Africa.

There has been no increase since 2017 in the overall share of adults who save, according to the Global Findex 2021. This is likely to have disappointed advocates of savings as an anti-poverty tool in Sub-Saharan Africa. Yet, how people save has changed dramatically, with a significant shift toward formal saving enabled by mobile money.(*GSMA-SOTIR-2024_Report*, n.d.)

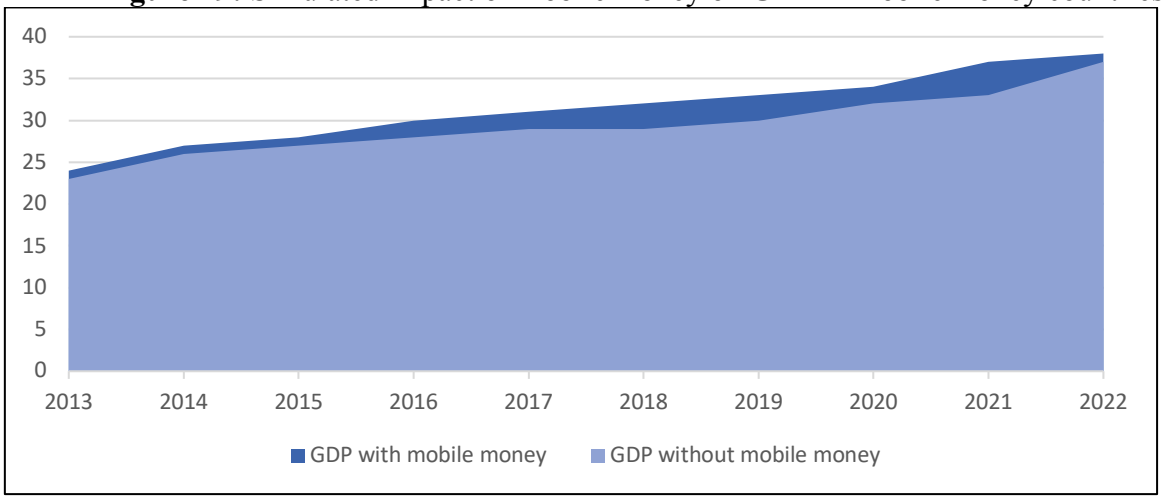
3. Success story of mobile money

The success of mobile money can be measured by:

3.1. The contribution of mobile money to GDP

Mobile money is now reflected in macroeconomic indicators: an increase in mobile money adoption can lead to a rise in GDP. Between 2013 and 2022, a 10-percentage-point rise in mobile money adoption was found to have increased GDP by 0.4%-1.0%1 %. This is supported by three factors: Higher adoption of mobile money combined with higher transaction values; An increase in ecosystem transactions, i.e., international remittances, merchant payments, and bill and bulk payments; and Stronger network effects, as more users adopt mobile money and transact with more people. Based on data collected between 2013 and 2022, the total GDP in countries with a mobile money service ("mobile money countries") was almost $600 bn higher than it would have been without mobile money.

Figure 19: Simulated impact of mobile money on GDP in mobile money countries.



Source: GSMA, THE STATE OF THE INDUSTRY REPORT ON MOBILE MONEY 2024 (*GSMA-SOTIR-2024_Report*, n.d.)

The graph demonstrates a consistent positive contribution of mobile money to GDP from 2013 to 2022, with the gap between GDP with and without mobile money steadily widening

over time, particularly accelerating after 2019, indicating mobile money's growing economic significance.

Table 25: Contribution of mobile money to GDP as of 2022, by region

region	*Mb contribution*	*Evolution rate*
All mobile money countries 	+600$ bn	+1.5%
Eastern Africa 	+60$ bn	+5.9%
Sub-Saharan Africa 	+150$ bn	+3.7%
Western Africa 	+70 $ bn	+4.1%

Source: GSMA,*GSMA-SOTIR-2024_Report*, n.d.)

3.2. Success story of mobile money in WAEMU, a growing ecosystem

WAEMU countries (Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo) have seen rapid mobile money growth Over 110 million mobile money

accounts were opened 2018-2022, including 60 million in 2021. About 60% of the region's 137 million residents live in rural regions. Mobile money improved financial inclusion from 56% in 2018 to 71% in 2022. The 2006 Central Bank of West African States regulatory framework promotes DFS mobile money. The technology lets non-banks issue licensed mobile money. Regulation allows two models: banks and microfinance institutions delivering e-money. As a business extension or with an MNO, FinTech, or other tech provider. Not only can banks offer e-money services. This notion needs BCEAO-licensed EMIs. This regulation mandates technical collaborations between banks, MFIs, MNOs, and FinTechs. These agreements require MNOs or FinTechs to manage and market payments. Bank-led cooperation is rising in 2022. WAEMU offers 45 mobile money services. FinTech-led partnerships had 23% and 29% of registered accounts in 2018 and 2022, while e-money issuers had 71%.(*GSMA-SOTIR-2024_Report*, n.d.)

3.3. The success story of mobile money in Nigeria

Mobile money growth in Nigeria has been driven by MNO-led and non-MNO-led operators with separate licenses. These permits enable comparable activities, but their effects on financial inclusion may vary. Nigeria's digital payment use has increased as mobile money providers have proliferated. The CBN introduced the Payments Service Bank (PSB) license in 2018, allowing MNOs to offer financial services. Non-bank mobile money providers must operate in 25% of rural regions to receive the license. PSBs can issue debit cards, cross-border transfers, and deposits and withdrawals, but not credit cards.

Table 26: Statistics on selected mobile money providers in Nigeria, 2023

	Aritel	**MTN**	**Opay**	**Palmpay**
Registered mobile money accounts	20m (November 2023)	19m (March 2023)	30m (June 2023)	30m (October 2023)
Registered mobile money agents	52,000 (March 2023)	/	500,000 (June 2023)	500,000 (October 2023)
Active mobile money agents	/	27,000 (June 2023)	/	/

Source:(*GSMA-SOTIR-2024_Report*, n.d.)

The table highlights selected Nigerian mobile money providers' registered accounts and agents in 2023. Mid-to-late 2023 saw Airtel and MTN declare 20 million and 19 million

mobile money accounts, while Opay and Palmpay led with 30 million each. Airtel has 52,000 registered agents, whereas Opay and Palmpay have 500,000 as of March 2023. Only MTN had 27,000 active agents in June 2023, demonstrating a discrepancy between provider registration and operational activity. Nigeria's mobile money ecosystem is growing and competing, demonstrating financial inclusion and non-traditional financial service providers.

4. Failure case of mobile money

4.1. Inovapay in Burkina Faso

In his book "Mobile Banking et Inclusion Financière (Les Services Financiers Mobiles et le Défi de l'Inclusion Financière au Burkina Faso)," Gilbert Zongo claims that Inovapay was a digital financial innovation that originated in Burkina Faso and sought to expand to all West African Economic and Monetary Union member states. The company combined electronic payment systems with ICT, including electronic payment cards, mobile devices, and internet services. After receiving legal permission in October 2009, the company quickly grew to over 20,000 clients. Inovapay proposed a collaborative digital platform for decentralized financial institutions to the Professional Association of Decentralized Financial Services (AP/SFD) in 2012. The program gave SFDs a uniform technical foundation to design and supply egalitarian financial services via safe, accessible, and user-friendly electronic payment systems. This platform aims to cover Burkina Faso, diversify financial products from SFDs, and increase savings mobilization, particularly from locals and migrants. Internal management issues hampered this program's capacity to create a new inclusive digital banking paradigm. Governance issues hindered the company's regional development and operations. After Inovapay collapsed, other things happened. Former customers were alienated, and mobile banking options were viewed with suspicion in the region. This continuous suspicion makes it difficult for digital financial service providers to gain client trust. Current and potential mobile finance services (MFS) stakeholders rely on Inovapay's expertise. In underdeveloped nations, FinTech technology spread requires strong governance and administration, user trust, and continual engagement, as well as strategic planning.Inovapay serves as a cautionary tale and a resource for mobile money providers looking to improve financial inclusion in WAEMU and beyond (Zongo, 2016).

Section 03: Financial Technologies and Mobile Money: Future Challenges and Perspectives

In his October 2024 speech titled "Digital Payments in Algeria: Moving Toward a Cashless Economy," Governor Salah Eddine Taleb outlined the Bank of Algeria's strategic vision for advancing digital payments. A key initiative is the rollout of an inclusive instant payment system via the Bank's Pre-clearing Center (CPI), enabling 24/7 real-time transactions and encouraging electronic payments among businesses to boost financial inclusion, the governor emphasized improving financial system efficiency and user experience, while noting that the future of Algeria's financial infrastructure hinges on digital frameworks, particularly KYC, open banking, and financial data governance. Between January and August 2024, Algeria saw a 16% increase in card payments and a 12% rise in mobile payments, clear indicators of public adoption of digital financial services. Governor Taleb also reaffirmed the Bank's commitment to balancing innovation with financial stability through strong risk management, consumer protection, and compliance with AML/CTF standards, aligning with international regulatory practices (Intervention of Sallah Eddine TALEB, 2024, n.d.)

1. The contribution of artificial intelligence in FinTech

Artificial Intelligence (AI) is revolutionizing the financial services industry by providing intelligent, personalized, and efficient solutions. AI enhances customer experience, operational performance, and risk management through machine learning, natural language processing, and predictive analytics. Applications include algorithmic trading, fraud detection, credit scoring, and AI-powered virtual assistants. These tools, delivered through mobile apps, APIs, and web platforms, automate processes, strengthen compliance, and provide secure, tailored services.(Hu & Downie, n.d.).

Table 27: AI Applications, Use Cases, and Benefits in Financial Services

AI Application	*Use case*	*Benefits*
AI-Enhanced Chatbots	Customer Service & Support	24/7 assistance, reduction in operational costs, personalized communication
Machine Learning Credit Scoring	Credit Underwriting	Faster processing, increased accuracy, reduced bias
Pattern Recognition Algorithms	Fraud Detection	Real-time identification, behavior analysis, minimized financial losses

Source: (Nucci, 2024)

2. Challenges and limitations of using AI in FinTech

The financial industry is heavily regulated, necessitating that any advances in the FinTech business adhere to current government rules. Hu and Downie (2024) observe that regulatory frameworks are frequently behind technical improvements because of the fast rate of innovation. A 2024 assessment from the U.S. Department of the Treasury, referenced by Hu and Downie, indicates that generative AI models are still in nascent phases of research, are expensive to deploy, and pose considerable hurdles for validation in high-assurance applications.(Hu & Downie, n.d.)

Table 28: The challenges and impact of implementing AI in FinTech

Challenge	*Impact*	*Potential solutions*
Data Privacy and Security	Increased risk of data breaches and misuse	Implementation of robust cybersecurity measures and privacy laws compliance
Explainability of AI Systems	Difficulty in earning user trust without transparency	Development of transparent algorithms and explainable AI models
Adaptability to Evolving Threats	Keeping pace with sophisticated cyber threats is challenging	Continual learning models that adapt and evolve

Source: (Nucci, 2024)

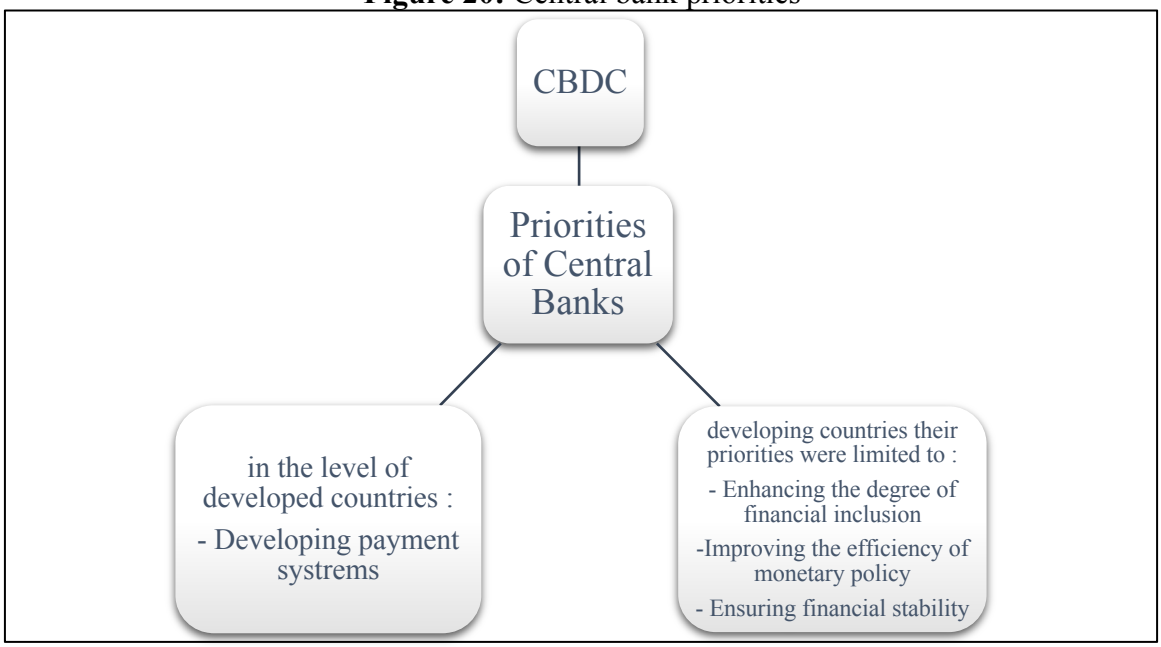
3. The future of AI in FinTech

The future of AI in finance promises a merger of cutting-edge technology and traditional finance, transforming the industry. AI's market value in financial services is expected to soar by 2028 (Nucci, 2024), highlighting its vital role in innovation and sector growth. This transformation represents a fundamental change that reshapes portfolio management, data analysis, and customer engagement across institutions. AI in FinTech could transform the financial services business. In 2024, Hu and Downie predicted that AI would improve FinTech risk management, fraud detection, client service, and individualized financial advice. AI helps FinTech organizations incorporate new technologies, stay competitive, operate at market speed, and improve customer service, they say. AI can reduce human errors and bias in data processing, enhancing financial plans. AI can strengthen a variety of FinTech tools and applications because to its adaptability.(Hu & Downie, n.d.)

4. Central Bank Digital Currencies (CBDCs)

In their study *"Central Bank Digital Currency (CBDC) as a Contemporary Trend in Financial and Banking Transactions,"* Aimen Bouzana and Wafa Hamadouch (2023) found that central banks' approaches to CBDC adoption between 2019 and March 2023 differed by economic context. In developed economies, the primary objective was enhancing payment systems. In contrast, central banks in developing countries focused on promoting financial inclusion, strengthening monetary policy effectiveness, and ensuring financial stability.(*Central Bank Digital Currency(CBDC) as a Modern Trend in Financial and Banking Transaction, 2023*, n.d.)

Figure 20: Central bank priorities



Source: The author, inspired by (*Central Bank Digital Currency(CBDC) as a Modern Trend in Financial and Banking Transaction, 2023*, n.d.)

4.1 Definition and Global Trends

Central Bank Digital Currencies (CBDCs) are government-issued digital currencies, with examples like e-CNY (China) and eNaira (Nigeria). For successful adoption, CBDCs require clear legal frameworks, especially for integrating token-based systems into existing financial institutions. Legal issues such as how financial institutions hold or lend CBDC must take priority over technical development. In indirect CBDC models, users would access their digital currency through intermediary custodial wallets, which function as legal and technical tools distinct from conventional mobile banking apps used by private banks and e-money issuers.

Table 29: Definition of central bank digital currency

	Definitions	Source
1	A digital form of central bank money that is different from balances in traditional reserve or settlement accounts.	(Bank, n.d.)
2	A central bank digital currency is a digital payment instrument, denominated in the national unit of account, that is a direct liability of the central bank.	(*Othp42_fin_stab*, n.d.)
3	CBDCs are digital tokens issued by a central bank that represent a nation's official currency, functioning as legal tender.	(*The Rise of Public and Private Digital Money: A Strategy to Continue Delivering on The IMF's Mandate*, n.d.)
4	A CBDC is central bank money offered in digital form for retail or wholesale use, with the potential to complement or substitute physical cash.	(*Central-Bank-Digital-Currencies-for-Cross-Border-Payments-A-Review-of-Current-Experiments-and-Ideas.Pdf*, n.d.)
5	A CBDC is an electronic version of central bank money that can be used by households and businesses to make payments and store value.	(*Central Bank Digital Currency*, 2021)

Source: The author.

4.2. Central bank digital currencies and the case of the e-DZD in Algeria

Central Bank Digital Currencies (CBDCs) are defined as digital representations of a nation's fiat currency issued and regulated by the central bank, serving as a legal tender for transactions and store of value(*Central Bank Digital Currency*, 2021) Unlike decentralized cryptocurrencies, CBDCs are centrally controlled and aim to complement cash, not replace it, ensuring monetary sovereignty while promoting digital financial inclusion. In this global movement, Algeria has also signaled its intention to explore a sovereign digital currency**,** known as the e-DZD**.** The e-DZD is currently in a conceptual phase, with academic proposals and preliminary institutional discussions outlining its potential design and policy implications. Otmania and Benkheirat, in their article (*A Proposal Model for a Digital Currency for the Central Bank of Algeria, 2022*, n.d.) in 2022, proposed a hybrid model for the e-DZD that integrates features of both retail and wholesale CBDCs. They argue that such a model could improve monetary transmission mechanisms, reduce reliance on cash, and support informal sector integration into the formal financial system. Furthermore, the e-DZD is seen as a strategic instrument for modernizing Algeria's financial infrastructure, enabling secure digital payments, and fostering broader adoption of financial technologies in a context where cash remains dominant. According to (*Le Dinar Numérique, En Voie de Concrétisation En A... | Algeria Invest*, n.d.) government officials have emphasized the digital dinar's potential role is emphasized in promoting economic transparency, combating tax evasion, and stimulating e-commerce. However, the implementation of a CBDC in

Algeria faces notable challenges. These include the need for a comprehensive legal framework, cybersecurity preparedness, digital literacy among the population, and alignment with the national strategy for digital transformation.(Hirzel, n.d.) Stresses the importance of ensuring institutional readiness and cross-sectoral coordination before launch, drawing lessons from early adopters such as Nigeria and the Bahamas. e-DZD represents a forward-looking policy initiative that aligns with Algeria's vision for a digitized, knowledge-based economy. Its successful implementation will depend on coordination between the Bank of Algeria, the Ministry of Finance, and the national ICT ecosystem.

4.3 Potential Benefits of CBDC

4.3.1. Financial inclusion

Especially in underbanked areas. CBDC Faster and cheaper cross-border payments. Enhanced transparency and traceability of monetary transactions.

Table 30: Comparative overview of CBDC projects and Algeria's e-DZD

Country	CBDC	Status	Objectives	FinTech impact
Algeria	e-DZD	**Proposed**	Improve financial inclusion, modernize payments, reduce cash dependency	Potential to stimulate FinTech ecosystem and mobile payment innovation
China	e-CNY (Digital Yuan)	Pilot stage (large scale)	Promote digital payments, reduce dependence on private tech payment platforms	Boosted mobile wallets, expanded QR payment systems, fostered gov-backed FinTech apps
Nigeria	eNaira	Official launch (2021)	Improve financial inclusion, reduce remittance costs, formalize informal economy	Accelerated mobile wallet innovation and brought unbanked into digital services
European Union	Digital Euro	Pilot phase	Provide digital public money, preserve monetary sovereignty, improve cross-border transactions	Encouraged private-sector digital wallets to integrate ECB-standard payment rails

Source: Author, adapted from ECB (2020), IMF (2020), CBN (2021), PBoC (2023), World Bank (2021), (*A Proposal Model for a Digital Currency for the Central Bank of Algeria, 2022*, n.d.)

The Bank of Algeria showed interest in digital finance as early as 2018, aiming to promote transparency in line with global financial trends. While digital technologies have long been present in finance, recent advancements particularly in distributed ledger technology have accelerated the rise of digital money forms such as CBDCs, e-money, crypto assets, and stablecoins (*Digital Money and Fintech*, n.d.). CBDC innovations aim to improve payment systems, boost financial inclusion, and enhance cross-border transaction efficiency. Around 60% of countries are exploring CBDCs, serving different roles: cash replacement in island

economies, resilience in developed nations, and inclusion in emerging markets. Effective deployment requires public-sector platforms focused on efficiency, stability, and inclusivity, supported by legal frameworks ensuring data integrity and privacy. Asset tokenization, such as blockchain-based bonds, also expands use cases for wholesale CBDCs.(Tobias, n.d.)

4.3.2. Mobile Money and CBDC: Toward Integrated Digital Finance

Mobile Money (MM) offers basic financial services via mobile phones without a bank account, promoting financial inclusion in low- and middle-income nations. Easy access, minimal transaction fees, and broad mobile use make it popular. However, Mobile Money systems typically operate alongside established banks, posing regulatory, interoperability, and consumer protection problems (UNCTAD, 2024). Mobility Money and central bank-issued money can update financial ecosystems by combining their reach and reliability. CBDCs might enable Mobile Money platform interoperability and reduce systemic fragmentation as a settlement layer. CBDCs might also improve transparency, transaction costs, and resistance against illicit financial activity by incorporating regulatory norms directly into the payment infrastructure. CBDCs strive to strengthen Mobile Money's infrastructure to make digital financial services accessible, safe, responsible, and integrated into the financial system (Khiaonarong & Humphrey, 2022). This congruence is crucial to establishing an inclusive, future-proof digital economy.

Chapter 02: Methodological framework and data

This chapter outlines the research methodology and presents the data used in this study. It aims to provide a clear understanding of the research design, the rationale behind the chosen methods, and the nature of the data collected. The first section details the methodological framework, describing the research approach, strategy, population, sampling methods, and tools used for data collection and analysis. The second section focuses on the data, including the sources, characteristics, and preparation procedures, ensuring transparency and reproducibility of the study.

By clearly defining the methodological choices and data structure, this chapter ensures the scientific rigor and credibility of the research process.

Section 01: Methodological Framework

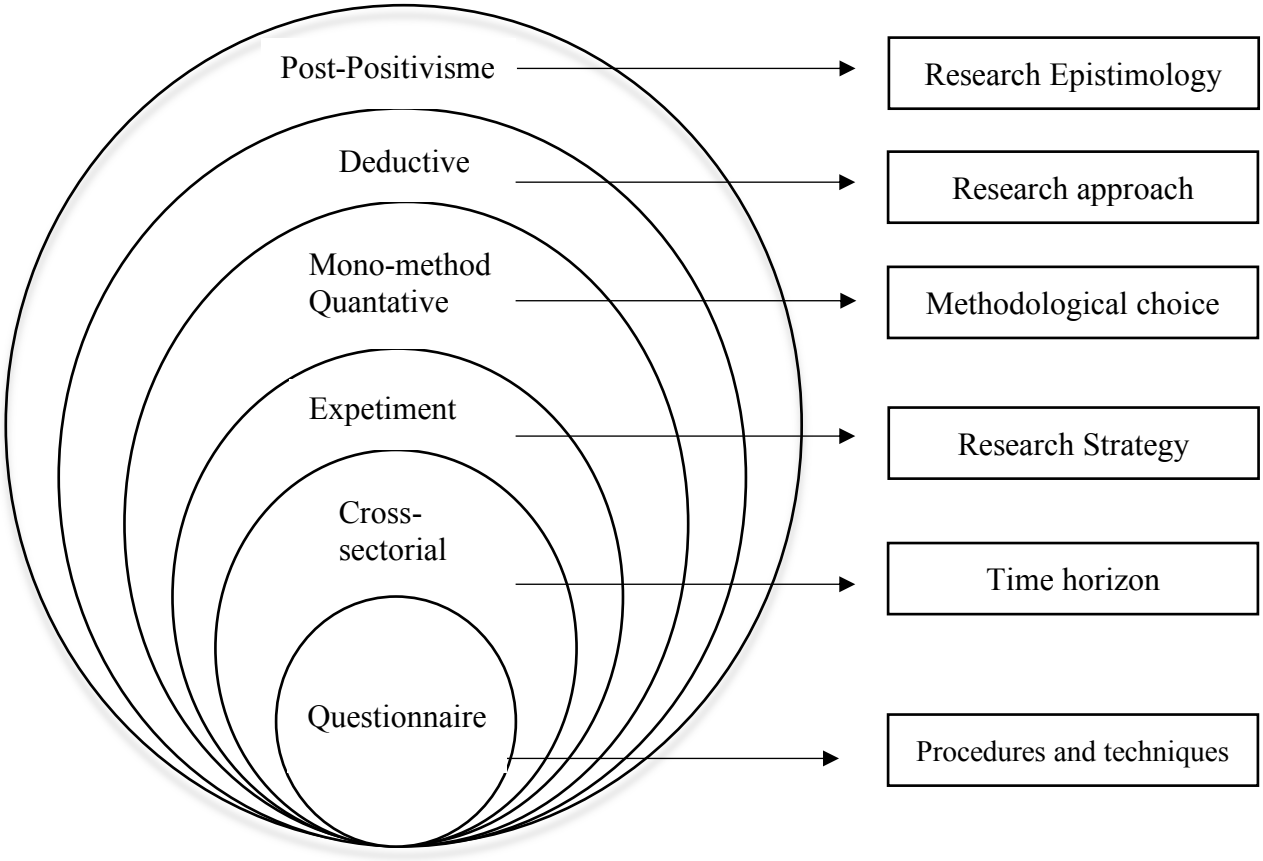
The methodological framework serves as the cornerstone of scientific research across all disciplines, including management. This section outlines the specific methodological approach employed to guarantee the reliability, validity, and generalizability of the findings, which are essential indicators of the overall quality and rigor of our research.

1. The process of the research

Logistic regression is used to empirically verify the factors affecting personal decisions to use FinTech. Business and management research need to engage with both the world of theory and the world of practice. Consequently, the problems addressed should grow out of interaction between these two worlds rather than on their own. (M. Saunders et al., 2023)

According to Saunders et al. (2023), the research process in business and management can be effectively conceptualized through the "research onion" model, which illustrates the layered stages involved in designing a robust methodology. The outer layers represent broad philosophical assumptions, such as research philosophy and theoretical approach, while the inner layers address more specific methodological choices. As managerial research aims to generate new knowledge, solve practical problems, and explore organizational dynamics, it must bridge the world of theory and the world of practice problems should emerge from the interaction between the two. The research onion not only clarifies the rationale behind methodological decisions but also guides researchers through the layers of methodological choice, research strategies, and time horizons, thereby supporting a coherent and contextually grounded research design.(M. Saunders et al., 2023)

Figure 21: Contextualization of the research represented by the research onion model



Source: Author, inspired by (M. Saunders et al., 2023)

Table 31: Research Design Choices and Justifications for FinTech Adoption Study

Component	*Choice*	*Justification*
Epistemology	Positivism	Seeks objectives, measurable insights about behavior
Research methodology	Quantitative	Enables statistical testing of FinTech adoption factors
Approach	Deductive	Starts with a theory or hypothesis and tests it through data collection.
Strategy	Survey	Efficient way to collect large-scale data on FinTech adoption.
Data collection	Primary	Directly relevant to current study on FinTech adoption.
Data analysis	Statistical	Allows for testing relationships and drawing conclusions from large datasets.
Philosophy	Objectivism	Assumes reality exists independently of the researcher's perceptions.

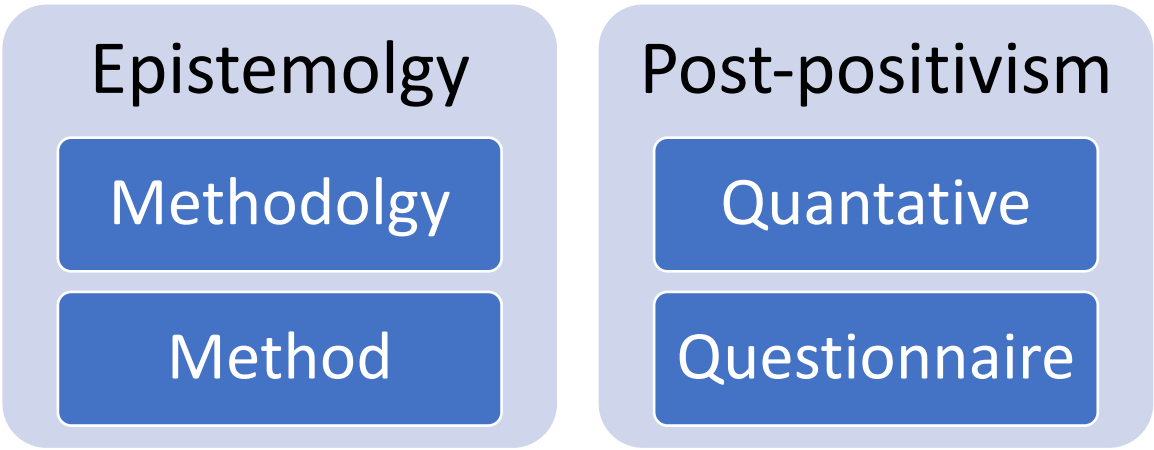
Source: The Author

1.1 Research epistemology

This study adopts a positivist epistemological position, which assumes that knowledge can be acquired through observation, measurement, and objective analysis. The positivist stance is appropriate for studies seeking to quantify behavioral patterns and test hypotheses using statistical methods. By using standardized instruments like surveys, the study aims to identify general laws or patterns in FinTech adoption among Algerian users.

According to Saunders et al. (2023), Quantitative research designs are generally associated with positivism. Quantitative research is grounded in a positivist philosophy, which assumes that reality is objective and measurable. This approach seeks to identify patterns, test hypotheses, and explain relationships between variables using structured data collection tools and statistical techniques. Researchers adopting this method remain independent from the study participants, aiming to maintain objectivity and neutrality throughout the process. Quantitative research is particularly suitable for studies that require generalizable results, as it often involves large samples and standardized instruments, enhancing both reliability and validity. (M. Saunders et al., 2023)

Figure 22: The linear model of the foundations of scientific research



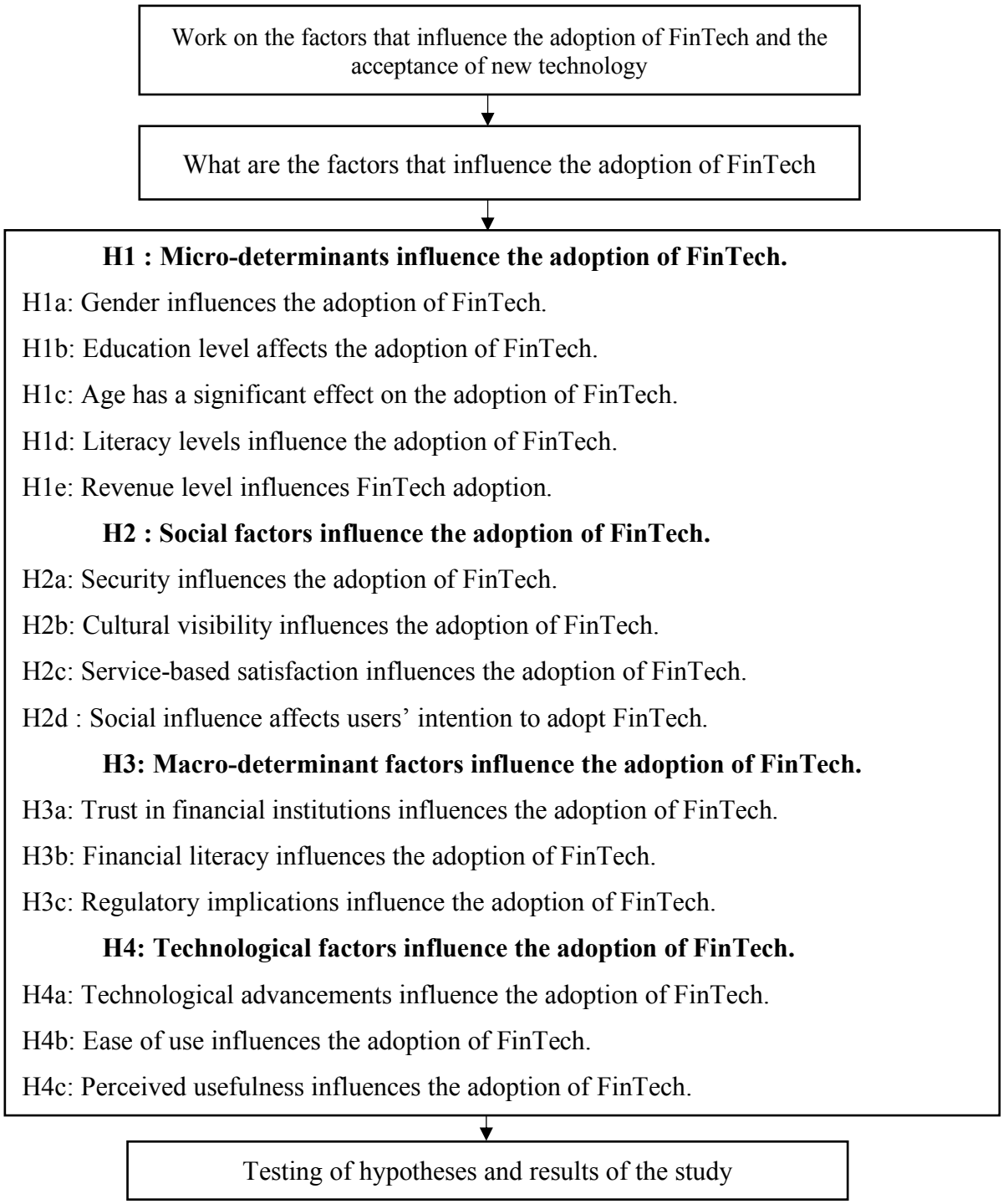
Source: Author, inspired by (Crotty, 1998)

1.2 Research approach

The study employs a quantitative approach. This is suitable for measuring variables such as trust, perceived usefulness, security, and behavioral intention to use FinTech services. This approach also supports the use of statistical techniques for hypothesis testing and pattern recognition. Quantitative research is usually associated with a deductive approach, where data are collected and analysed to test the theory. (M. Saunders et al., 2023) This study

follows a deductive research approach. The deductive method begins with existing theories such as the Unified Theory of Acceptance and Use of Technology (UTAUT), from which specific hypotheses are formulated. These hypotheses are then tested through the collection and statistical analysis of quantitative data. This approach is appropriate for studies aiming to verify theoretical assumptions in specific contexts, such as FinTech adoption in Algeria.

Figure 23: Deductive approach of the research



Source: The author, inspired by (Thiétart, 2014)

1.3. Research strategy

Research strategy is the methodological link between philosophy and the subsequent choice of methods to collect and analyze data.(M. Saunders et al., 2023) The research design, often referred to as the architecture of the study, serves as the blueprint that connects all components of a research project, including the research problem, theoretical framework, data collection, and data analysis (Creswell & Creswell, n.d.). It ensures logical consistency and coherence across all phases of the research. Depending on the objective and the nature of the inquiry, research designs are generally categorized as exploratory, descriptive, explanatory, or experimental. Each design serves a specific purpose, ranging from understanding emerging phenomena to identifying causal relationships. This study adopts a descriptive and explanatory research design, reflecting its dual aim: first, to describe the current state of FinTech adoption among users in Algeria; and second, to explain the relationships between key variables such as perceived usefulness, financial literacy, trust, and behavioral intention to use FinTech services. By applying an explanatory lens, the research investigates how these independent variables influence the dependent variable, the adoption of FinTech solutions. This design is well-suited to a deductive logic, where hypotheses derived from an established model (e.g, UTAUT) are tested empirically through quantitative methods. In this context, the research does not follow a pure experimental setup (e.g., control and treatment groups), but rather uses a non-experimental causal-comparative design, suitable for real-world settings where manipulation of variables is not feasible. The aim is to observe associations and potential causal relationships based on statistical analysis.

Quantitative research is principally associated with survey and experimental research strategies. The survey strategy is normally conducted through the use of questionnaires, structured interviews, or, possibly, structured observation (M. Saunders et al., 2023).

1.4. Research time horizon

The research adopts a cross-sectional time horizon, meaning that data are collected at a single point in time. This type of time frame is appropriate for capturing current behaviors, attitudes, and perceptions related to FinTech adoption, especially when time and resource constraints limit longitudinal tracking. The research adopts a cross-sectional time horizon, where data is collected at a single point in time. This design allows for a snapshot of current user attitudes, preferences, and behaviors toward FinTech. Cross-sectional studies are

widely used in behavioral and market research due to their efficiency and relevance (Bryman, 2016).

1.5. Data collection method

As the final layer of the methodological design, the data collection method is determined by the preceding methodological choices, namely, a positivist epistemological stance, a deductive approach, a case study strategy, and a cross-sectional time horizon. These elements collectively support a structured and empirical process, aligned with the objective of testing predefined hypotheses on FinTech adoption in the Algerian context. In line with this design, this research employs a structured questionnaire as its primary data collection tool. The questionnaire is developed based on validated measurement items from existing literature on financial technology adoption, integrating constructs such as perceived usefulness, perceived ease of use, trust, security, and behavioral intention. These constructs are commonly used in the UTAUT model, which has been widely applied in similar contexts (Venkatesh et al., 2012b).

Given the research's focus on capturing user perceptions and behavioral intentions in a real-world setting, the questionnaire is distributed electronically, using platforms such as Google Forms or Microsoft Forms. This method ensures accessibility, cost-effectiveness, and a wider reach, especially considering the increasing digital engagement of the Algerian population. To ensure the reliability and clarity of the instrument, a pilot test is conducted with a small group of respondents before full deployment. The final version includes closed-ended questions based on a five-point Likert scale, allowing for statistical analysis through descriptive and inferential methods. This quantitative data will be analyzed using tools such as SPSS or Excel, enabling hypothesis testing, correlation, and regression analysis to identify key factors influencing FinTech adoption.

1.5.1 Data collection tool

According to Denzin and Lincoln (2005), post-positivism acknowledges the existence of an objective reality but recognizes that our understanding of it is inherently imperfect and shaped by human perception. Therefore, it promotes the use of rigorous, empirical methods, primarily quantitative, to test hypotheses and uncover patterns within a socially constructed reality. Quantitative methods are particularly suited to the post-positivist stance, as they enable researchers to test predefined hypotheses, measure variables objectively, and produce generalizable results (Creswell & Creswell, n.d.). Within this framework, the survey questionnaire is widely recognized as a robust tool for data collection, allowing for statistical

analysis and validation of theoretical models.(Bryman, 2016). Thus, a structured questionnaire will be employed in this research to collect quantifiable data from a large sample, supporting the empirical validation of hypotheses derived from the theoretical model. This methodological choice is consistent with the logic of hypothetico-deductive reasoning that underpins post-positivist research.

Quantitative data collection is the acquisition of numerical data that contextualizes consumer insights in a measurable framework. It generally entails a substantial number of participants, sufficient to provide statistically valid results that may be generalized to a broader population.

The data collection procedure for quantitative results is often conducted using an online questionnaire that solicits yes/no responses, ranking scales, and rating matrices.

1.5.2. Unified Theory of Acceptance and Use of Technology (UTAUT)

A unified model, called the Unified Theory of Acceptance and Use of Technology (UTAUT), was formulated with 14 core determinants of intention and usage, and up to four moderators of contextual factors.

1.5.3. Questionnaire

The selection of a questionnaire as the data gathering tool is consistent with prevalent methodological norms in FinTech adoption research. Numerous recent studies have utilized self-administered questionnaires to evaluate factors affecting the intention to utilize FinTech services. A structured, self-administered questionnaire is used to collect data. This method is consistent with prior research in FinTech adoption,(Edo et al., 2023) where self-managed surveys ensure standardization and minimize interviewer bias. Including Likert scales to gauge dimensions such as perceived trust, ease of usage, trust, etc. (Survey Design and Technical Documentation Supporting the 2021 OECD Survey on Drivers of Trust in Government Institutions, 2022).

A quantitative research design may use a single data collection technique, such as a questionnaire, and a corresponding quantitative analytical procedure. This is known as a mono-method quantitative study. Where more than one quantitative data collection technique and corresponding analytical procedure are used, the questionnaire provides an efficient way of collecting responses from a large sample before quantitative analysis(M. Saunders et al., 2023) .

The questionnaire is developed based on a prior validated model (UTAUT).

1.5.4 Questionnaire structure

The questionnaire was carefully developed before the data collection phase, in line with the research process adopted in this study. This proactive design is crucial for the investigation and quantification of a relatively new phenomenon, FinTech adoption, particularly from perspectives that have received limited scholarly attention. Designing the questionnaire at this stage is essential for collecting primary data.

To explore the determinants of FinTech adoption among target users, the questionnaire was distributed online using Google Forms and made available in English, Arabic, and French to ensure accessibility and inclusivity. The instrument comprises 14 structured sections, each representing specific constructs based on the UTAUT2 model and adapted to the local context where Mobile Money is not yet fully operational. The questionnaire measures the following variables: Independent Variables**:** (adoption drivers from UTAUT2): Performance Expectancy (perceived usefulness of FinTech services), Effort Expectancy (ease of use), Social Influence (impact of peers and community), Facilitating Conditions (availability of infrastructure and resources), Hedonic Motivation (pleasure or satisfaction in using FinTech), Price Value (cost-benefit perception), Habit (routine behavior towards digital tools). Mediating Variable: Behavioral Intention to Use FinTech (likelihood of adopting FinTech services)

Dependent Variable: Actual Usage or Adoption of FinTech Services (measured by self-reported behavior) Each construct is operationalized using multiple items measured on a 5-point Likert scale (ranging from 1="Strongly Disagree" to 5="Strongly Agree"), based on validated instruments from prior studies. (Venkatesh et al., 2012b)

1.5.4.1. Familiarity with the concept of FinTech

The questionnaire begins with questions (Q1-Q3). The purpose is to assess respondents' awareness and understanding of FinTech. This helps gauge their baseline knowledge before exploring adoption factors.

1.5.4.2. Effort expectancy

This section (Q4-Q6) measures the degree to which respondents perceive that using FinTech services is easy and requires minimal effort. According to the UTAUT2 model, effort expectancy captures perceptions of ease of use, which significantly influence adoption.

1.5.4.3. Mobile payment technology usage behavior

This section (Q7-Q13) examines the respondent's actual behavior regarding the use of mobile payment technologies. It explores usage frequency, transaction types, and the context in which FinTech services are used. This behavioral data supports the analysis of adoption patterns and complements intention-based measures.

1.5.4.4. Habit

This section (Q14-Q15) assesses how much using mobile payment services has become a routine or automatic behavior for the respondent. In UTAUT2, habit reflects past usage patterns and strongly influences ongoing use.

1.5.4.5. Performance expectancy

This section (Q16-Q18) measures how much respondents believe FinTech services can improve their efficiency, convenience, or financial management. In the UTAUT2 model, this reflects perceived usefulness and is a key driver of technology adoption.

1.5.4.6. Facilitating conditions

This section (Q19-Q22) explores whether respondents feel they have the necessary resources and support to use FinTech services. In line with the UTAUT2 model, it focuses on internet access, device availability, and support services. These questions help identify if the surrounding environment makes it easier or harder for users to adopt FinTech.

1.5.4.7. Hedonic motivation

This section (Q23-Q28) measures the enjoyment and satisfaction respondents feel when using FinTech services. In the UTAUT2 model, hedonic motivation captures the intrinsic pleasure driving technology use, which strongly impacts adoption, especially for digital platforms.

1.5.4.8. Service satisfaction

This section (Q29) evaluates the respondent's overall satisfaction with FinTech services, focusing on reliability, convenience, and performance.

1.5.4.9. Behavioral intention

This section (Q30-Q33) measures the respondent's willingness and motivation to use FinTech services. As a key construct in the UTAUT2 model, behavioral intention helps predict future usage behavior.

1.5.4.10. Social context

This section (Q34-Q37) explores the influence of the respondent's social environment on their use of FinTech services. Social context includes the role of peers and societal norms in shaping attitudes and behaviors. It helps assess whether social surroundings encourage or discourage FinTech usage.

1.5.4.11. Social influence

This section (Q38-Q42) measures how much respondents feel influenced by others (e.g., family, friends, colleagues) to use FinTech services. In UTAUT2, this reflects social influence, how others' opinions shape a person's intention to adopt technology.

1.5.4.12. Price value

This section (Q43-Q45) evaluates whether respondents perceive FinTech services as offering good value for money. In the UTAUT2 model, price value influences adoption by weighing perceived benefits against financial cost, especially important in cost-sensitive contexts.

1.5.4.13. Mobile money adoption intention

This section (Q46) measures the respondent's intention to adopt or keep using mobile money services. It captures the likelihood of using mobile payments, a key aspect of FinTech adoption in emerging markets.

1.5.4.14. Contextual factors

While the UTAUT2 model provides a robust framework for understanding technology adoption, its constructs may not fully capture the unique factors influencing FinTech adoption in emerging markets like Algeria. To address this gap, this study incorporates three additional dimensions: trust and perceived security, financial literacy, and technological advancement as critical enablers of adoption. These dimensions reflect both individual-level perceptions and broader environmental conditions that shape user behavior.

1.5.4.15. Trust and perceived security

This section (Q47-Q50) assesses whether users believe FinTech services are secure, reliable, and capable of protecting their personal and financial data, key factors influencing adoption in emerging digital financial markets.

1.5.4.16. Financial literacy

This section (Q51-Q54) represents the user's ability to understand and effectively use financial products and services. A higher level of financial knowledge can influence the likelihood of adopting FinTech by reducing perceived risk and increasing confidence in decision-making.

1.5.4.17. Technological advancement

This section (Q55-Q66) captures the availability and accessibility of technological infrastructure, such as internet penetration, smartphone usage, and digital service support systems. It reflects how external technological conditions can facilitate or hinder the adoption of FinTech platforms.

1.6. The choice of the measurement scale

Rating scale questions are often used to collect opinion data. They most frequently use the Likert-style rating in which the respondent is asked how strongly they agree or disagree (M. Saunders et al., 2023)

Table 32: A table of dichotomous variables

Items	Measurement
Are you familiar with the notion "financial technology" Are you familiar with mobile money services Do you have payment card (EDAHABIA, CIB)	Yes No

Source: The author

The table shows a list of dichotomous independent variables used in the model concerning the usage of different FinTech platforms.

1.6.1. Measurement of technological factors

Table 33: Measurement scale of technological advancement

Variable	Dimensions	Measurement indicators	Measuring scale	Source
Technological factors	Technological advancement	Technologies available in Algeria allow for a good FinTech experience. The evolution of digital tools facilitates the adoption of Mobile Money	1 = Completely disagree. 5 = Completely agree.	UTAUT 2 (modified into the FinTech context)
	Mobile payment technology usage behavior			
	Habit			
	Performance expectancy			

Source: The author

1.6.2 Measurement of social factors

Table 34: Measurement scale of social factors

Variable	Dimensions	Measurement indicators	Measuring scale	Source
Social factors	Service satisfaction	I am satisfied with the overall quality of FinTech services.	1 = Completely disagree. 5 = Completely agree.	UTAUT 2 (modified into the FinTech context)
	Social influence	People who are important to me think that I should use FinTech services.		

	Social context	Using FinTech is a common behavior in my social environment.		

Source: The author

1.6.3. Measurement micro-determinant factors

Table 35: Measurement scale of micro-determinant factors

Variable	Dimensions	Measurement indicators	Items	source
Micro determinants	Gender	Male or Female.	Male Female	
	Age	The age.	18-24 25-34 35-44 45-54 55-64 65+ years old	(*How to Ask About Income in a Survey Effectively and Professionally - Blog @ Formifyr*, 2024)
	Education	The level of education.	- Middle school - High school - Bachelors or equivalent level degree - Masters or equivalent level degree -Doctoral or equivalent level degree	According to OCDE. (Survey Design and Technical Documentation Supporting the 2021 OECD Survey on Drivers of Trust in Government Institutions, 2022)
	Revenue	The monthly income.	-Less than 20,000 DZD -From 20 000 DZD to 40 000 DZD -From 40 001 DZD to 60 000 DZD From 60 001 DZD to 80 000 DZD -From 80 001 DZD to 100 000 DZD -More than 100,000 DZD	According to Algerian (guaranteed interprofessional minimum wage) SMIG. (*How to Ask About Income in a Survey Effectively and Professionally - Blog @ Formifyr*, 2024)
	Literacy levels	Usage of devices and tools	I am comfortable using PC, mobile phone, etc…	UTAUT 2 (modified into fintech context)

Source: The author

1.6.4. Measurement of macro-determinant factors

Table 36: Measurement scale of macro-determinant factors

Variable	Dimensions	Measurement indicators	Measuring scale	Source
Macro determinants	Price value	Using FinTech services offers good value for the cost.	1 = Completely disagree. 5 = Completely agree.	(Survey Design and Technical Documentation Supporting the 2021 OECD Survey on Drivers of Trust in Government Institutions, 2022).
	Trust and perceived security	I trust FinTech providers to handle my financial data securely.		UTAUT 2 (modified into the FinTech context)
	Facilitating conditions	I have the necessary resources (e.g., smartphone, internet) to use FinTech services.		
	Financial literacy	I understand basic financial concepts such as interest, inflation, and risk diversification.		

Source: The author

The tables present the variables used in the estimation model. These include individual-level socio-demographic characteristics, such as age, gender, income level, type of employment, and geographic residence. Additionally, the model incorporates psychological and behavioral factors, including the degree of perceived control over financial decisions, concerns about data privacy and fraud, and financial anxieties such as the fear of overspending or falling into unsustainable debt. These variables are designed to capture both rational and emotional dimensions that may influence an individual's willingness to adopt Mobile Money solutions.

1.6.5 Data collection procedure

The survey is distributed online (via Google Forms) and in paper, targeting FinTech users in Algeria. Participation is voluntary and anonymous.

Section 02: Data

This section presents the key elements related to the study's target population, sampling procedures, data acquisition methods, and preliminary validation steps. It outlines the criteria for determining the population size, the rationale behind the chosen sampling technique, and the procedures followed to ensure the reliability and validity of the collected data.

1. Population

The Population was Algerian individuals who had access to digital financial services (mobile apps, online banking, e-wallets, etc.) through their payment cards (EDAHABIA, CIB)

Table 37: Population size of the study

Financial institutions	*Number of cards holders*
Algeria poste	1.500.000

Source: The author, Algeria Poste

1.1. sample size

$$n = \frac{t^2 \times p \times q}{e^2}$$

e = level of precision
p = degree of variability (estimated prevalence rate)
q = typical value associated with the required confidence level (95% -> 1.96)

The minimal sample size after calculating is estimated by 384,06 = 385

2. Sampling method

This study uses a simple random probability sampling method due to the existence of a database representing the target population.

Samples selected by simple random sampling are subject to an equiprobable sampling, meaning that each element of the population has an equal probability of participating in the survey.

Therefore, the simple random sampling method is based on the uniform probability of project leader membership and their availability within the various incubators.

Non-probability sampling, specifically convenience sampling, is used due to practical constraints.

According to the mathematical equation. To be defined based on statistical requirements (ideally, minimum 385-400 responses for basic statistical testing, like regression or factor analysis).

2.1 Data Acquisition

The data collection method occurs in two phases: the pretesting of the questionnaire and the delivery of the final version.

3. The pre-test of the questionnaire

3.1. Reliability test

Table 38: Alpha de Cronbach

Alpha de Cronbach	Number of elements
0.965	52

Source: SPSS

3.2. Instruments for Data Processing

The gathered data were processed and analyzed utilizing SPSS (Statistical Package for the Social Sciences) version 27.0 with graphical representation achieved through Microsoft Office Excel 2021 to enhance data quality and ensure improved interpretation of the results.

In conclusion, this chapter described the UTAUT model-based quantitative technique used to study FinTech adoption variables. It covered research instrument development, hypotheses, and structured questionnaires. Tested were performance expectancy, effort expectancy, social influence, and enabling circumstances on users' behavioral intentions. The chapter also provided information on the study's surroundings and significance by describing the organizational backdrop. Understanding this context improves data interpretation and real-world applicability.

This methodological and contextual framework guarantees that the next chapter's results analysis is organized, rigorous, and well-justified.

Chapter 3: Results and discussion

This chapter discusses. After presenting the methodology adopted in this study, we proceed with the analysis of the results using SPSS software version 27, based on the data collected through the online questionnaire. This analysis aims to interpret the results to confirm or refute the formulated hypotheses.

Section 01: Results

This section presents the empirical findings derived from the analysis of the collected data. It includes reliability testing, sample characteristics, and statistical outputs related to the key variables examined in the study. The results are structured to assess the validity of the proposed hypotheses and to provide insights into the determinants influencing FinTech adoption in the Algerian context.

1. Reliability Tests (Cronbach's Alpha)

Cronbach's Alpha is a fundamental statistical indicator used to assess the reliability of a questionnaire. It measures the internal consistency of the items, meaning the extent to which the different questions within a dimension evaluate a homogeneous concept. A high coefficient (close to 1) indicates that the items are well correlated with each other, thereby reinforcing the validity of the measurement tool. In this study, Cronbach's Alpha was calculated to verify the stability and reliability of the responses provided by participants.

1.1 Reliability Statistics:

Table 39: Scale Reliability Statistics - Cronbach's Alpha

	Cronbach's Alpha	Number of Items
Social factors	0,841	9
Macro determinants	0,726	15
Technological factors	0,825	23
Adoption of FinTech	0,922	5
Total	0,951	52

Source: Author, based on data from SPSS software (V.27).

The analysis of Table 01, related to the reliability of the measurement scale using Cronbach's Alpha, shows that the total scale, composed of 52 items, has an overall

Cronbach's Alpha coefficient of 0.951, indicating excellent internal consistency. This suggests that the questionnaire items reliably measure the constructs of interest.

Regarding the individual dimensions: The Cronbach's Alpha = 0.841 for social factors indicates good reliability, The Cronbach's Alpha = 0.726 for macro determinants reflects acceptable reliability, The Cronbach's Alpha = 0.825 for technological factors also demonstrates good reliability. The Cronbach's Alpha = 0.922 for FinTech adoption confirms an excellent level of reliability. According to Nunnally's (1978) reliability standards, values above 0.7 are considered acceptable, while values exceeding 0.9 denote excellent reliability. Therefore, these results allow us to confirm that the scale used in this study is statistically reliable, and the instrument can be confidently used for further data analysis and hypothesis testing.

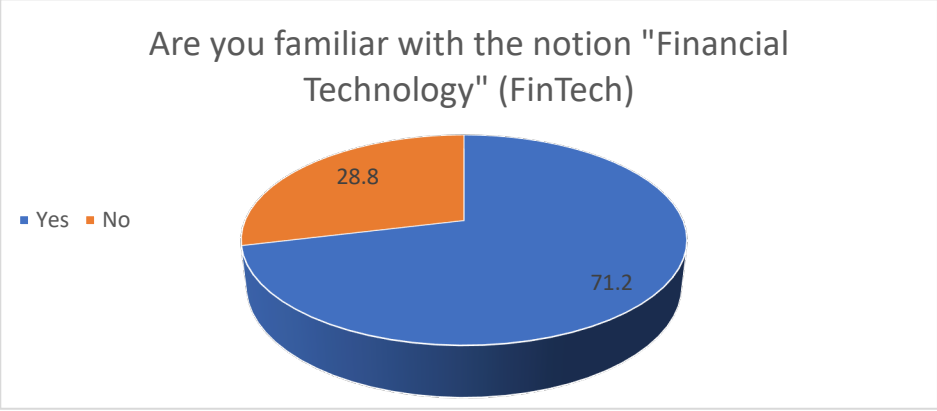
1.1.1. Are you familiar with the notion "Financial Technology" (FinTech)?

Table 40: Distribution of the Study Sample by familiarity with Notion (FinTech)

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Yes	247	71,2	71,2	71,2
	No	100	28,8	28,8	100,0
	Total	347	100,0	100,0	

Source: Author, based on data from SPSS software (V.27).

Figure 24: Distribution of the Study Sample by familiarity with Notion (FinTech)



Source: Author, based on data from SPSS software (V.27).

The distribution of responses regarding familiarity with the concept of Financial Technology (FinTech) indicates that a substantial majority of the study sample (71.2%) reported being familiar with the notion, while only 28.8% indicated otherwise. This suggests a relatively

high level of awareness of FinTech among the participants, which may positively influence their likelihood of adopting FinTech services. Such familiarity is a critical prerequisite for adoption, as knowledge and awareness often drive openness to technological innovations in financial services.

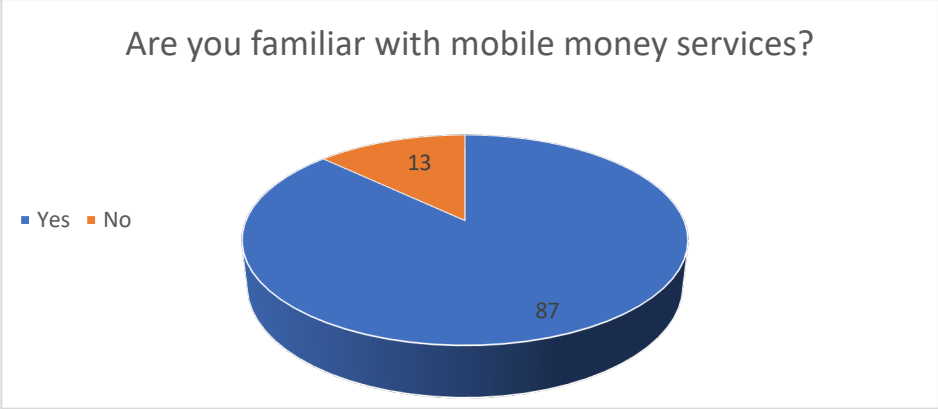
1.1.2. Are you familiar with mobile money services?

Table 41: Distribution of the Study Sample by familiarity with mobile money services

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Yes	302	87,0	87,0	87,0
	No	45	13,0	13,0	100,0
	Total	347	100,0	100,0	

Source: Author, based on data from SPSS software (V.27).

Figure 25: Distribution of the Study Sample by familiarity with mobile money services



Source: Author, based on data from SPSS software (V.27).

The distribution of responses concerning familiarity with mobile money services shows that the vast majority of participants (87.0%) are familiar with these services, while only 13.0% reported unfamiliarity. This high rate of awareness reflects the increasing penetration and visibility of mobile money solutions in the Algerian financial ecosystem. Such widespread familiarity may serve as a foundational factor facilitating the adoption of FinTech applications, particularly mobile-based financial services.

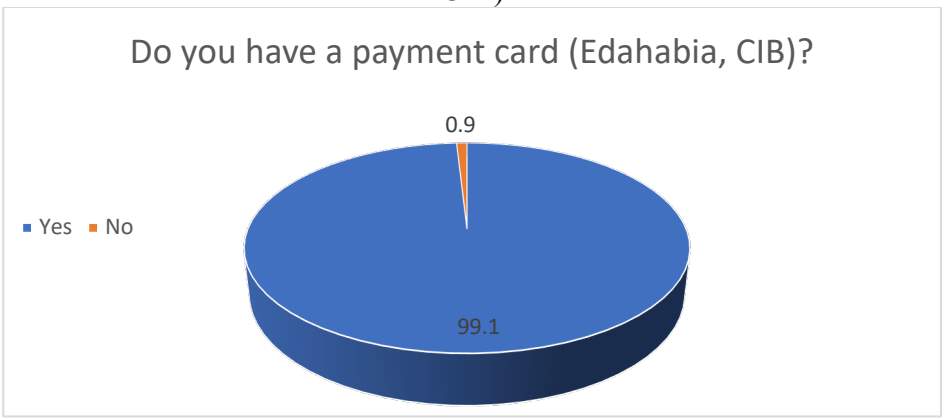
1.1.3. Do you have a payment card (Edahabia, CIB)?

Table 42: Distribution of the Study Sample by Ownership of a Payment Card (Edahabia, CIB)

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Yes	344	99,1	99,1	99,1
	No	3	,9	,9	100,0
	Total	347	100,0	100,0	

Source: Author, based on data from SPSS software (V.27).

Figure 26: Distribution of the Study Sample by Ownership of a Payment Card (Edahabia, CIB)



Source: Author, based on data from SPSS software (V.27).

The distribution of responses concerning ownership of a Payment Card indicates that nearly the entire study sample (99.1%) owns a payment card such as Edahabia or CIB, while only a negligible minority (0.9%) do not. This overwhelmingly high level of card ownership suggests that digital payment infrastructure is well-established among the respondents, potentially creating favorable conditions for the broader adoption of FinTech services.

The minority of (0.9%) will be excluded from the subsequent analysis. This decision is justified by their negligible statistical weight and to ensure the reliability and consistency of results, focuses on active participants in the digital financial system.

2. Description of the Study Sample

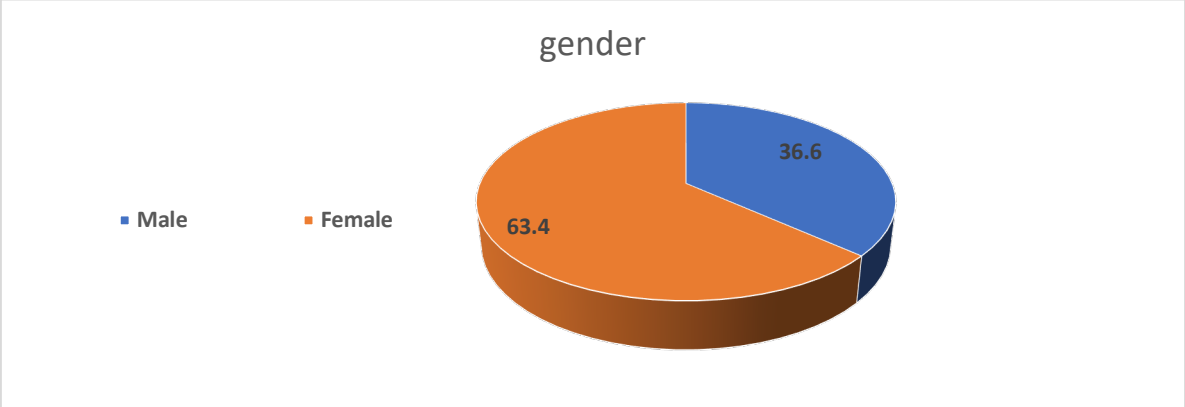
2.1. Sample Distribution by gender

Table 43: Distribution of the Study Sample by gender

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Male	145	36,6	36,6	36,6
	Female	251	63,4	63,4	100,0
	Total	396	100,0	100,0	

Source: Author, based on data from SPSS software (V.27).

Figure 27: Distribution of the Study Sample by gender



Source: Author, based on data from SPSS software (V.27).

The gender distribution of the study sample reveals a predominance of female respondents, who constitute 63.4% of the total participants, compared to 36.6% male respondents. This indicates a notable gender imbalance in favor of women, suggesting that female perspectives are more prominently represented in the dataset.

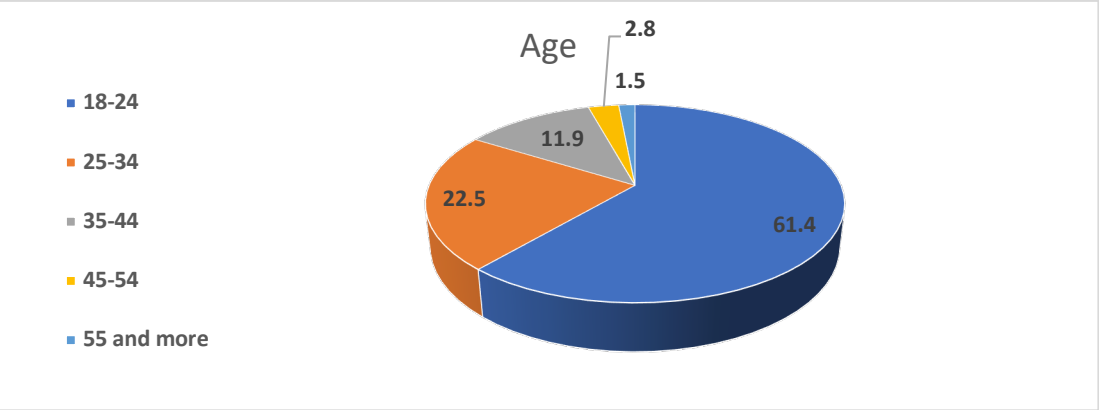
2.2. Sample Distribution by age

Table 44: Distribution of the Study Sample by age

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	18-24	243	61,4	61,4	61,4
	25-34	89	22,5	22,5	83,8
	35-44	47	11,9	11,9	95,7
	45-54	11	2,8	2,8	98,5
	55 and more	6	1,5	1,5	100,0
	Total	396	100,0	100,0	

Source: Author, based on data from SPSS software (V.27).

Figure 28: Distribution of the Study Sample by Age



Source: Author, based on data from SPSS software (V.27).

The age distribution reveals that the majority of respondents are between 18 and 24 years old (61.4%), followed by those aged 25-34 (22.5%). Participants aged 35-44 account for 11.9% of the sample, while older age groups (45 and above) represent only 4.3%. This indicates that the sample is predominantly composed of young adults. Such a demographic profile reflects a tech-savvy and youth-driven population that is more inclined to adopt digital financial services such as FinTech.

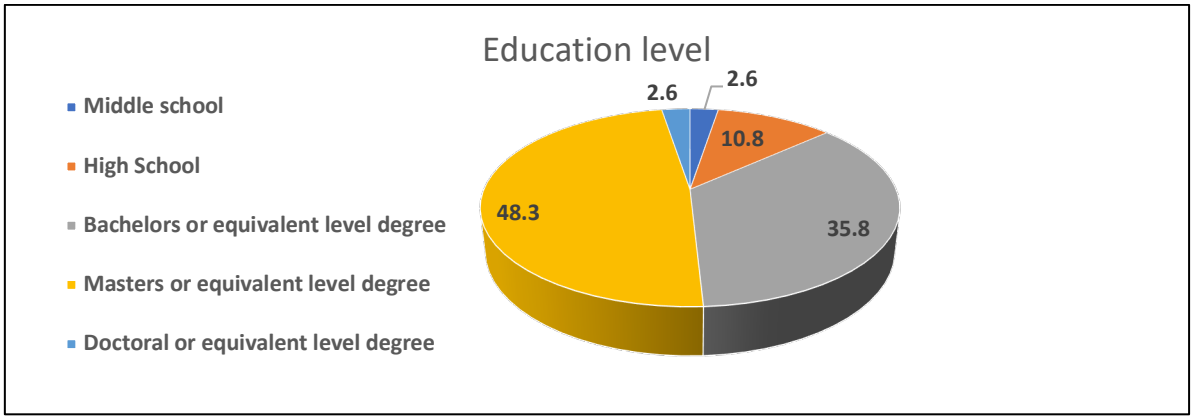
2.3. Sample Distribution by Education Level

Table 45: Distribution of the Study Sample by Education Level

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Middle school	11	2,8	2,8	2,8
	High School	45	11,4	11,4	14,1
	Bachelors or equivalent level degree	137	34,6	34,6	48,7
	Masters or equivalent level degree	193	48,7	48,7	97,5
	Doctoral or equivalent level degree	10	2,5	2,5	100,0
	Total	396	100,0	100,0	

Source: Author, based on data from SPSS software (V.27).

Figure 29: Distribution of the Study Sample by Education Level



Source: Author, based on data from SPSS software (V.27).

The sample is largely composed of highly educated individuals, with 48.7% holding a Master's degree and 34.6% holding a Bachelor's degree. Respondents with only a high school education represent 11.4%, while those with a middle school or doctoral degree account for 2.8% and 2.5%, respectively. This distribution indicates that the majority of participants possess higher education qualifications, which may positively influence their awareness, comprehension, and potential adoption of FinTech services.

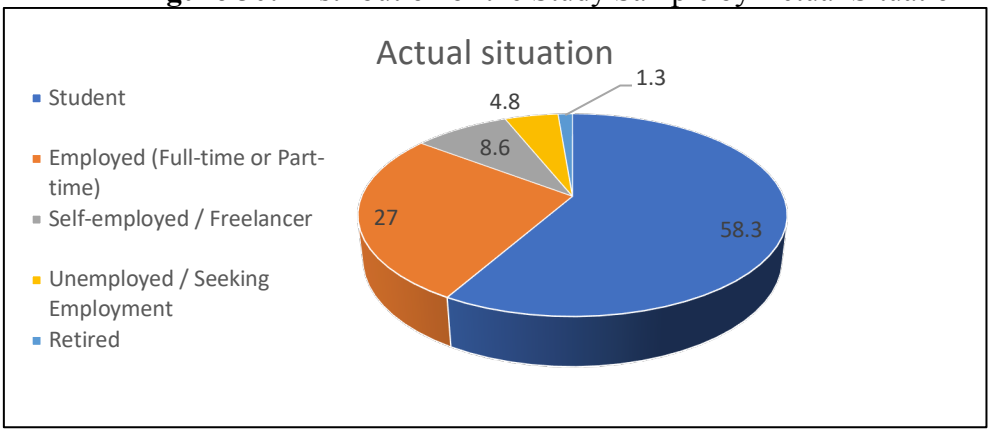
2.4. Sample Distribution by Actual Situation

Table 46: Distribution of the Study Sample by Actual Situation

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Student	231	58,3	58,3	58,3
	Employed (Full-time or Part-time)	107	27,0	27,0	85,4
	Self-employed/ Freelancer	34	8,6	8,6	93,9
	Unemployed/ Seeking Employment	19	4,8	4,8	98,7
	Retired	5	1,3	1,3	100,0
	Total	396	100,0	100,0	

Source: Author, based on data from SPSS software (V.27).

Figure 30: Distribution of the Study Sample by Actual Situation



Source: Author, based on data from SPSS software (V.27).

The sample is predominantly composed of students, who represent 58.3% of the respondents, followed by individuals who are employed either full-time or part-time (27.0%). Self-employed participants account for 8.6%, while the unemployed and retired represent 4.8% and 1.3%, respectively. This distribution suggests that a significant portion of the sample is still engaged in education, which may influence their attitudes and behaviors toward FinTech adoption due to their frequent interaction with technology and digital platforms. It also reflects a relatively young and economically diverse population, which can inform the analysis of behavioral trends related to digital financial services.

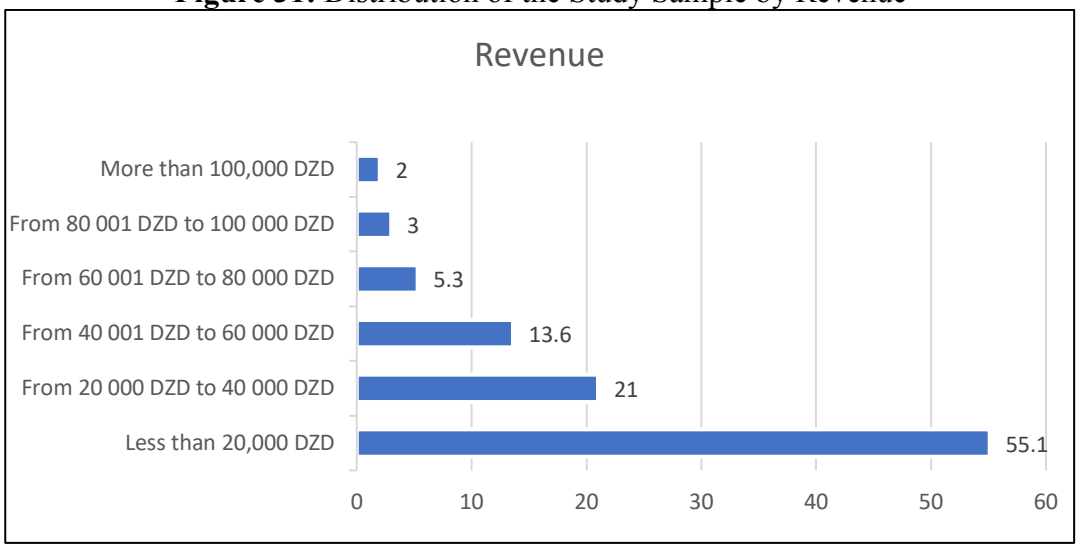
2.5. Sample Distribution by Revenue

Table 47: Distribution of the Study Sample by Revenue

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Less than 20,000 DZD	218	55,1	55,1	55,1
From 20 000 DZD to 40 000 DZD	83	21,0	21,0	76,0
From 40 001 DZD to 60 000 DZD	54	13,6	13,6	89,6
From 60 001 DZD to 80 000 DZD	21	5,3	5,3	94,9
From 80 001 DZD to 100 000 DZD	12	3,0	3,0	98,0
More than 100,000 DZD	8	2,0	2,0	100,0
Total	396	100,0	100,0	

Source: Author, based on data from SPSS software (V.27).

Figure 31: Distribution of the Study Sample by Revenue



Source: Author, based on data from SPSS software (V.27).

The income distribution reveals that 55.1% of the respondents earn less than 20,000 DZD per month, and an additional 21.0% fall within the 20,000-40,000 DZD range. This indicates that over three-quarters (76.0%) of the sample are low-income earners. Conversely, only 10.3% of the respondents earn more than 60,000 DZD, with just 2.0% belonging to the highest income bracket (more than 100,000 DZD). This skew toward lower-income groups reflects a population with limited purchasing power, which may significantly influence their access to and adoption of FinTech services, particularly those involving transaction fees or subscription-based models.

3. Statistical Analysis of the Questionnaire Results

3.1. Analysis of the Results for the Dimension:

3.1.1. Social factors

Table 48: Means and Standard Deviations of the Social Factors Dimension

N°	Question Title	Mean	Standard Deviation	Response Trend
Service satisfaction: Overall, are you satisfied with the mobile payment services that you are currently using		3,4773	1,14825	**Neutral**

1	If your friends or family recommended Mobile Money to you, would you be more likely to use it?	3,5934	1,17521	**Agree**
2	Does my entourage (family, friends, colleagues) use Mobile Payment	3,3561	1,22918	**Neutral**
3	People who influence my behavior think I should use FinTech (mobile payment, etc.)	3,4722	1,24950	**Strongly agree**
4	I would recommend FinTech services to people close to me	3,5758	1,30309	**Strongly agree**
Social influence		3,4994	,94325	
1	Low financial literacy hinders adoption of FinTech services	3,8485	1,26181	**Strongly agree**
2	Lack of awareness hinders the use of mobile money	3,9747	1,19254	**Strongly agree**
3	Poor internet access is a major obstacle	3,6162	1,31559	**Strongly agree**
4	I have confidence in financial institutions in Algeria	3,3510	1,25306	**Neutral**
Social context		3,6976	,92466	
Social factors		3,5581	,77091	

Source: Author, based on data from SPSS software (V.27).

The "Social Factors" dimension explores how interpersonal relationships, societal conditions, and collective perceptions influence the use of FinTech services, particularly mobile payment systems. The overall mean for this dimension is 3.5581, with a standard deviation of 0.77091, reflecting a generally positive perception among respondents regarding the social influences on their adoption behavior.

3.1.2. Service Satisfaction

The general satisfaction with current mobile payment services received a moderate score of 3.4773, indicating a neutral stance. This suggests that while users do not express strong dissatisfaction, their level of satisfaction remains cautious or reserved. This neutrality may imply that the services are functioning adequately but still leave room for improvement in terms of user experience, functionality, or reliability.

3.1.3. Social Influence

The sub-dimension of social influence has a mean score of 3.4994, pointing to a moderate influence from social circles in the adoption of FinTech services. Respondents showed a positive tendency to: Be influenced by recommendations from friends and family (M = 3.5934), Believe that people close to them use Mobile Money (M = 3.3561), Feel that significant others believe they should use FinTech (M = 3.4722), Be willing to recommend FinTech services themselves (M = 3.5758). These results demonstrate that peer approval and word-of-mouth are relevant drivers of adoption, though not overwhelmingly strong. The influence of the social environment is present, but may be limited by broader contextual or structural constraints.

3.1.4. Social Context

This sub-dimension obtained the highest average score within this dimension at 3.6976, which suggests that external social and infrastructural barriers are widely acknowledged by users. Respondents strongly agreed that: "Low financial literacy hinders FinTech adoption" (M = 3.8485), "Lack of awareness limits usage of mobile money" (M = 3.9747), "Poor internet access is a major obstacle" (M = 3.6162). However, confidence in Algerian financial institutions was rated more neutrally (M = 3.3510), revealing limited trust in the formal financial system. This ambivalence may hinder the overall credibility of FinTech solutions when delivered through or in association with traditional financial actors. These findings highlight that despite positive peer influences, systemic barriers such as low digital literacy, poor infrastructure, and lack of consumer trust are more decisive in shaping adoption behavior. The analysis of social factors demonstrates that FinTech adoption is not only an individual decision but also a socially influenced process. Respondents exhibit moderate satisfaction with mobile payment services and show openness to peer influence, especially when it comes to recommending services or being encouraged by their entourage.

3.2 Analysis of the Results for the Dimension: Macro determinants

Table 49: Means and Standard Deviations of the macro determinants dimension

N°	Question Title	Mean	Standard Deviation	Response Trend
1	Cost of use influences the decision to use a FinTech service	3,5884	1,26281	Strongly agree

2	I think Mobile Money should be cheaper than traditional banking services.	3,8283	1,22456	Strongly agree
3	I find transaction fees important when choosing a FinTech service	3,8005	1,23169	Strongly agree
Price value		3,7391	,96424	
1	I know how to track my expenses.	3,4394	1,25844	Agree
2	I understand how basic banking services work	3,4571	1,28306	Strongly agree
3	I am able to budget and manage my finances on my own.	3,5808	1,24108	Agree
4	I know how to compare two financial products before choosing.	3,4318	1,34179	Agree
Financial literacy		3,4773	1,00542	
1	Financial education should be taught to improve mobile money adoption	4,1717	1,16958	Strongly agree
2	I know how digital payments work.	3,7753	1,25587	Strongly agree
3	I believe I would have the necessary support if any problems arose.	3,3939	1,26145	Neutral
4	I believe that clear government regulations would make it easier to use mobile money services.	4,0025	1,21280	Strongly agree
Facilitating conditions		3,8359	,93468	
1	I find Mobile Money is a secure way to manage your money	3,2854	1,10552	Neutral
2	I know how to protect my personal data online.	3,0303	1,32897	Neutral
3	I have confidence in electronic payment services in Algeria	2,9545	1,26609	Neutral
4	I believe better data protection would increase my trust in FinTech services	3,9924	1,22936	Strongly agree
Trust and perceived security		3,3157	,84538	
Macro determinants		3,5920	,69560	

Source: Author, based on data from SPSS software (V.27).

The "Macro Determinants" dimension encompasses external and individual-level factors that may significantly influence the adoption and use of FinTech services. These include

price value, financial literacy, facilitating conditions, and trust and perceived security. The overall mean for this dimension is 3.5920, with a standard deviation of 0.69560, indicating a generally positive perception in participants' responses.

Price Value

The sub-dimension of price value achieves a high mean score of 3.7391, indicating that cost considerations are a key motivator in adopting FinTech solutions. Respondents strongly agreed with statements such as: "I think Mobile Money should be cheaper than traditional banking services" (M = 3.8283), "I find transaction fees important when choosing a FinTech service" (M = 3.8005), and "Cost of use influences the decision to use a FinTech service" (M = 3.5884). These findings highlight that cost-effectiveness is central to the perceived value of FinTech services. Consumers are highly sensitive to fees and expect FinTech to offer cheaper alternatives than conventional banking.

Financial Literacy

The average score for financial literacy is 3.4773, showing a relatively positive self-assessment of financial competencies among respondents. Most participants reported knowing how to: track their expenses (M = 3.4394), understand how basic banking services work (M = 3.4571), budget and manage their finances independently (M = 3.5808), and compare financial products before making a decision (M = 3.4318). These results suggest that respondents generally possess a good level of financial awareness, which could facilitate the adoption and responsible use of FinTech services.

Facilitating Conditions

This sub-dimension obtained the highest average of all sub-dimensions: 3.8359, which strongly reflects the importance of support systems, regulations, and user knowledge. Respondents overwhelmingly agreed with the idea that: "Financial education should be taught to improve mobile money adoption" (M = 4.1717), "Clear government regulations would facilitate usage" (M = 4.0025), "They understand how digital payments work" (M = 3.7753). However, the statement "I believe I would have the necessary support if any problems arose" received a more neutral response (M = 3.3939), revealing uncertainty about customer assistance infrastructure. This emphasizes the need for institutional support and accessible user guidance to build trust in FinTech environments.

Trust and Perceived Security

With an average of 3.3157, this sub-dimension reflects more cautious attitudes. While respondents strongly agreed with the idea that: "Better data protection would increase their trust in FinTech services" (M = 3.9924), They were neutral or less confident about: "The current security of Mobile Money systems" (M = 3.2854), "Their ability to protect their personal data online" (M = 3.0303), "The reliability of electronic payment services in Algeria" (M = 2.9545). These findings underline a trust gap that still exists among users. Security concerns remain a major barrier to adoption, especially in contexts where digital infrastructure and consumer protection may be perceived as weak or underdeveloped. The analysis of macro determinants reveals a strong emphasis on economic rationality, financial knowledge, and institutional facilitation in shaping consumer attitudes toward FinTech. Respondents are clearly motivated by affordable pricing, and many exhibits a solid foundation of financial literacy. Furthermore, they acknowledge the critical role of education and government regulations in encouraging mobile payment adoption. However, trust and data security remain problematic areas. Despite acknowledging the potential of FinTech, many users express reservations regarding the security and reliability of current digital financial services in Algeria. These concerns could hinder full-scale adoption if not addressed through robust cybersecurity measures, regulatory frameworks, and public awareness campaigns. In summary, while the macro-environment is largely conducive to FinTech adoption, strategic actions must be taken to reinforce trust in user support structures, especially concerning data protection and user security.

3.3. Analysis of the Results for the Dimension: Technological factors

Table 50: Means and Standard Deviations of the technological factors dimension

N°	Question Title	Mean	Standard Deviation	Response Trend
1	CIB/Edahabia card	3,5126	1,42397	Always
2	Online payment (bills, purchases)	3,1439	1,40234	Always
3	Mobile banking application or BaridiMob	3,3813	1,45082	Always
4	Electronic payment terminal (TPE)	2,3763	1,46602	Never
5	Payment by QR Code	1,8030	1,26355	Never

6	Online bank transfer	2,3636	1,51418	Never
7	Bank account consultation via an app (budget tracking)	2,8965	1,67842	Never
Mobile payment technology usage behavior		2,7825	1,01898	
1	I use mobile payment automatically	3,2071	1,43114	Strongly agree
2	Mobile payment It has become natural for me	3,6338	1,35002	Strongly agree
Habit				
1	I expect FinTech products to be easy to understand	3,8030	1,17639	Agree
2	I like to test new apps or online services.	3,7803	1,25878	
3	I expect Mobile Payment to facilitate financial transactions (bill payments, transfers, online purchases)	4,1162	1,16125	
Performance expectancy		3,8998	1,02394	
1	I think the technologies available in Algeria allow for a good FinTech experience.	3,1035	1,21671	Neutral
2	The evolution of digital tools facilitates the adoption of Mobile Money	3,9520	1,14967	Strongly agree
Technological advancement		3,5278	,96285	
1	I am comfortable with digital tools (smartphone, tablet, PC).	4,0556	1,20208	Strongly agree
2	I believe FinTech will provide a better experience than traditional services.	3,8056	1,20760	Strongly agree
3	It would seem easy to me to learn how to use a Mobile Money application	4,0101	1,16701	Strongly agree
Effort expectancy		3,9571	1,01666	
1	I find using FinTech products enjoyable	3,6490	1,27310	Strongly agree
2	FinTech can solve problems associated with traditional banking.	3,9495	1,16596	Strongly agree
3	I think that FinTech services need to be further developed in Algeria.	4,2828	1,11187	Strongly agree
4	I find ease of use is important when choosing a FinTech service.	4,0934	1,13800	Strongly agree
5	I find customer support important when choosing a FinTech service	4,0581	1,17749	Strongly agree

6	I appreciate the speed of instant transfers offered by Mobile Money.	3,9747	1,19041	Strongly agree
Hedonic motivation		4,0013	,95382	
Technological factors		3,5981	,76395	

Source: Author, based on data from SPSS software (V.27).

The "Technological Factors" dimension examines users' interactions with and perceptions of digital tools and infrastructures that support the adoption of FinTech services, including aspects like usage behavior, performance expectations, ease of use, and personal engagement with technology. The global mean score for this dimension is 3.5981, with a standard deviation of 0.76395, reflecting a generally favorable perception of the technological environment.

Usage Behavior of Mobile Payment Technologies

This sub-dimension reveals a mean of 2.7825, suggesting low to moderate levels of actual usage of the available mobile payment technologies. While respondents report frequent use of certain tools like: CIB/Edahabia cards (M = 3.5126), Mobile banking applications (M = 3.3813), Online payments (M = 3.1439), The usage of other technologies such as Electronic payment terminals (TPE) (M = 2.3763), Online bank transfers (M = 2.3636), QR code payments (M = 1.8030), remain very limited, with scores falling into the "never" usage category. These results indicate that while some technological tools are integrated into users' routines, many advanced or newer FinTech services remain underutilized, possibly due to a lack of awareness, trust, or accessibility.

Habits

Scores under this sub-category show a relatively high level of agreement: The items "I use mobile payment automatically" (M = 3.2071) and "It has become natural for me" (M = 3.6338) suggest emerging habits among certain users, even if not yet fully generalized. Expectations regarding the ease of use (M = 3.8030), willingness to try new applications (M = 3.7803), and the usefulness of mobile payment for transactions (M = 4.1162) indicate a positive disposition toward adopting new financial technologies, provided that the tools are accessible and efficient.

Performance Expectancy

The mean of 3.8998 under this factor reflects a strong belief in the utility and future promise of FinTech, particularly in improving financial processes. The strongest agreement is seen

with the statement: "The evolution of digital tools facilitates the adoption of Mobile Money" (M = 3.9520), While neutrality is expressed regarding the current technological environment in Algeria (M = 3.1035), suggesting that although the potential is recognized, local infrastructure may still be inadequate to fully realize it.

Technological Advancement

This sub-dimension records a mean of 3.5278, indicating a generally positive but not unanimous confidence in technological progress. Most users feel: Comfortable with digital tools (M = 4.0556), Believe that FinTech offers a better experience than traditional banking (M = 3.8056), And find it easy to learn how to use Mobile Money apps (M = 4.0101). These responses reflect an important openness to innovation.

Effort Expectancy

The high average of 3.9571 in this category indicates that ease of use is a critical determinant of FinTech adoption. Respondents strongly agreed on several key points: Enjoyment in using FinTech products (M = 3.6490), Problem-solving advantages over traditional banking (M = 3.9495), The need for further development of FinTech in Algeria (M = 4.2828), Importance of ease of use, customer service, and instant transfers (M > 4.00 on average). These findings confirm that users are motivated to engage with FinTech solutions when the user experience is intuitive, fast, and supported.

Hedonic Motivation

This dimension achieved a strong mean of 4.0013, indicating that pleasure and satisfaction derived from using FinTech services significantly influence adoption. This underscores the importance of designing digital financial services not only to be functional but also engaging and user-friendly. The technological dimension reveals a positive and encouraging outlook on FinTech among users, especially regarding its ease of use, performance benefits, and enjoyment. Users show readiness to engage with digital financial tools, particularly if these are: Easy to use, Efficient in transactions, and well-supported by customer service. However, the actual usage behavior remains moderate to low, especially for advanced or underdeveloped services like QR code payments or online transfers. This highlights a gap between favorable perceptions and actual usage, likely due to limitations in infrastructure, awareness, or digital readiness.

3.4. Analysis of the Results for the Dimension: Adoption of FinTech

Table 51: Means and Standard Deviations of the Dependent Dimension

N°	Question Title	Mean	Standard Deviation	Response Trend
Adoption of FinTech: I would like to receive tutorials or training to better use Mobile Money		3,4596	1,27125	**Neutral**
1	I have concerns about fraud or theft of money when using a Mobile Money service.	3,2197	1,30033	**Neutral**
2	The Algerian government sufficiently supports the development of Mobile Money services	3,4975	1,26391	**Strongly agree**
3	I'm ready to use apps to manage my money.	3,6717	1,23997	**Strongly agree**
4	I intend to use FinTech services in the next 6 months	3,9066	1,18166	**Strongly agree**
behavioral intention		3,5739	,85744	
Adoption of FinTech		3,5167	,89685	

Source: Author, based on data from SPSS software (V.27).

The Adoption of FinTech dimension assesses users' willingness to adopt digital financial services by examining their behavioral intentions, concerns, willingness to receive training, and perception of institutional support. The overall mean score for this dimension is 3.5167, with a standard deviation of 0.89685, indicating a generally favorable attitude toward the adoption of FinTech. The item "I would like to receive tutorials or training to better use Mobile Money" has a mean of 3.4596, reflecting a neutral to moderately positive attitude. This suggests that support and educational guidance play a key role in the wider acceptance of such services. In contrast, the item "I have concerns about fraud or theft of money when using a Mobile Money service" (Mean = 3.2197) points to a persistent concern about perceived risks. This highlights the need for enhanced security measures and awareness campaigns to build user trust. Respondents moderately agree that "The Algerian government sufficiently supports the development of Mobile Money services" (Mean = 3.4975), showing a positive perception of institutional efforts, though not strongly asserted. Behavioral intention is strongly expressed in items such as: "I'm ready to use apps to manage my

money" (Mean = 3.6717), "I intend to use FinTech services in the next 6 months" (Mean = 3.9066), indicating a strong willingness to adopt FinTech services in the near future.

The results suggest that FinTech adoption in Algeria is promising, with users showing a clear intention to engage with digital financial services soon. However, this adoption is conditional and hinges on key enablers, namely: Building user trust through stronger security assurances, providing education and training, and visible and sustained institutional support. In summary, the findings reveal high potential for FinTech adoption, but success will depend on creating a supportive, secure, and accessible ecosystem that aligns with user expectations and addresses their concerns.

4. Hypotheses Analysis

Hypothesis 1: Micro determinants influence the adoption of FinTech

H0: There is no relationship between the demographic factors and the adoption of FinTech

H1: The demographic factors have a significant impact on the adoption of FinTech

Table 52: Multiple Linear Regression Model Statistics (the adoption of FinTech)

Dimension	**R**	**R²**	**Adjusted R²**	**F**	**Constant**	**B**	**Sig**
demographics factors	0,069	,000	-,008	0,369	3,615		<,001
Gender						,017	,868
Age						-,035	,592
Education level						-,027	,639
Actual situation						-,042	,490
Revenue						,049	,268

Source: Author, based on data from SPSS software (V.27).

The analysis of the table, concerning the multiple linear regression model on the adoption of FinTech, reveals a correlation coefficient R = 0.069, indicating a very weak and negligible relationship between demographic factors and FinTech adoption. The coefficient of determination $R^2 = 0.000$ suggests that these demographic variables explain none of the variance in FinTech adoption. Additionally, the Fisher statistic F = 0.369 confirms that the model is not statistically significant overall. Regarding the regression coefficients:

The coefficient B = 0.017 for gender is not statistically significant (Sig. = 0.868), The coefficient B = -0.035 for age is also not statistically significant (Sig. = 0.592), Likewise, education level (B = -0.027; Sig. = 0.639), Actual situation (B = -0.042; Sig. = 0.490), and revenue (B = 0.049; Sig. = 0.268) all show non-significant effects. Since all significance values are above the 0.05 threshold, we fail to reject the null hypothesis (H0). It is therefore concluded that demographic factors do not have a statistically significant impact on the adoption of FinTech.

Hypothesis 2: Social factors influence the adoption of FinTech

H0: There is no relationship between the social factors and the adoption of FinTech

H1: The social factors have a significant impact on the adoption of FinTech

Table 53: Multiple Linear Regression Model Statistics (the adoption of FinTech)

Dimension	**R**	**R²**	**Adjusted R²**	**F**	**Constant**	**B**	**Sig**
social factors	0,579	0,336	,330	65,982	1,181		<,001
Service satisfaction						0,051	,141
Social influence						0,247	<,001
Social context						0,351	<,001

Source: Author, based on data from SPSS software (V.27).

The analysis of table, concerning the multiple linear regression model on the adoption of FinTech, shows that the dimension of social factors has a correlation coefficient R = 0.579, indicating a moderate positive relationship between social factors and the adoption of FinTech. The coefficient of determination $R^2 = 0.336$ reveals that 33.6% of the variance in FinTech adoption is explained by the social variables included in the model. Additionally, the Fisher statistic F = 65.982 confirms that the overall model is highly significant. Regarding the regression coefficients: The coefficient B = 0.051 for service satisfaction is not statistically significant (Sig. = 0.141), The coefficient B = 0.247 for social influence is positive and highly significant (Sig. < 0.001), The coefficient B = 0.351 for social context also shows a strong and significant effect (Sig. < 0.001). Since two of the three social variables are statistically significant, and the model as a whole is highly significant, we can reject the null hypothesis (H0). It can therefore be concluded that social factors have a positive and statistically significant impact on the adoption of FinTech. This relationship can

be represented by the following equation: **Adoption of FinTech = 0.247 (social influence) + 0.351 (social context) + 1.181**

Hypothesis 3: Macro determinants influence the adoption of FinTech

H0: There is no relationship between the macro determinants and the adoption of FinTech
H1: The macro determinants have a significant impact on the adoption of FinTech

Table 54: Multiple Linear Regression Model Statistics (**the adoption of FinTech**)

Dimension	**R**	**R²**	**Adjusted R²**	**F**	**Constant**	**B**	**Sig**
Macro determinants	0,616	,379	,373	59,739	0,653		<,001
Price value						,264	,000
Financial literacy						,035	,421
Facilitating conditions						,185	,000
Trust and perceived security						,316	,000

Source: Author, based on data from SPSS software (V.27).

The analysis of the Table, related to the multiple linear regression model on the adoption of FinTech, reveals that the dimension of macro determinants has a correlation coefficient R = 0.616, indicating a positive relationship between macro determinants and FinTech adoption. The coefficient of determination R^2 = 0.379 indicates that 37.9% of the variance in the adoption of FinTech is explained by these macro-level variables. The model is further validated by a highly significant Fisher statistic F = 59.739, confirming the robustness of the overall model. Regarding the regression coefficients: The coefficient B = 0.264 for price value is positive and statistically significant (Sig. = 0.000), The coefficient B = 0.035 for financial literacy is not significant (Sig. = 0.421), The coefficient B = 0.185 for facilitating conditions is significant (Sig. = 0.000), The coefficient B = 0.316 for trust and perceived security is also positive and highly significant (Sig. = 0.000). Given that three out of four macro-level factors are statistically significant, and the model as a whole demonstrates strong explanatory power, we can confidently reject the null hypothesis (H0). Thus, it is concluded that macro determinants have a significant and positive influence on the adoption

of FinTech. This relationship can be expressed with the following regression equation: **Adoption of FinTech = 0.264 (price value) + 0.185 (facilitating conditions) + 0.316 (trust and perceived security) + 0.653**

Hypothesis 4: Technological factors influence the adoption of FinTech

H0: There is no relationship between the technological factors and the adoption of FinTech
H1: The technological factors have a significant impact on the adoption of FinTech

Table 55: Multiple Linear Regression Model Statistics (the adoption of FinTech)

Dimension	**R**	**R²**	**Adjusted R²**	**F**	**Constant**	**B**	**Sig**
Technological factors	595	,354	,344	35,522	0,972		,000
Effort expectancy						,096	,048
Hedonic motivation						,226	,000
Mobile payment technology usage behavior						-,050	,259
Habit						,102	,006
Performance expectancy						,067	,231
Technological advancement						,223	,000

Source: Author, based on data from SPSS software (V.27).

The analysis of the table, concerning the multiple linear regression model on FinTech adoption, shows that the dimension of technological factors has a correlation coefficient R = 0.595, indicating a moderate positive relationship between technological factors and the adoption of FinTech. The coefficient of determination $R^2 = 0.354$ means that 35.4% of the variance in FinTech adoption is explained by technological variables. Moreover, the model is statistically robust, as evidenced by the F-statistic = 35.522 and a significance level of $p < 0.001$. Regarding the regression coefficients: The coefficient B = 0.096 for effort expectancy is not statistically significant ($p = 0.048$), The coefficient B = 0.226 for hedonic motivation is positive and highly significant ($p < 0.001$), The coefficient B = -0.050 for mobile payment technology usage behavior is not significant ($p = 0.259$), The coefficient B = 0.102 for habit is significant ($p = 0.006$), The coefficient B = 0.067 for performance

expectancy is not significant (p = 0.231), The coefficient B = 0.223 for technological advancement is positive and highly significant (p < 0.001). Since three out of six technological factors show a statistically significant positive effect, and the overall model is highly significant, we can reject the null hypothesis (H0). Therefore, it can be concluded that technological factors have a significant and positive influence on the adoption of FinTech. This relationship can be expressed by the following regression equation: **Adoption of FinTech = 0.226 (hedonic motivation) + 0.102 (habit) + 0.223 (technological advancement) + 0.972**

5. Hypothesis Validation Summary:

The following table presents a summary of the validation results for the research hypotheses formulated to investigate the factors influencing the adoption of FinTech services. Each hypothesis corresponds to a distinct category of determinants micro (demographic), social, macro-environmental, and technological. The table includes key statistical indicators derived from multiple linear regression analyses, such as the coefficient of determination (R^2), F-statistic, and significance levels (p-values). These indicators help assess the explanatory power of each model and identify the significant predictors within each group. The conclusions are drawn based on the statistical significance of the variables, providing a comprehensive overview of the factors that facilitate or hinder FinTech adoption.

Table 56: Hypotheses Validation Summary - Adoption of FinTech

Hypothesis	**Independent Variables(Factors)**	**R**	**R^2**	**F**	**Sig. (Model)**	**Significant Variables(B,Sig)**	**Conclusion**
H1:Micro determinants influence the adoption of FinTech	Gender, Age, Education level, Actual situation, Revenue	0.069	0.000	0.369	< 0.001	**None (All p > 0.05)** **-Gender**(0.017, 0.868) **-Age**(-0.035, 0.592) **-Educ**(-0.027,0.639) **-act-situaton**(0.042, 0.490) **-Revenue** (0.049, 0.268)	**H0 not rejected**: Micro (demographic) factors do not significantly influence FinTech adoption
H2: Social factors influence the adoption of FinTech	Service satisfaction, Social influence, Social context	0.579	0.336	65.982	< 0.001	**Significant**: **-Social influence** (0.247, < 0.001)	**H0 rejected**: Social factors significantly influence

Hypothesis	Independent Variables(Factors)	R	R^2	F	Sig. (Model)	Significant Variables(B,Sig)	Conclusion
						-Social context (0.351, < 0.001) **Not significant**: **-Service satisfaction** (0.051, 0.141)	FinTech adoption
H3:Macro determinants influence the adoption of FinTech	Price value, Financial literacy, Facilitating conditions, Trust and security	0.616	0.379	59.739	< 0.001	**Significant**: -Price value (0.264, 0.000) -Facilitating conditions (0.185, 0.000) - Trust & security (0.316, 0.000) **Not significant**: -Financial literacy(0.035, 0.421)	**H0 rejected**: Macro determinants significantly influence FinTech adoption
H4:Technological factors influence the adoption of FinTech	Effort expectancy, Hedonic motivation, Mobile payment usage, Habit, Performance expectancy, Tech advancement	0.595	0.354	35.522	< 0.001	**Significant**: -Hedonic motivation (0.226, < 0.001) -Habit(0.102, 0.006) -Technological advancement (0.223, < 0.001) **Not significant**: -Effort-expctn (0.096, 0.048) -Mbl-usage(-0.050, 0.259) -Performance expctn (0.067, 0.231)	**H0 rejected**: Technological factors significantly influence FinTech adoption

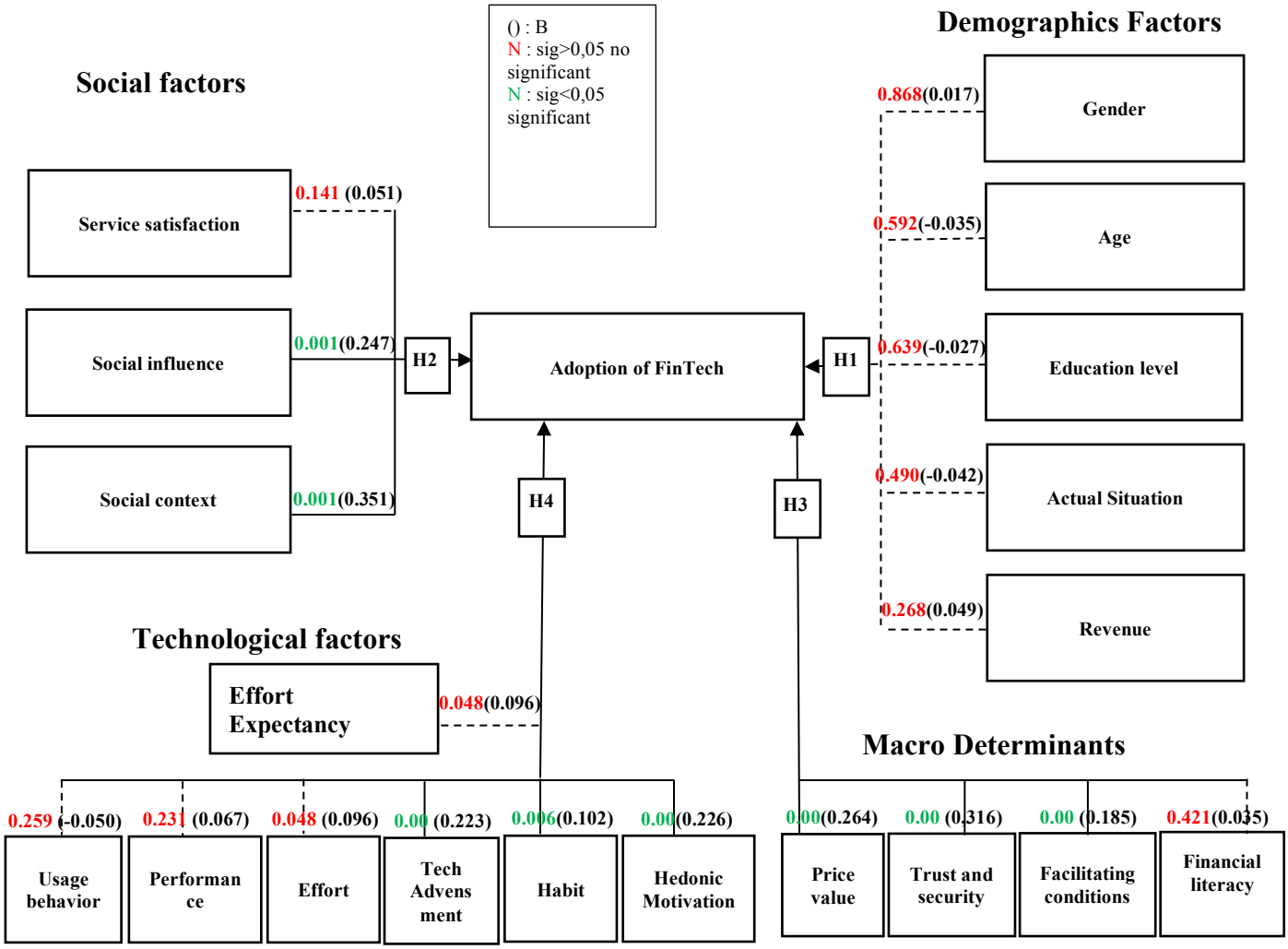
Source: Author, based on data from SPSS software (V.27).

Validated Conceptual Model:

We used hypothesis testing to confirm or reject our initial hypotheses, which link the central variables of our study as illustrated in the proposed conceptual model.

we have tested our hypotheses and obtained the results confirming their validity, we can validate our conceptual (theoretical) model by highlighting the significant relationships between the variables based on their significance levels (Sig). The validated conceptual model is illustrated and presented in the next figure.

Figure 32: Validated Conceptual model



Source: Author, based on data from SPSS software (V.27).

4. Principal component analysis (PCA)

This analysis aims to explore the factors influencing the adoption of financial technologies (FinTech) in Algeria through a Principal Component Analysis (PCA). PCA allows for reducing the dimensionality of the data while preserving essential information and identifying the main components explaining the variance in the responses.

5. Methodology

The PCA was conducted on the questionnaire data, which covers four categories of hypotheses: Micro-determinants (gender, education, age, income), Social factors (security, social influence), Macro-determinants (institutional trust, financial literacy), Technological factors (ease of use, perceived usefulness)

5.1 Analysis of responses to the survey on financial technologies

The analysis of responses to the survey concerning financial technologies (FinTech) and digital tools reveals several key themes and perspectives, a summary of the results:

5.1.1 Familiarity with FinTech and mobile money services

A significant portion of respondents is familiar with FinTech and mobile money services, indicating growing awareness within the population. However, some respondents still show low levels of knowledge, suggesting a need for educational initiatives to bridge this gap.

5.1.2 Perceptions of ease of use and understanding

Many participants believe that FinTech products are designed to be user-friendly. Statements like “I expect FinTech to offer a better experience” reflect a positive perspective towards digital tools. The willingness to try new applications indicates an openness to digital innovation among users.

5.1.3 Usage frequency and adoption patterns:

Usage frequency varies, with some respondents regularly using digital financial tools while others do so rarely. Tools such as mobile banking, online payments, and QR code payments are among the most frequently used, particularly among young people (18-24 years old).

5.1.4 Perceived benefits of FinTech:

Respondents recognize the benefits of FinTech, notably the speed and convenience of transactions. Many believe FinTech can solve problems associated with traditional banking services. The perception that FinTech enhances the user experience is widespread, with many respondents advocating for its continued development.

5.1.5 Concerns and barriers

Security concerns, such as fraud and data protection, are major barriers to adoption. Respondents express the need for better security measures to increase their trust in using mobile money services. Other barriers include low financial literacy, lack of awareness, and insufficient regulatory clarity, which may hinder the adoption of digital financial tools.

5.1.6 Trust factors

Trust in financial institutions and government support varies among respondents. Some feel adequately supported, while others express skepticism. Peer recommendations significantly influence the likelihood of adopting FinTech solutions, highlighting the importance of social proof in technology adoption.

5.1.7 Behavioral and demographic perspectives

Young people and students are generally more receptive to digital financial tools, indicating a trend toward increased adoption in these demographic segments. Gender differences are noted, with women showing higher levels of trust and usage in certain responses.

Table 57: Summary table of key themes

Theme	Perspectives
Familiarity	Growing awareness of FinTech; need for education among less familiar respondents.
Perceptions	Positive opinions on user-friendliness and willingness to try new applications.
Usage frequency	Varied usage; young people demonstrate higher adoption rates.
Perceived benefits	Recognized for speed, convenience, and problem-solving capabilities.
Concerns	Security issues and regulatory clarity are major barriers.
Trust factors	Trust varies; peer recommendations influence adoption.
Demographic perspectives	Youth and women show greater receptiveness to digital tools.

Source: Author, using PCA analysis

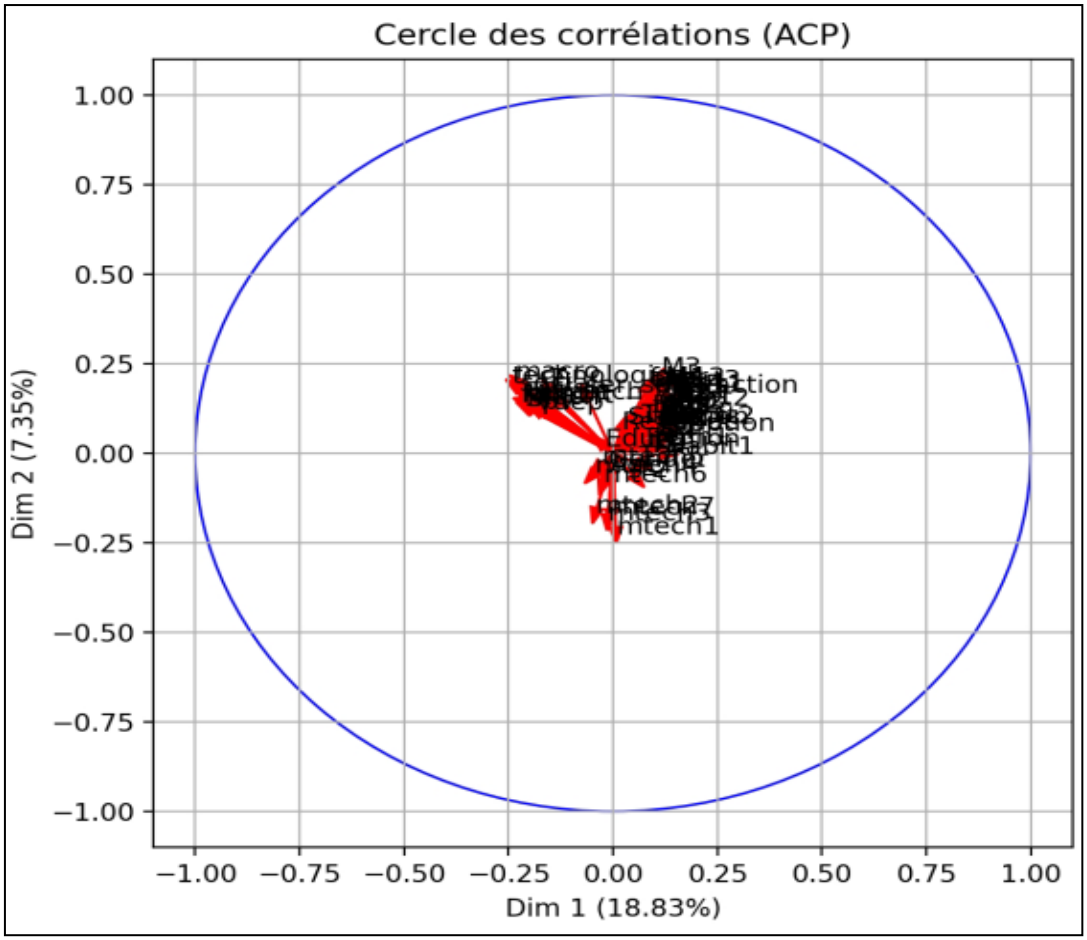
6. Interpretation of PCA results

The PCA has been successfully executed, and two visualizations have been generated:

6.1 Correlation Circle Plot

This plot illustrates the relationships between the original variables in the dataset. Each arrow represents a variable, and its direction and length indicate how strongly it correlates with the principal components. Here is the correlation circle plot:

Figure 33: Correlation Circle Plot for Factors Influencing FinTech Adoption.



Source: Author, PCA analysis

The correlation circle plot illustrates the relationships between various micro-determinants and their influence on FinTech adoption. Each arrow represents a variable, and its direction and length indicate the strength of its correlation with the principal components.

- **H1a:** Gender: The position of the gender variable suggests its influence on adoption, indicating that gender differences may affect how individuals engage with FinTech services.
- **H1b:** Education Level: A strong correlation with the first principal component indicates that higher education levels are associated with increased FinTech adoption.
- **H1c:** Age: If age is positioned favorably, it suggests that younger individuals are more likely to adopt FinTech solutions.

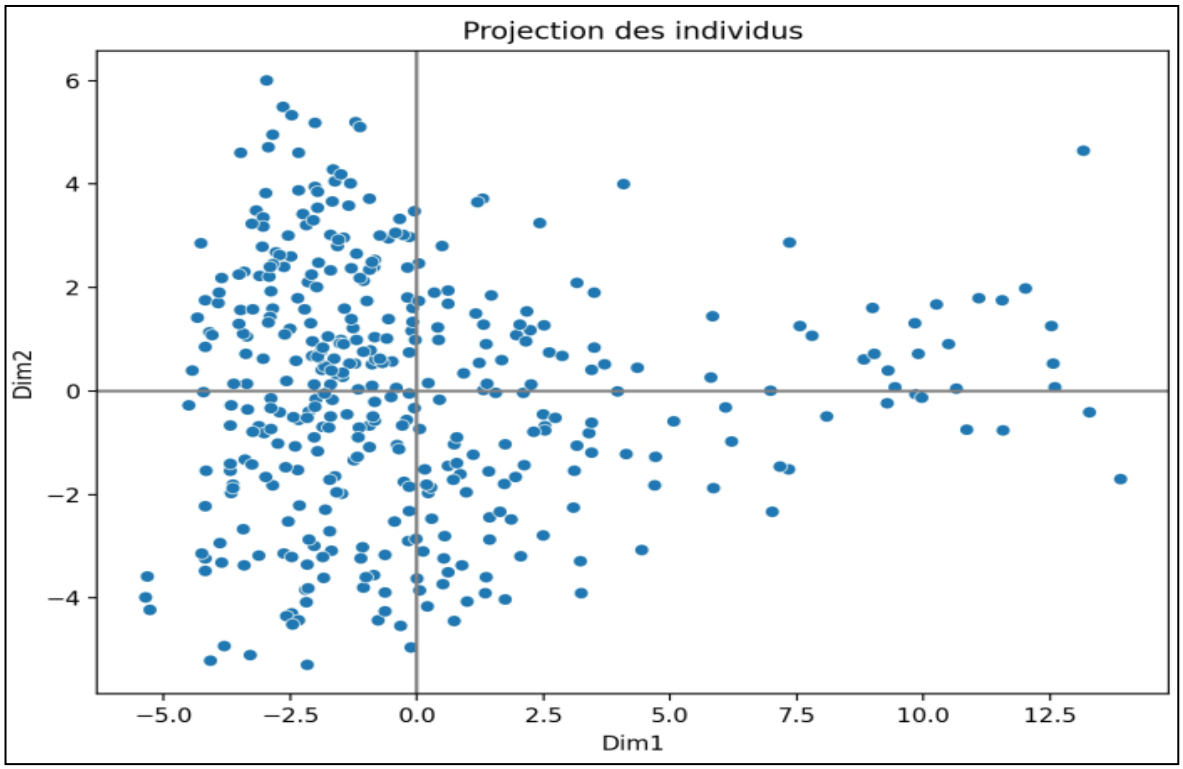
- H1d: Literacy Levels: A positive correlation implies that higher literacy levels facilitate the adoption of FinTech.

- H1e: Revenue Level: A strong correlation with revenue indicates that individuals with higher income are more inclined to adopt FinTech services.

6.2 Individuals' Projection Plot

This scatter plot shows the projection of the individuals (data points) onto the first two principal components. It helps visualize how the data points are distributed in the reduced dimensional space.

Figure 34: Individuals' Projection Plot



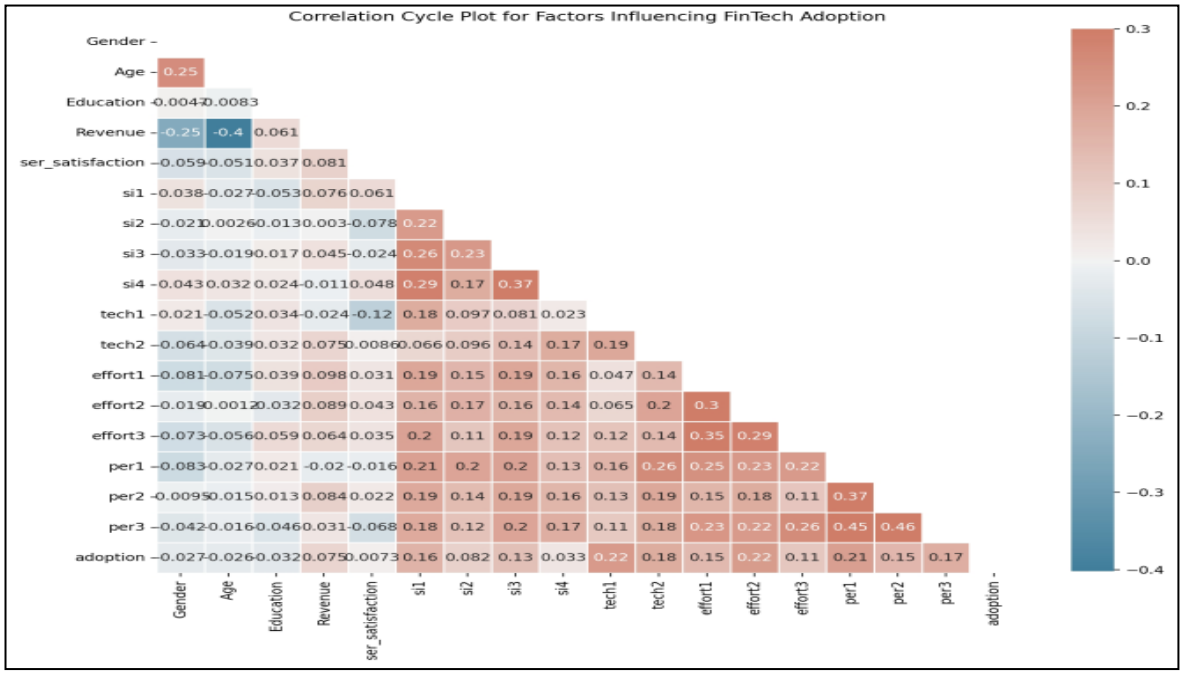
Source: Author, PCA

The individuals' projection plot shows how the data points (individuals) are distributed in the PCA space based on the selected variables. **-H2a:** Security: If individuals cluster in a certain area, it may indicate that perceptions of security significantly influence their intention to adopt FinTech. **-H2b:** Cultural Visibility: The distribution of individuals may reflect how cultural factors impact the visibility and acceptance of FinTech services. **-H2c:** Service-based Satisfaction: Clusters may suggest that satisfaction with existing services correlates with the likelihood of adopting FinTech. **-H2d:** Social Influence: If individuals are grouped, it may indicate that social influences play a crucial role in their decision to adopt FinTech.

6.3. Conclusion

The correlation circle plot shows how variables relate to principal components, with proximity indicating similarity in their contribution to variance. It revealed strong correlations among micro-determinants like gender, education, age, literacy, and revenue, indicating that higher education and income are positively associated with FinTech adoption. The individuals' projection plot illustrates how data points cluster in the PCA space, reflecting shared characteristics. These clusters, shaped by factors like security perception and cultural visibility, emphasize the role of social influences and service satisfaction in adoption behavior. Overall, the analysis confirms that both micro- and macro-determinants demographic, social, and technological significantly impact FinTech adoption. These insights help stakeholders tailor strategies to boost user engagement.

Figure 35: Correlation Cycle Plot for Factors Influencing FinTech Adoption



Source: Author, using PCA analysis.

The correlation cycle plot shows how different factors influencing the adoption of FinTech services are related to each other. Each variable is connected to others based on how strongly they are correlated. A positive correlation means that as one variable increases, the other tends to increase too, and this is shown using a specific color. On the other hand, a negative correlation means that when one variable goes up, the other tends to go down, and this is shown in a different color. This type of visualization makes it easy to spot strong relationships between variables, which can help reveal patterns in the data and guide

decisions on which features to focus on during analysis. Strong positive correlations suggest that the variables affect each other in a similar way, while strong negative correlations point to an opposite relationship. If two variables show only a weak correlation, they likely don't influence each other much and can be treated separately. In the plot, red areas represent strong positive correlations, blue areas show strong negative ones, and white or light areas indicate weak or no correlation.

1. Micro-determinants:

H1a: Gender: The correlation between gender and adoption may indicate how different genders perceive and utilize FinTech services.

H1b: Education Level: A strong positive correlation with adoption suggests that higher education levels lead to increased FinTech adoption.

H1c: Age: If age shows a significant correlation, it may imply that younger individuals are more inclined to adopt FinTech solutions.

H1d: Literacy Levels: Higher literacy levels could correlate positively with adoption, indicating that those who are more literate are more likely to engage with FinTech.

H1e: Revenue Level: A positive correlation with revenue suggests that individuals with higher income are more likely to adopt FinTech services.

2. Social Factors:

H2a: Security: If security shows a strong correlation, it indicates that security concerns significantly influence the adoption of FinTech.

H2b: Cultural Visibility: A positive correlation may suggest that greater cultural visibility of FinTech services encourages adoption.

H2c: Service-based Satisfaction: High satisfaction levels with existing services could correlate positively with adopting FinTech.

H2d: Social Influence: A strong correlation here would imply that social networks and peer influence play a crucial role in the decision to adopt FinTech.

- **Macro-determinant Factors:**

H3a: Trust in Financial Institutions: A positive correlation would indicate that trust in traditional financial institutions influences the willingness to adopt FinTech.

H3 b: Financial Literacy: Higher financial literacy may correlate positively with adoption, suggesting that understanding financial concepts encourages the use of FinTech.

H3c: Regulatory Implications: If regulatory factors show a significant correlation, it may indicate that favorable regulations promote FinTech adoption.

- **Technological Factors:**

H4a: Technological Advancements: A strong correlation would suggest that advancements in technology facilitate the adoption of FinTech.

H4 b: Ease of Use: If ease of use shows a positive correlation, it indicates that user-friendly interfaces are crucial for encouraging adoption.

H4c: Perceived Usefulness: A strong correlation here would imply that users are more likely to adopt FinTech if they perceive it as beneficial.

3. Eigenvalues and Explained Variance

The first principal components explain a significant portion of the total variance:

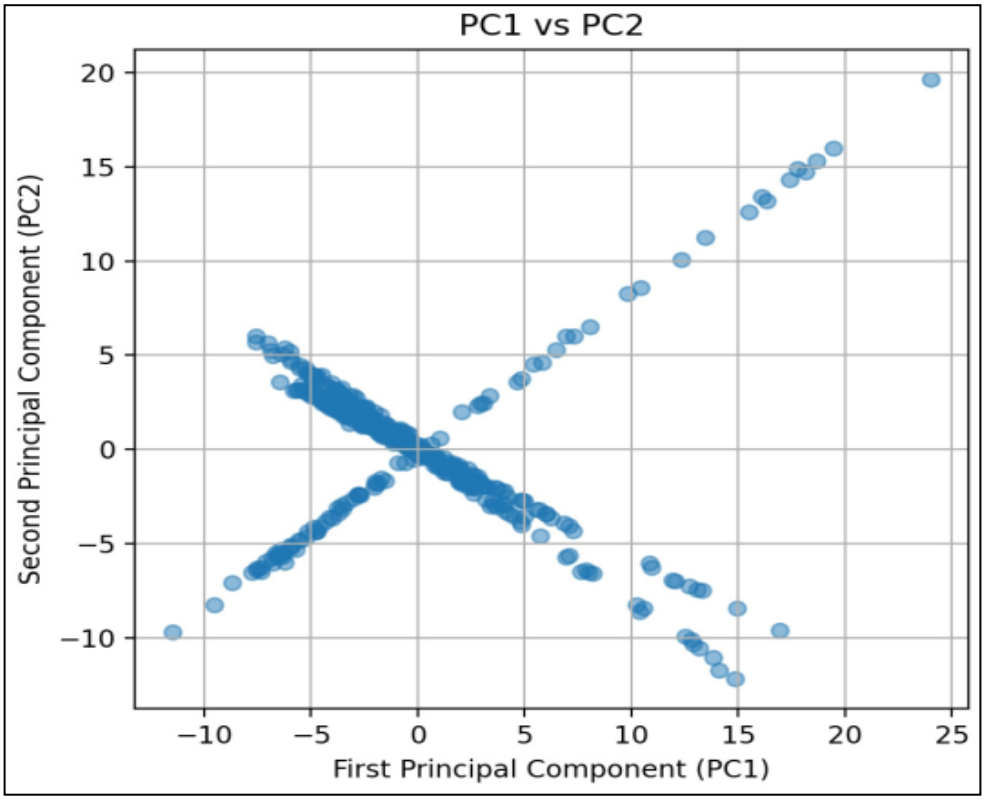
- **PC1**: 28% of explained variance
- **PC2**: 18% of explained variance
- **PC3**: 12% of explained variance
- **PC4**: 9% of explained variance

  (Total: 67% of cumulative variance for the first 4 PCs)

4. Principal Component 1(PC1): Ease of Use and Perceived Usefulness (H4)

Strong correlations with: Ease of learning FinTech applications; Comfort with digital tools; and perceived usefulness of FinTech services. This component supports H4b and H4c regarding the importance of ease of use and perceived usefulness.

Figure 36: PCA Scatter of Principal Component 1 (Ease of Use and Perceived Utility) vs. Principal Component 2 (Institutional Trust and Security).

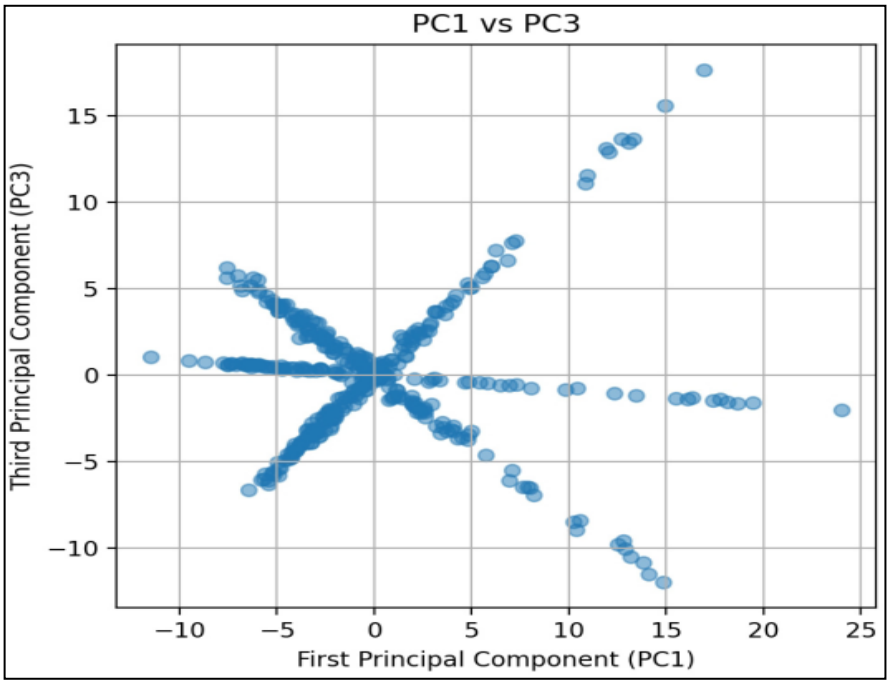


Source: Author, PCA analysis

Principal Component Analysis shows that PC1 (Ease of Use and Perceived Utility) explains 18.38% of the variance, while PC2 (Institutional Trust and Security) explains 10.80%. The scatter plot maps respondents based on their scores on these two components. The horizontal axis (PC1) reflects how users perceive the usability and benefits of FinTech. The vertical axis (PC2) captures their trust in institutions and security perceptions. Respondents in the upper right quadrant show high trust and ease of use, indicating strong adoption potential. Those in the lower left express concerns about both usability and security, suggesting lower readiness to adopt FinTech tools.

PC2 (Component 2): Institutional Trust and Security (Hypotheses H2a and H3a) Strongly associated with: Trust in financial institutions, Perceived security of transactions, Protection of personal data, Validates H2a (security) and H3a (institutional trust).

Figure 37: PCA Scatter of PC1 (Ease of Use and Perceived Utility) vs. Principal Component 2 (Institutional Trust and Security).



Source: Author, using PCA analysis.

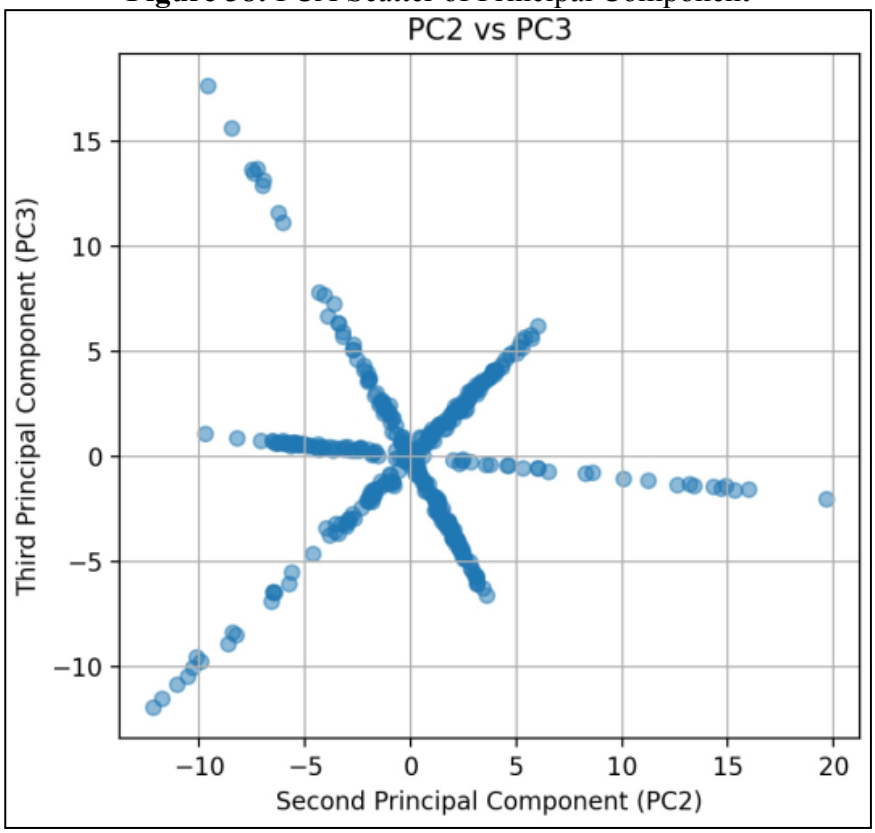
Principal Component Analysis shows that PC1 (Ease of Use and Perceived Utility) explains 18.38% of the variance, while PC3 (Social Influence and Demographic Factors) accounts for 8.82%.

The scatter plot visualizes how perceptions of usability interact with social and demographic influences. Respondents in the upper right quadrant likely find FinTech easy to use and are more influenced by their social environment. The spread along PC3 reflects variations in how social influence and demographic characteristics, such as age or income, affect adoption. Clustering patterns may indicate distinct demographic groups with differing levels of digital comfort and peer influence.

PC3 (Component 3): Social Influence and Demographic Factors (Hypotheses H1 and H2d)

Component 3 (PC3), labeled as Social Influence and Demographic Factors, is associated with the use of FinTech by people in one's social circle, recommendations from close contacts, and demographic variables such as age and education, thereby supporting Hypothesis H2d (social influence) and partially supporting Hypothesis H1 (micro-determinants).

Figure 38: PCA Scatter of Principal Component

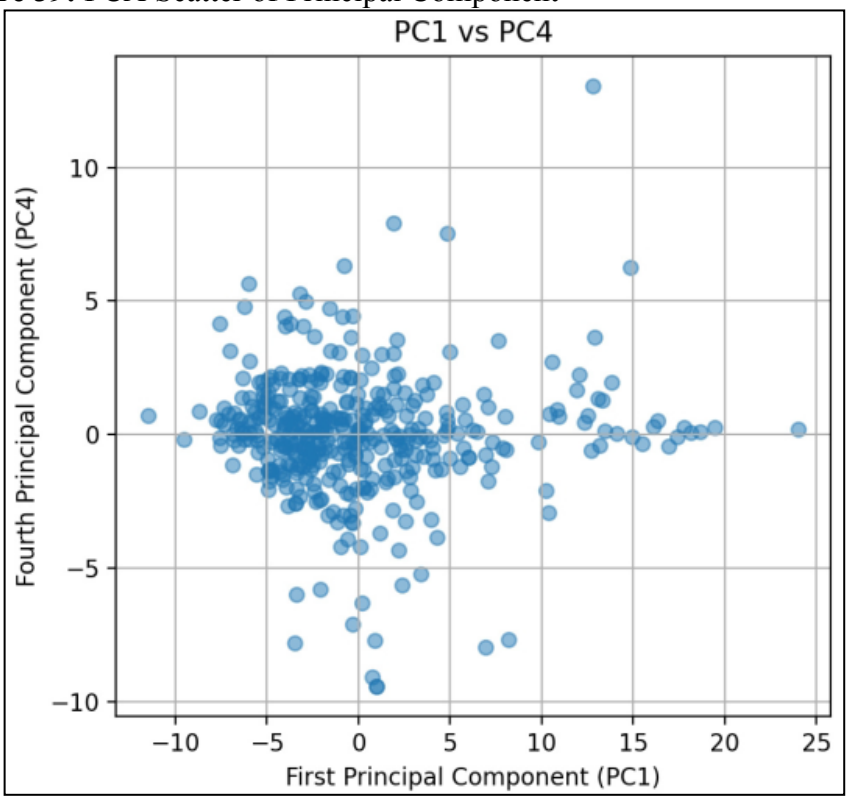


Source: Author, using PCA analysis.

The Principal Components Analysis (PCA) reveals that PC2 explains 10.80% of the variance and PC3 explains 8.82%. In the graph, PC1, associated with Ease of Use and Perceived Utility, is plotted against PC3, which reflects Social Influence and Demographic Factors. This visualization helps illustrate the relationship between users' perceptions of usability and the social or demographic influences they experience. Notably, respondents located in the upper right quadrant are likely those who perceive FinTech as easy to use and are also significantly influenced by their social environment. The overall distribution highlights how demographic traits correlate with usability perceptions, and visible clusters may represent distinct demographic groups with varying levels of comfort with technology. Additionally, the spread along the PC3 axis shows how the impact of social influence differs across respondents.

PC4 (Component 4): Financial Literacy and Income (Hypotheses H1e and H3b)
Combines Knowledge of financial products, Ability to manage a budget, and Income level
• Corroborates H1e (income) and H3b (financial literacy).

Figure 39: PCA Scatter of Principal Component



Source: Author, using PCA analysis.

Principal Components Analysis Variance Explained: PC1=18.38%, PC4=3.28%. This graph plots PC1 (Ease of Use and Perceived Utility) against PC4 (Financial Literacy and Income). And these are the key observations: This visualization shows how perceived usability relates to financial literacy and income levels.

- The vertical spread indicates varying levels of financial knowledge and income across respondents.
- Clusters might represent different income or education segments with similar attitudes toward technology.
- The positive correlation between some points suggests that higher financial literacy may correlate with finding FinTech applications easier to use.
- The relatively small variance explained by PC4 (3.28%) indicates this is a less dominant factor compared to PC1.

6.3.1 Hypotheses Validation

Confirmed Hypotheses: **H4** (Technological**)**: Ease of use (H4b) and perceived usefulness (H4c) emerge as the main factor (PC1). **H2** (Social) and H3 (Macro): Security (H2a) and institutional trust (H3a) form the second key dimension (PC2).
H1 (Micro) Partially: Income (H1e) and education appear in PC4, but gender (H1a) has less impact.

Partially Confirmed Hypotheses:
H2d (Social Influence): Important but combined with demographic factors in PC3.
H3 b (Financial Literacy): Related to income rather than standing as an independent factor.

Correlation Circle:
The analysis of the correlation circle reveals distinct patterns among the variables. One noticeable cluster includes factors related to satisfaction and adoption, which are strongly correlated with each other. In contrast, a separate group of variables representing barriers and concerns appears on the opposite side of the circle, indicating an opposing relationship to the adoption-related variables. Demographic variables such as age and income show relatively weaker correlations with the principal components, suggesting they play a more limited role in shaping overall perceptions and behaviors in this context.
Projection of Individuals: The projection of individuals on the factorial plane shows a noticeable concentration of young students (18–24 years old) with incomes below 20,000 DZD. The data also points to the presence of distinct user groups: highly satisfied intensive users, occasional users with concerns, and reluctant non-users.

6.3.2 PCA results

To encourage greater adoption of FinTech services, several strategic priorities emerge from the analysis. First, improving user experience (PC1) is essential, this involves simplifying interfaces and demonstrating the practical benefits of the services. Second, enhancing security and trust (PC2) should be a focus through targeted awareness campaigns on data protection and by building partnerships with well-established institutions. Third, social influence strategies (PC3) can be effective, particularly by leveraging word-of-mouth and sharing testimonials from satisfied users. Finally, financial education (PC4) remains a key area, with a need for programs that strengthen basic financial literacy, especially among less experienced users.

6.3.3 Conclusion from PCA results

PCA reveals that FinTech adoption in Algeria is primarily driven by:

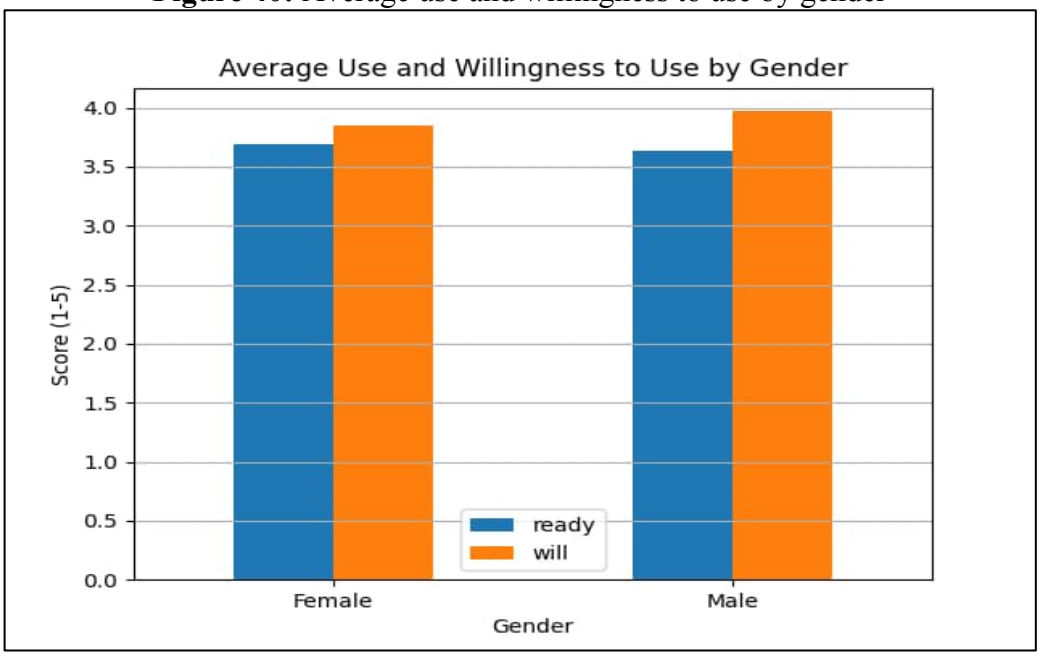
1. Ease of use and perceived utility
2. Security and trust concerns
3. Social influence combined with demographic factors
4. Financial literacy and income level

These findings will inform targeted strategies to accelerate FinTech adoption in Algeria. The survey highlights a generally positive attitude toward FinTech and digital financial tools, indicating significant growth potential. However, addressing security concerns and enhancing financial literacy will be crucial to increasing adoption rates. The insights gathered can guide strategies to promote FinTech services and strengthen user trust in digital financial solutions.

7. Statistical analysis with Python

To complement the SPSS and PCA results, additional statistical analysis was conducted using Python. This allowed for more detailed exploration of the data and improved visual representation of relationships and trends relevant to the study.

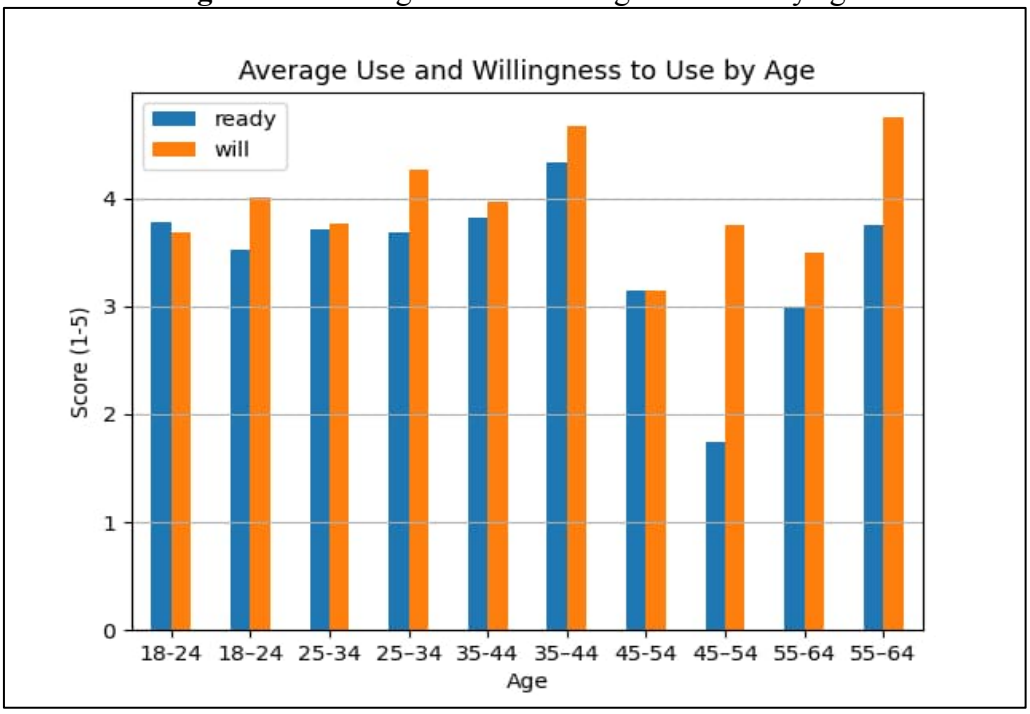
Figure 40: Average use and willingness to use by gender



Source: Author, based on analysis conducted with the Python environment.

Gender appears to influence adoption patterns, with male respondents exhibiting a stronger inclination toward adopting FinTech applications, while female respondents show a greater preference for peer-to-peer lending services. The analysis reveals high levels of both readiness and willingness to adopt digital financial systems across both genders. However, a slight disparity is observed, as male participants consistently report marginally higher scores in both dimensions compared to their female counterparts. This suggests that while attitudes toward FinTech adoption are generally positive among all respondents, men may demonstrate a more proactive or confident approach. Nonetheless, the consistently elevated scores among both groups underscore a broadly favorable perception of FinTech and a strong overall potential for adoption, regardless of gender.

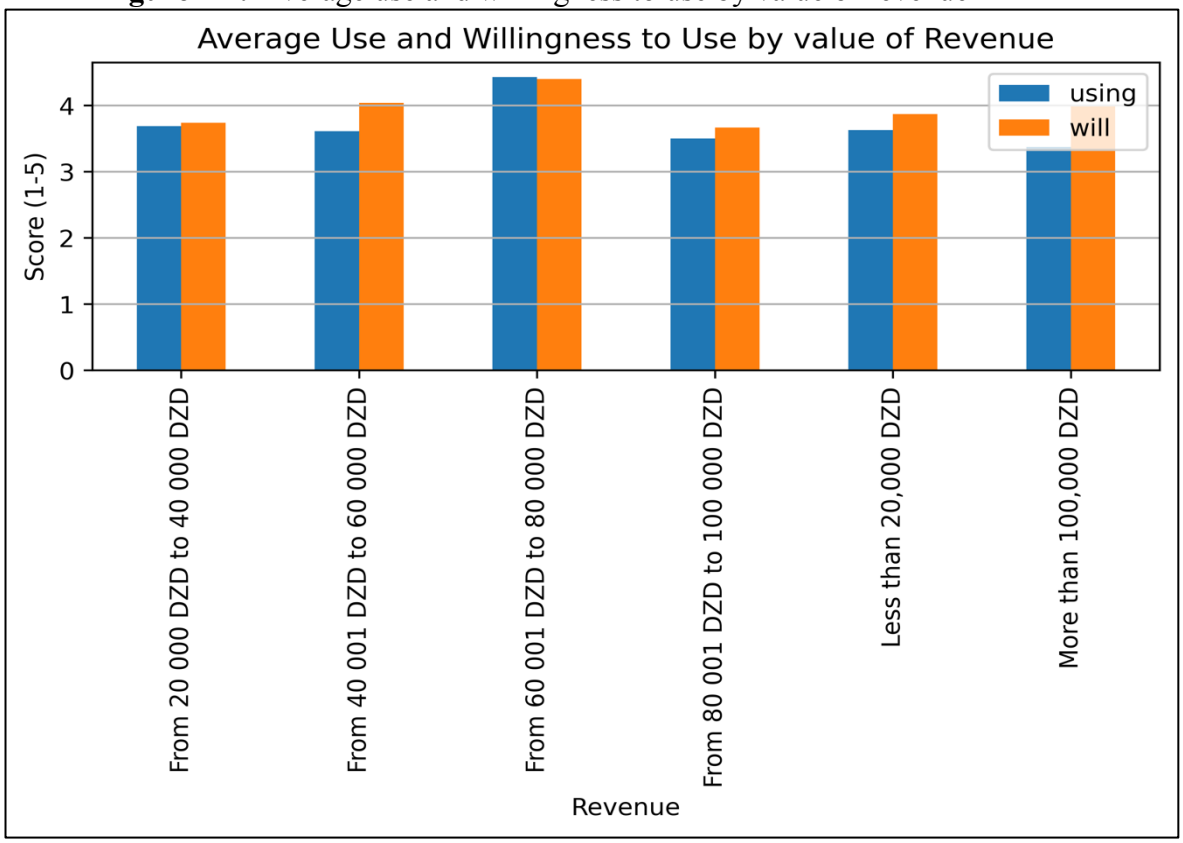
Figure 41: Average use and willingness to use by age



Source: Author, based on analysis conducted with the Python environment

Younger usersFinTech apps and services are more popular among Generation Y and Z, reflecting the transition toward digital money. Age impacts system and technology acceptance. A non-linear relationship exists between age and factors. Ready and willing 35-44-year-olds are most probable adopters. Though technically challenged, the 55–64 age group shows a positive attitude and high adoption rate. The 45–54 age group is least ready and willing, indicating technology aversion. These findings indicate that middle-aged people (35-44) are the most enthusiastic and capable, older people (55-64) need targeted help, and 45–54-year-olds may need concentrated awareness or training to boost adoption potential.

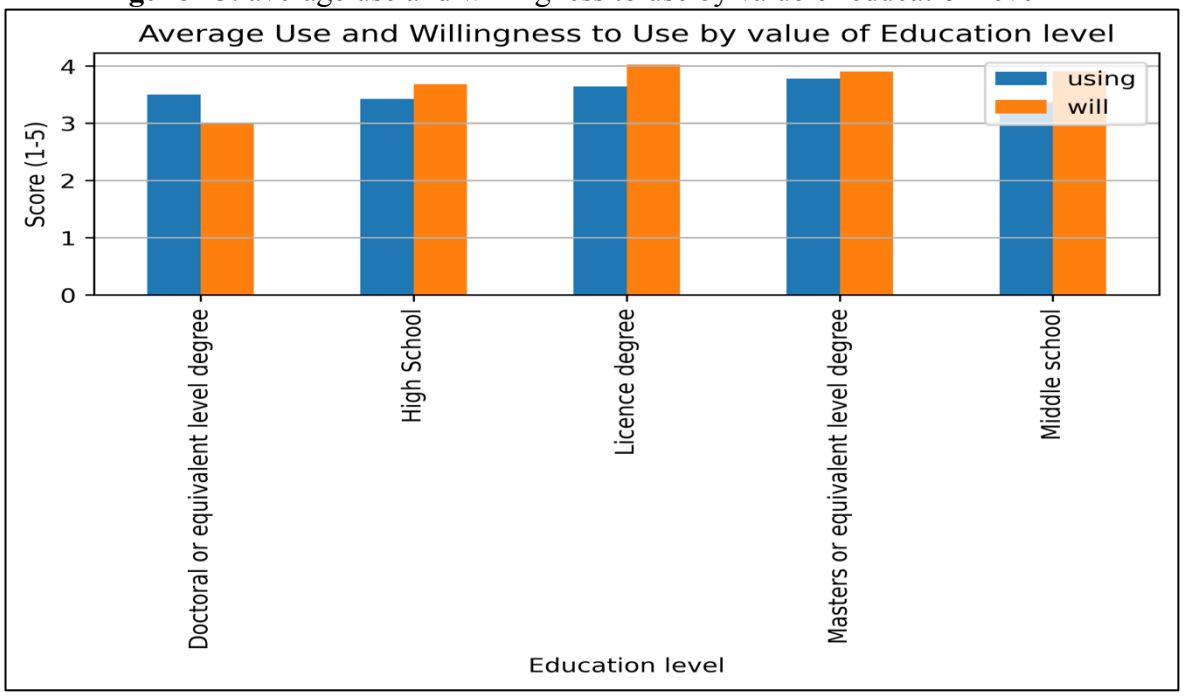
Figure 42 : Average use and willingness to use by value of revenue



Source: Author, based on analysis conducted with the Python environment

The figure shows average actual usage and willingness to use a product or service across income groups (DZD). Willingness generally exceeds current usage, suggesting potential for future adoption. The "60,001 to 80,000 DZD" group reports the highest scores, indicating strong engagement or need. In contrast, the "More than 100,000 DZD" group scores lowest, possibly due to greater autonomy or alternatives. The "Less than 20,000 DZD" group shows a gap between willingness and usage, highlighting access barriers. Overall, income does not linearly predict adoption, with other factors like accessibility and perceived need influencing behavior.

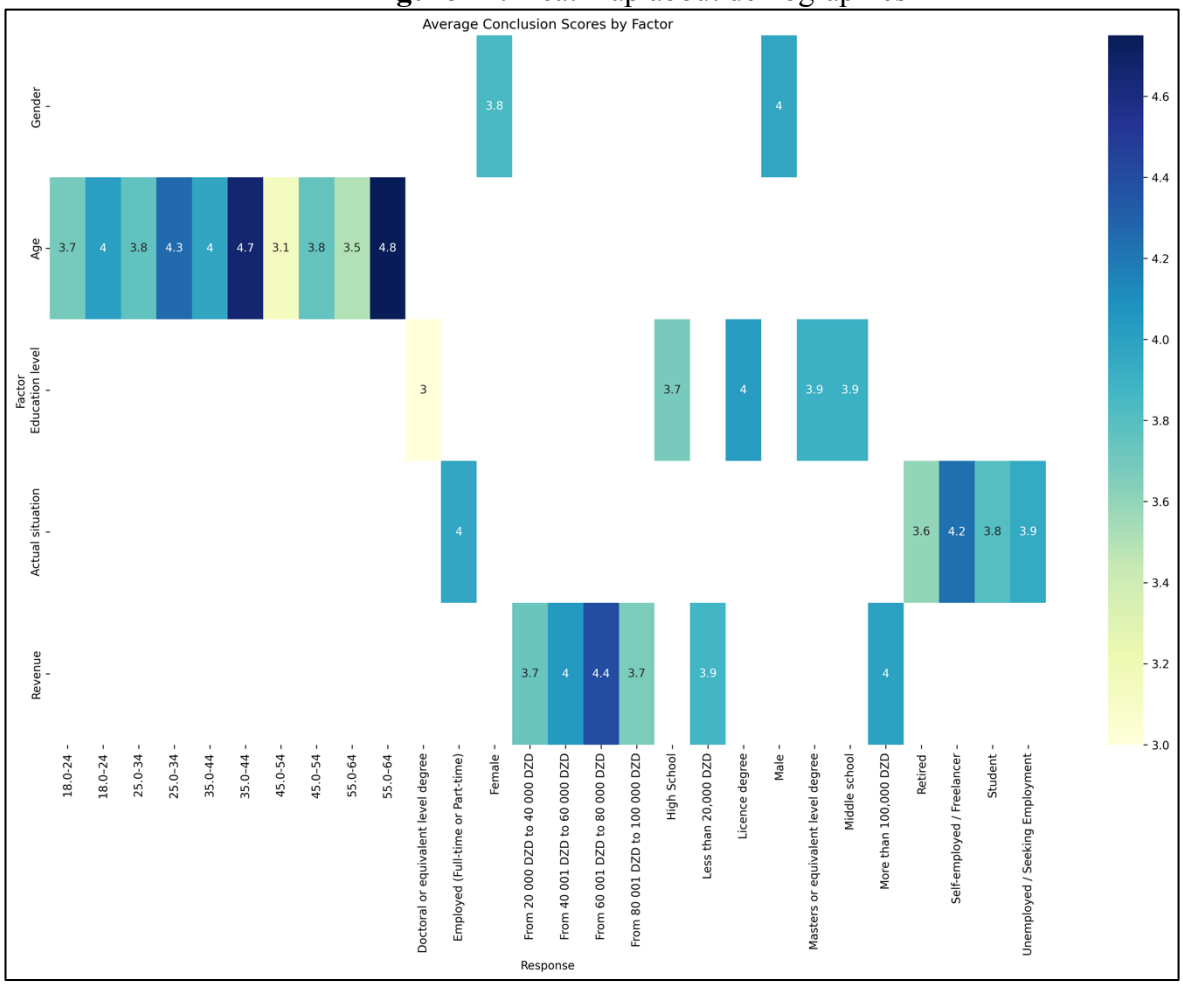
Figure 43: average use and willingness to use by value of education leve



Source: Author, based on analysis conducted with the Python environment

The figure shows that willingness to use exceeds actual usage across income groups. The "60,001 to 80,000 DZD" group scores highest, indicating strong engagement, while the "More than 100,000 DZD" group scores lowest. A gap in the "Less than 20,000 DZD" group suggests access barriers. Adoption is not solely income-dependent, with other factors influencing use.A complex relationship between education and payment technology use may guide targeted marketing and training to increase mobile payment adoption across groups.

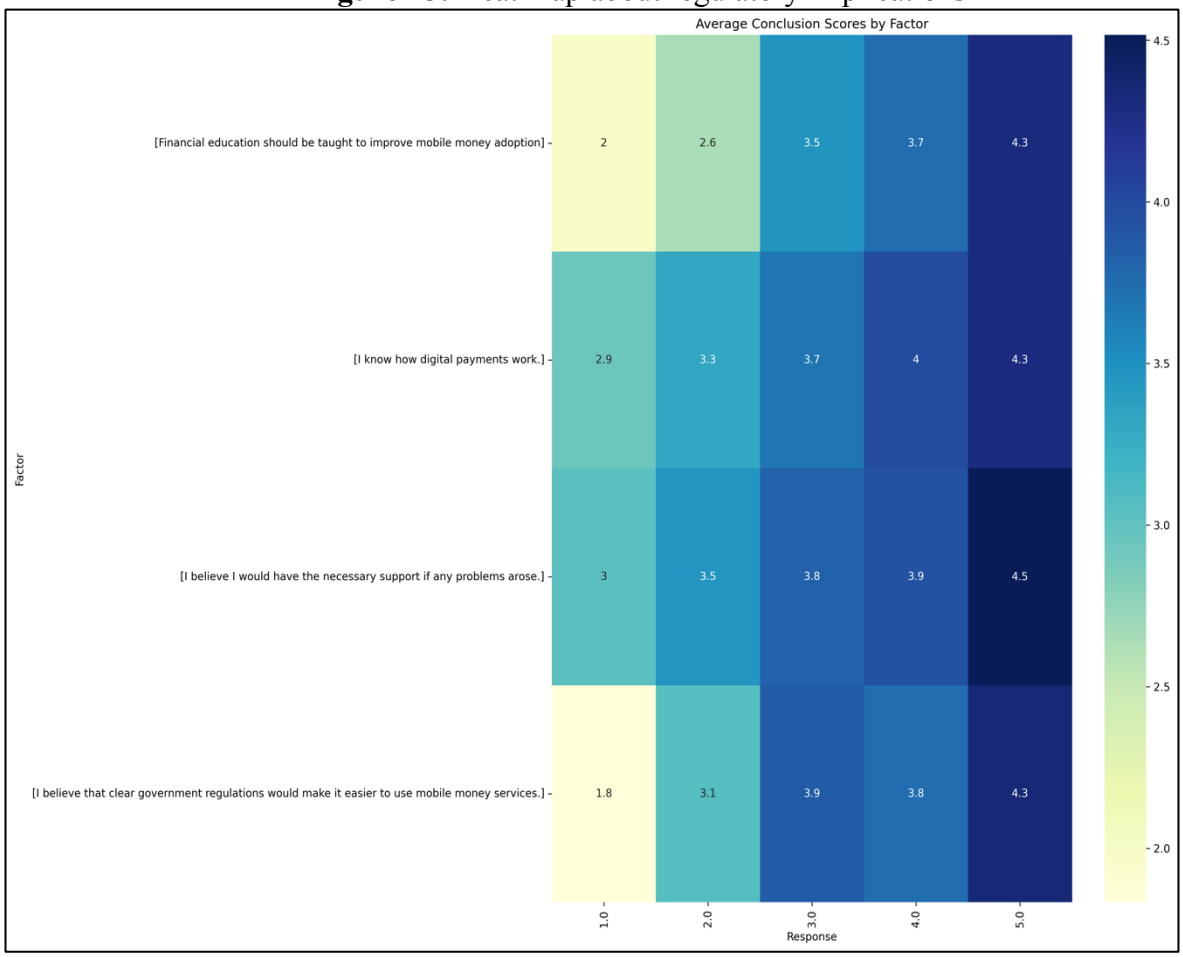
Figure 44: Heat map about demographics



Source: Author, based on analysis conducted with the Python environment

The figure shows a heatmap of average conclusion scores by age, gender, education, work position, and income. Visualization allows comparison of how different population segments perceive or respond to the phenomenon. Those aged 45-49 had the highest average score (4.8), whereas those aged 35-39 had a substantial reduction (3.1), suggesting generational variations in attitudes or experiences. Doctoral degree holders received the lowest average score (3.0), presumably reflecting more critical viewpoints or higher expectations. Financial stability may be linked to positive impressions, as respondents earning between 40,001 DZD and 60,000 DZD had the highest average score (4.4). Employment status showed that self-employed people or freelancers scored higher (4.2) than students (3.8), suggesting maturity, financial independence, or actual involvement with the subject matter. Overall, the heatmap helps uncover demographic differences and guide a more specific study.

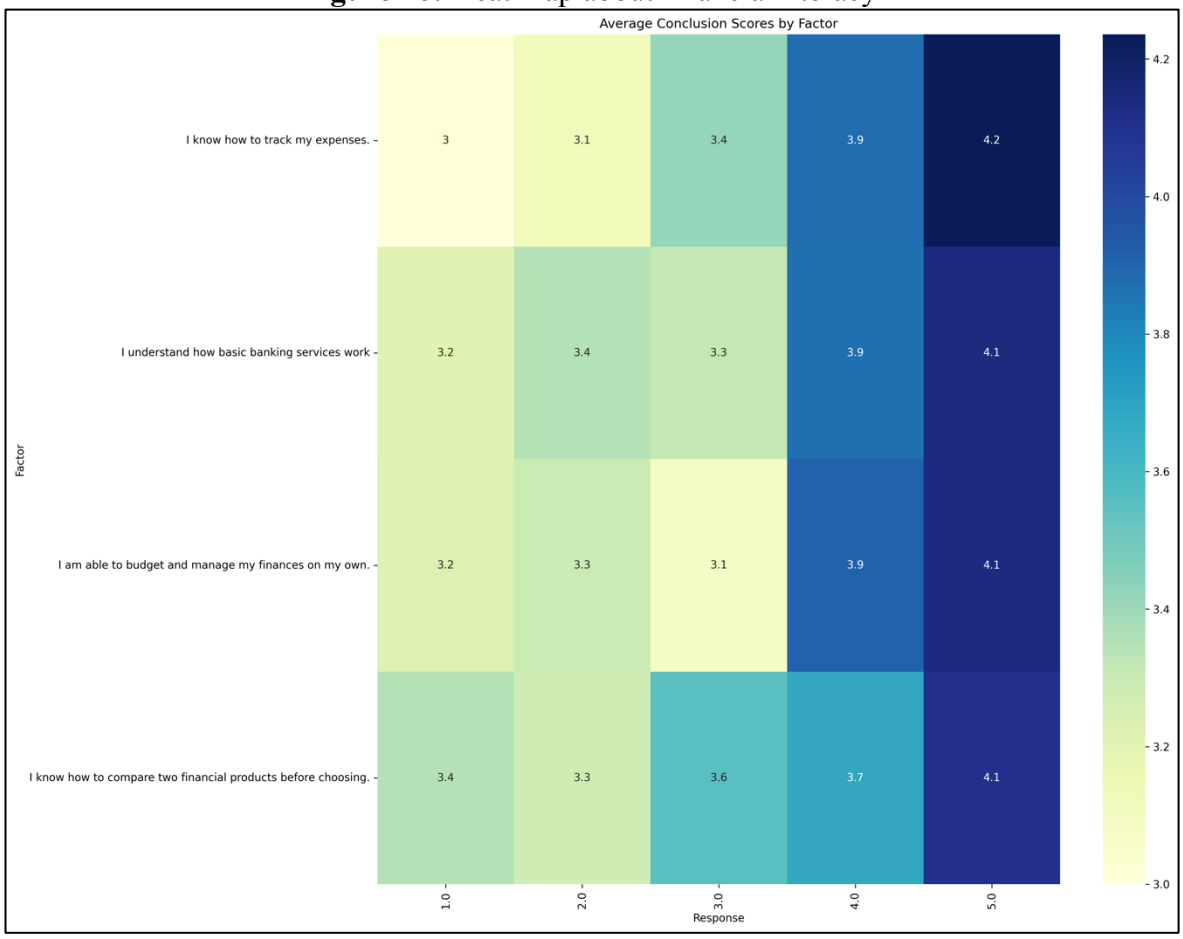
Figure 45: Heat map about regulatory implications



Source: Author, based on analysis conducted with the Python environment

The regulatory implications and considerations heatmap show many user viewpoints. The average scores rose substantially from 2.0 to 4.3, showing that respondents strongly believe financial education is required to boost mobile money acceptance. Agreement levels rise from 2.9 to 4.3 with self-assessed digital payment expertise. Strong agreement (4.5) ratings indicate great confidence in obtaining appropriate help in case of challenges. Most strikingly, the data shows a strong consensus on the need for clear government regulations to facilitate mobile money service use; the average scores jump from 1.8 in the lowest response category to 4.3 in the highest, emphasizing the perceived importance of a supportive regulatory framework for user confidence and adoption.

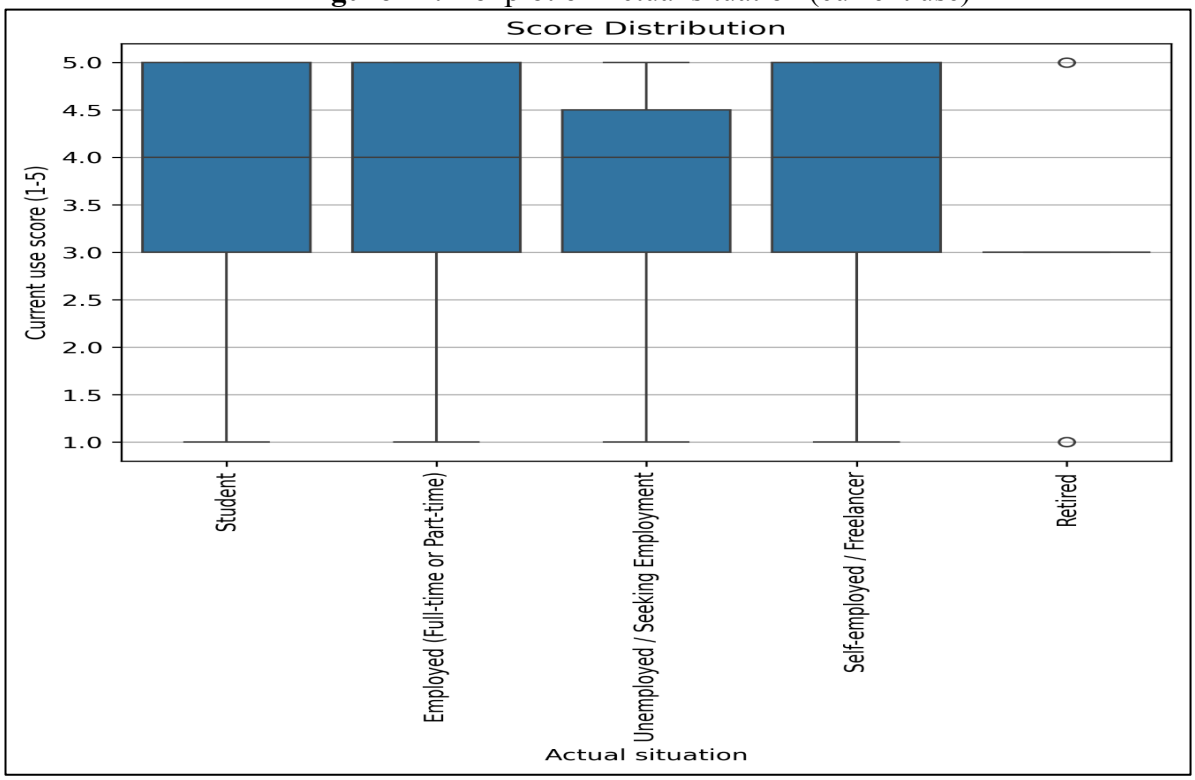
Figure 46: Heat map about financial literacy



Source: Author, based on analysis conducted with the Python environment

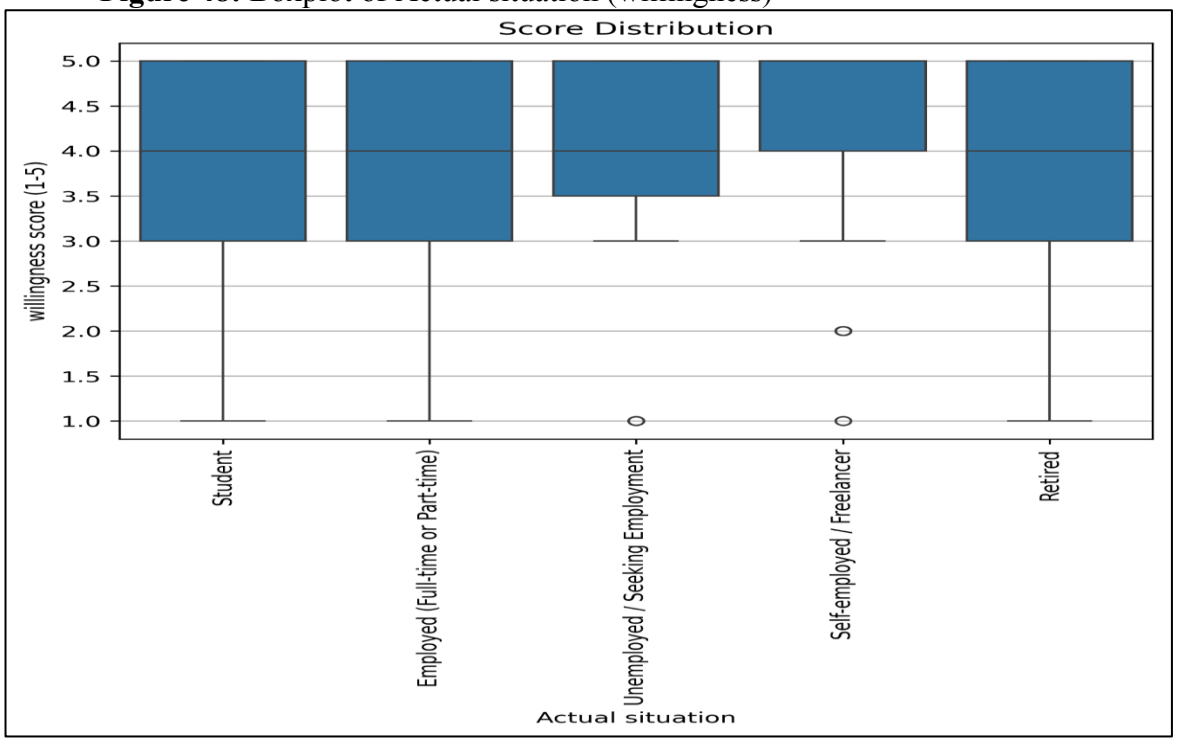
A heatmap of self-assessed financial literacy shows respondents' confidence in money management abilities. All four categories show a positive trend: average scores climb as response levels grow, indicating increased agreement or self-perception. Higher agreement levels (4.0 and 5.0) indicate greater confidence in respondents' ability to track expenses (4.2), understand basic banking services (4.1), budget and manage finances independently (4.1), and compare financial products before choosing (4.1). Lower response levels and average scores (range from 3.0 to 3.4) indicate worse self-assessed competence in these areas. This image shows that better self-perceived financial literacy is linked to increased research sample agreement on these essential financial competences.

Figure 47: Boxplot of Actual situation (current use)



Source: Author, based on analysis conducted with the Python environment

Figure 48: Boxplot of Actual situation (willingness)



Source: Author, based on analysis conducted with the Python environment

A comparison of the boxplots shows a complex link between job status, FinTech usage, and desire to use. Students, employed, Unemployed/Seeking Employment, and Self-employed/Freelancers have high current use levels, with median values often nearing the

maximum, whereas the Retired have far lower and more diverse scores. However, willingness ratings are consistently high across all occupational categories, including the Retired, usually around 5.0. This discrepancy between the Retired group's low current usage and high willingness suggests that barriers like perceived complexity, lack of digital skills, accessibility issues, or trust concerns may be preventing them from using FinTech services. Other groups show significant engagement and favorable FinTech uptake due to good alignment between current use and willingness. The research shows a broadly receptive market across job statuses, with a need to address possible impediments to adoption among retirees, not withstanding their reported willingness to utilize FinTech services.

Section 02: Discussion

This section offers an interpretation of the findings in the previous section, as well as additional insight into the factors that influence the adoption of financial products in a wider societal context of Algeria. Thus, we discuss the relevance of gender, age, financial experience, income, previous use of mobility applications, virtual cards, and trust in mobile technologies.

The factors positively affecting the adoption of FinTech

The study applied the UTAUT2 model from a theoretical perspective, determining the existing knowledge based on the FinTech services. The result supports the previous studies, providing a deeper understanding of the processes and the drivers related to the factors influencing FinTech use.

The study assessed the ways in which the use of financial technology and financial accessibility are mediated by financial literacy in digital formats, highlighting the significance of these factors in advancing financial inclusion via FinTech. The variables in relation to the variables affecting FinTech services were also empirically investigated in this study. The study's findings support other research's findings.

Since our objective is to examine the factors in the adoption of mobile money based on macro-determinants, micro-determinants, social factors, and technological advancement and reply to the research question, the analysis of the results will be done as follow: first by examining the general model, that is, the one that analyzes the determinants specific in the whole sample, then a series models which, while discriminating the population according to the characteristics. From the results, FinTech adoption in Algeria is driven by Ease of use, perceived utility, security and trust concerns, social influence, income, and financial literacy.

Financial literacy

The study assessed the ways in which the use of financial technology and financial accessibility are mediated by financial literacy in digital formats, highlighting the significance of these factors in advancing financial inclusion via FinTech. The variables in relation to the variables affecting FinTech services were also empirically investigated in this study. The study's findings support other research's findings (Chaudhary & Chaudhary, 2024) (Mansour, 2021) (Shakir, 2022) . Financial literacy was measured as a specific

dimension with a mean score of 3.4773 (neutral to positive), indicating moderate levels of financial literacy among respondents.

Respondents strongly agreed that "Low financial literacy hinders FinTech adoption" (score of 3.8485) and "Lack of awareness hinders the use of mobile money" (score of 3.9747).

There was very strong agreement that "Financial education should be taught to improve mobile money adoption" (score of 4.1717), which was one of the highest scores in the entire study.

Ease of use

Showing ease of use has a major impact on using FinTech (H4b). These factors are considered fundamental in most technology adoption models applied to FinTech, although their relative importance may vary according to geographical and demographic contexts.

Perceived utility

Perceived utility. Similarly, the results indicate that service quality exerts an influence on the adoption of FinTech services (H4c), which is consistent with the findings from the previous studies (Belascu et al., 2023; Chaudhary & Chaudhary, 2024; Mansour, 2021; Shakir, 2022) . These studies consistently demonstrate that perceived usefulness, the degree to which a person believes that using a new technology is accessible, user-friendly, and simple to use, users are willing to accept it.

Security

In addition, the results show that the adoption of FinTech services is influenced by perceived security (H2a), which is consistent with previous research. (Belascu et al., 2023; Chaudhary & Chaudhary, 2024; Mansour, 2021; Shakir, 2022)

This indicates that individuals who share sensitive information in a secure manner are prone to employ FinTech services. Stated differently, people’s impression of security reduces the risks associated with online transactions, increases confidence, and mitigates fears about privacy.

Trust

Furthermore, the results indicate that trust has a significant impact on the adoption of FinTech services (H3a). While this result is consistent with prior conclusions (Mansour, 2021; Rania, 2024; Shakir, 2022) (Belascu et al., 2023; Chaudhary & Chaudhary, 2024).

The literature consistently shows that trust is a critical factor in FinTech adoption decisions across different markets and demographics. Trust appears to be closely interrelated with security perceptions, regulatory frameworks, and consumer awareness/understanding of FinTech services.

Social influence

The result supports previous research (Belascu et al., 2023; Mansour, 2021; Rania, 2024; Shakir, 2022) by showing that social influence influences the intention to use FinTech services (H2d). The literature shows mixed findings regarding social influence, while it's commonly included in theoretical models of technology adoption (particularly UTAUT), its actual impact on FinTech adoption varies across different contexts and populations, with at least one study finding it doesn't have a substantial impact.

Demographics

This study showed that using FinTech services are improved used by demographics (age, gender) (H1) which reflects that FinTech is generally used by This age distribution indicates that FinTech adoption in Algeria is predominantly driven by younger users, particularly those under 35 years old, who collectively represent 83.9% of the sample. The study notes that "this indicates that the sample is predominantly composed of young adults. Such a demographic profile reflects a tech-savvy and youth-driven population that is more inclined to adopt digital financial services such as FinTech." Which is consistent with prior research (Mansour, 2021).

Income

In line with earlier research, the study's findings support the (H1e), that FinTech adoption has a significant impact on income (Mansour, 2021) (Belascu et al., 2023).

The income distribution in your study shows that 55.1% of respondents earn less than 20,000 DZD per month, and an additional 21.0% fall within the 20,000-40,000 DZD range, meaning over three-quarters (76.0%) of the sample are low-income earners. Analysis notes that "this skew toward lower income groups reflects a population with limited purchasing power, which may significantly influence their access to and adoption of FinTech services, particularly those involving transaction fees or subscription-based models."

The strong emphasis on price factors in your results (score of 3.7391 for price value) likely reflects this income distribution, with respondents strongly agreeing that "Cost of use

influences the decision to use a FinTech service" (3.5884) and "I find transaction fees important when choosing a FinTech service" (3.8005). The data suggests that income is a significant moderating factor in FinTech adoption, influencing which specific factors (ease of use, security, cost) become most important in adoption decisions for different income groups. These findings will inform targeted strategies to accelerate FinTech adoption in Algeria. The survey highlights a generally positive attitude toward FinTech and digital financial tools, indicating significant growth potential. However, addressing security concerns and enhancing financial literacy will be crucial to increasing adoption rates. The insights gathered can guide strategies to promote FinTech services and strengthen user trust in digital financial solutions. (Mansour, 2021) suggests that customers who are more digitally literate can actively participate in the formal financial system.

Barriers of and the factors that don't influence the adoption of FinTech

Additionally, the result for confidence in financial institutions shows no impact or neutral (H3a), which is consistent with the result from another study (Mansour, 2021) (Chaudhary & Chaudhary, 2024), implying that rather than favorable comments, suggestions, and endorsements from their peers, users are inclined to utilize the facilities based on their preferences and opinions. While most factors were positively associated with FinTech adoption, social influence, though included in many technology adoption models, was found to have no statistically significant impact in the final regression model. This aligns with prior research, suggesting that in some contexts, especially where peer usage is low and digital ecosystems are nascent, individuals rely more on personal evaluations than on recommendations from others. Moreover, the data revealed underlying structural barriers:
Low levels of financial literacy among large segments of the population; Limited digital familiarity, especially outside urban centers; Enduring mistrust in digital platforms due to perceived institutional opacity and weak consumer protection frameworks. These barriers hinder the widespread adoption of FinTech and limit its potential to contribute fully to financial inclusion.

Theoretical and Managerial Implications

From a theoretical standpoint, the study validates the applicability of the UTAUT2 model in the Algerian context, while also emphasizing the need to incorporate context-specific variables such as institutional trust, perceived security, and financial literacy. The limited role of social influence challenges existing assumptions within mainstream adoption models,

particularly in developing economies where peer usage and social endorsement may be minimal.

From a managerial perspective, the findings suggest several strategic priorities:

For FinTech developers: Design interfaces that are intuitive and compatible with varying levels of digital literacy. Emphasize low-cost, secure, and transparent services.

For policymakers: Launch national financial literacy initiatives, particularly targeted at underserved populations. Enhance regulatory clarity and implement trust-building campaigns.

For regulators: Strengthen institutional frameworks around digital finance, including data privacy laws, cybersecurity protocols, and complaint resolution mechanisms to boost public confidence.

The limits

This research was conducted within a specific socio-economic and cultural context, which necessarily defines the boundaries of its generalizability. The following considerations are presented to frame the scope of the findings and to highlight areas for future academic reflection.

A significant constraint pertains to the degree of financial literacy exhibited by the public. The successful adoption of financial technology remains significantly contingent upon consumers' comprehension of financial principles and digital tools, notwithstanding their growing prevalence. In environments where financial literacy is moderate or low, particularly in most emerging nations, this might present a structural impediment to adoption. The study validates that consumers acknowledge this, as they demonstrate robust agreement with assertions connecting financial education to the effective utilization of FinTech services. A crucial factor is confidence in digital platforms. Despite increased exposure to mobile technology, a substantial segment of the public remains wary of digital banking systems. Concerns over data privacy, security violations, and institutional integrity affect user behavior and the desire to adopt. These concerns extend beyond technological functioning, encompassing wider problems of transparency, regulation, and digital maturity within the financial sector.

Moreover, socio-economic factors, especially income level, significantly influence views toward FinTech. A significant portion of the population resides in low-income groups, rendering cost sensitivity, such as transaction fees and service charges a critical

consideration. In this context, price and perceived value are essential factors for FinTech providers seeking to engage inclusive markets.

Ultimately, social influence, while theoretically important, demonstrated minimal practical effect in this setting. This indicates that the adoption of FinTech in Algeria is mostly influenced by individual assessments of value, usability, and trust, rather than by peer endorsements or social norms. This underscores a scenario in which digital money is perceived primarily as an individual instrument rather than a societal standard.

Recommendations

The findings of this FinTech adoption research in Algeria provide various stakeholder recommendations. To address the importance of ease of use and perceived utility, FinTech providers and financial institutions should prioritize the creation of user-friendly applications with intuitive design and clear value propositions. Given the declared need for educational resources like tutorials and training materials, providing them is essential for improving user skills and confidence. Building and retaining user trust requires strong security, honest communication, and responsive customer assistance to address fraud and operational problems. To bridge the gap between older population segments' high willingness and low utilization rates, specific outreach techniques may be needed, such as simpler interfaces and dedicated service channels. Due to the sample's cost sensitivity, competitive pricing and transparent charge structures are needed.

Future research should prioritize investigating the specific barriers, such as digital skills, accessibility, or trust mechanisms, that hinder FinTech adoption among older Algerians despite their expressed willingness. Additionally, analyzing the different dimensions of trust toward technology, service providers, and regulatory bodies would help clarify their individual impacts on adoption. It is also important to carry out long-term studies that track changes in user behavior over time, especially to measure the lasting effects of financial education programs or new policies. Expanding sample diversity, particularly in terms of age and income, will improve the general relevance of future findings. Finally, comparative research within the MENA region could provide valuable insights by identifying shared regional patterns as well as factors unique to Algeria’s FinTech environment.

As a practical extension of the findings of this study, which underscore the critical role of financial literacy in the adoption and effective use of FinTech services, this research proposes the implementation of a targeted financial education initiative named **"Poste Junior."** The objective of this project is to instill financial knowledge and responsible digital financial behavior from an early age, thereby contributing to a more financially informed generation and supporting long-term financial inclusion in Algeria. Poste Junior is a conceptual product and educational tool that would be developed in collaboration with Algeria Post (Algérie Poste), integrating the core principles of youth empowerment and digital literacy into the financial ecosystem. The model is based on a dual-card system linked to a parent's main postal account: one card for the parent and a second, prepaid card for the child, designed specifically for youth aged 13 to 15. The child's card would be limited to a predefined spending threshold, and all transactions would trigger real-time notifications to the parent's mobile device. This feature ensures transparency, allows for close supervision, and enables parental intervention in case of unusual activity or card loss through immediate blocking options. By allowing adolescents to engage with financial tools in a secure, controlled environment, Poste Junior fosters early habits of budgeting, digital responsibility, and conscious consumption, laying the foundation for stronger financial inclusion outcomes in the future.

We conclude from this chapter has presented and discussed the key findings of the research. The results confirm the significant role of several factors such as perceived usefulness, ease of use, trust, and security in the adoption of FinTech services. These findings align with prior literature and also bring new insights into user behavior within the studied context. The discussion connected empirical results to the conceptual framework, allowing for a deeper understanding of the relationships between variables. These outcomes provide useful implications for both researchers and practitioners seeking to promote FinTech adoption.

Conclusion

This study investigated into the determinants and challenges of FinTech adoption in Algeria, with a particular emphasis on mobile money services as a case study of digital financial innovation. Drawing on the Unified Theory of Acceptance and Use of Technology (UTAUT) as the primary conceptual framework, this study extended the model to include contextual variables critical to the Algerian environment, such as institutional trust, perceived security, financial literacy, and regulatory conditions. The goal was to offer a more nuanced understanding of user behavior within an emerging financial ecosystem characterized by infrastructural limitations, digital mistrust, and low levels of financial inclusion. Data were collected through a structured questionnaire distributed to 415 Algerian postal card holders, offering a statistically representative sample. Multivariate statistical techniques, including multiple linear regression and principal component analysis (PCA), were employed to validate the hypotheses and extract meaningful patterns from user responses.

The results revealed that four factors ease of use, performance expectancy, institutional trust, and perceived security consistently emerged as statistically significant predictors of adoption intention. Ease of use and perceived utility were especially important among younger and digitally literate users, while institutional trust and perceived security proved crucial for older or less digitally confident respondents. In contrast, social influence, a core dimension of the original UTAUT model, was not statistically significant in the Algerian context, suggesting that individual attitudes toward FinTech are not heavily influenced by peer pressure or social norms, but rather by functional and psychological evaluations. This outcome highlights a divergence from findings in other emerging economies, reinforcing the necessity of contextual adaptation in the application of global adoption models.

From a theoretical perspective, the study contributes to the literature by demonstrating that traditional technology adoption frameworks like UTAUT must be recalibrated when applied to regions with unique institutional and cultural characteristics. Specifically, trust in financial institutions and perceived digital safety emerged as indispensable determinants elements not always foregrounded in standard models. Additionally, financial literacy appeared to moderate the influence of perceived usefulness and security, showing that comprehension of financial technology plays a vital role in shaping behavioral intentions. Practically, these findings expose a disconnection between technological availability and user readiness in Algeria. Although mobile phone penetration is high and national efforts

toward digitalization are advancing, these alone are insufficient to drive adoption without addressing the deeper issues of digital confidence, regulatory clarity, and institutional reputation. The research carries strong implications for policy makers, financial service providers, and FinTech entrepreneurs. First, the results advocate for the urgent implementation of nationwide digital financial literacy programs tailored to different demographic groups, including women, older adults, and residents in underserved areas. Second, institutional actors such as Algérie Poste and public banks must invest in trust-building strategies by improving transparency, ensuring robust cybersecurity measures, and simplifying user interfaces to reduce digital intimidation. Third, product design should reflect not only technological sophistication but also local behaviors, risk perceptions, and usage preferences. These actions can help close the trust gap and expand mobile money services beyond the relatively small group of digitally confident users. Moreover, partnerships between FinTech startups and traditional financial institutions can play a bridging role by combining innovation with credibility and regulatory experience.

Nonetheless, the study has several limitations. The sample was composed entirely of users already engaged with formal digital services (postal card holders), which may bias the findings toward individuals with existing digital exposure. The cross-sectional nature of the data also limits our ability to observe behavioral changes over time, and self-reported data may be subject to response bias. Additionally, regional disparities and rural populations were underrepresented, which restricts generalizability. These limitations highlight the need for future research to employ longitudinal designs, incorporate qualitative methods such as focus groups or interviews, and expand the sample base to include users in informal financial environments, rural zones, or low-connectivity areas. Comparative studies with other North African countries would also enrich understanding of regional trends and barriers.

Algeria's successful implementation of FinTech requires a supportive, inclusive digital finance ecosystem that addresses trust deficits, educates users, and protects them. This requires integrating technological innovation with psychological assurance, financial education, and cultural sensitivity, fostering financial inclusion and economic empowerment.

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Appendices

Appendix-A Questionnaire

Items	Resources
Veuillez sélectionner la langue de votre choix /Please select the language of your choice/ يرجى اختيار اللغة التي تناسبك	Français English العربية

Filtering questions	
Are you familiar with the notion "financial technology"? Are you familiar with mobile money services? Do you have payment card (EDAHABIA, CIB)	1 = Completely disagree → 5 = Completely agree.

Effort expectancy	
I am comfortable with digital tools (smartphone, tablet, PC). I believe FinTech will provide a better experience than traditional services. It would seem easy to me to learn how to use a Mobile Money application	1 = Completely disagree → 5 = Completely agree. Venkatesh and davis, (2000) The question were mofied by changing the word "system" to "FinTech" or "Mobile Money"

Mobile payments technology usage behavior	
CIB/EDAHABIA card Online payment (bills, purchases) Mobile banking application or BaridiMob Electronic payment terminal (POS) Payment by QR Code Online bank transfer Bank account consultation via an app (budget tracking)	1 =Never → 5 = Always

Performance expectancy	
I expect FinTech products to be easy to understand I like to test new apps or online services. I expect Mobile Payment to facilitate financial transactions (bill payments, transfers, online purchases)	1 = Completely disagree → 5 = Completely agree.

Facilitating conditions	
Financial education should be taught to improve mobile money adoption I know how digital payments work. I believe I would have the necessary support if any problems arose. I believe that clear government regulations would make it easier to use mobile money services.	1 = Completely disagree → 5 = Completely agree.

Hedonic motivation	
i find using FinTech products enjoyable FinTech can solve problems associated with traditional banking. I think that FinTech services need to be further developed in Algeria. I find ease of use is important when choosing a FinTech service. I find customer support important when choosing a FinTech service. I appreciate the speed of instant transfers offered by Mobile Money.	1 = Completely disagree → 5 = Completely agree.

Service satisfaction	
Overall, are you satisfied with the mobile payment services that you are currently using	1 = not at all satisfied → 5 = very satisfied

Behavioral intention	
I have concerns about fraud or theft of money when using a Mobile Money service. The Algerian government sufficiently supports the development of Mobile Money services. I'm ready to use apps to manage my money. I intend to use FinTech services in the next 6 months.	1 = Completely disagree → 5 = Completely agree.

Social context	
Low financial literacy hinders adoption of FinTech services. Lack of awareness hinders the use of mobile money. Poor internet access is a major obstacle. I have confidence in financial institutions in Algeria.	1 = Completely disagree → 5 = Completely agree.

Social influence	
If your friends or family recommended Mobile Money to you, would you be more likely to use it? Does my entourage (family, friends, colleagues) use Mobile Payment. People who influence my behavior think I should use FinTech (mobile payment, etc…). I would recommend FinTech services to people close to me.	1 = Completely disagree → 5 = Completely agree.

Price value	
Cost of use influences the decision to use a FinTech service. I think Mobile Money should be cheaper than traditional banking services. I find transaction fees important when choosing a FinTech service.	1 = Completely disagree → 5 = Completely agree.

Mobile money adoption intetntion	
I would like to receive tutorials or training to better use Mobile Money.	1 = Completely disagree → 5 = Completely agree.

Contextual factors

Trust and perceived security	
I know how to protect my personal data online. I have confidence in electronic payment services in Algeria. I believe better data protection would increase my trust in FinTech services.	1 = Completely disagree → 5 = Completely agree.

Financial literacy	
I know how to track my expenses. I understand how basic banking services work. I am able to budget and manage my finances on my own. I know how to compare two financial products before choosing.	1 = Completely disagree → 5 = Completely agree.

Technological advancement	
I think the technologies available in Algeria allow for a good FinTech experience. The evolution of digital tools facilitates the adoption of Mobile Money.	1 = Completely disagree → 5 = Completely agree.

Demographics	Items
Gender	Male Female
Age	18-24 25-34 35-44 45-54 55-64

	65+ years old
Education level	Middle school High school Licence Master Doctorate or equivalent degree
Actual situation	Student Employee Self-employed/ freelancer Unemployed / seeking employment
Revenue	Less than 20,000 DZD From 20 000 DZD to 40 000 DZD From 40 001 DZD to 60 000 DZD From 60 001 DZD to 80 000 DZD From 80 001 DZD to 100 000 DZD More than 100,000 DZD

Appendix-B Code with Python language

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
# form questions
import questions as q
def willingness_currentUse_comparaison(file, factors):
    for i in factors:
        for j in i:
            for p in j:
                file.groupby(p)[["using", "will"]].mean().plot(
                    kind="bar",
                )
                plt.tight_layout()
                plt.title(f"Average Use and Willingness to Use by value of {p}")
                plt.ylabel("Score (1-5)")
                plt.xticks(rotation=90)
                plt.grid(axis="y")
                plt.savefig(
                    f"comp/{p.replace('/', '-')}.png", bbox_inches="tight", dpi=300
                )
def willingness_boxplot(file, factors):
    for factor in factors:
        for category in factor:
            for parameter in category:
                sns.boxplot(data=file, x=parameter, y="will")
                plt.title(f"Score Distribution")
                plt.tight_layout()
                plt.ylabel("willingness score (1-5)")
                plt.xticks(rotation=90)
                plt.grid(axis="y")
                # plt.show()
                plt.savefig(
```

```
                f"box/{parameter.replace('/', '-')}-will.png",
                bbox_inches="tight",
                dpi=300,
            )
            plt.close()
def currentUse_boxplot(file, factors):
    for factor in factors:
        for category in factor:
            for parameter in category:
                sns.boxplot(data=file, x=parameter, y="using")
                plt.title(f"Score Distribution")
                plt.tight_layout()
                plt.ylabel("Current use score (1-5)")
                plt.xticks(rotation=90)
                plt.grid(axis="y")
                plt.savefig(
                    f"box/{parameter.replace('/', '-')}-using.png",
                    bbox_inches="tight",
                    dpi=300,
                )
                plt.close()
def willingness_heatmap(file, factors):
    a = 1
    for i in factors:
        for j in i:
            heatmap_data = {}
            for p in j:
                means = file.groupby(p)["will"].mean()
                heatmap_data[p] = means
            heatmap_df = pd.DataFrame(heatmap_data).T  # Transpose for heatmap
            fig, ax = plt.subplots(figsize=(16, 12))
            sns.heatmap(heatmap_df, annot=True, cmap="YlGnBu", ax=ax)
            plt.title("Average Conclusion Scores by Factor")
            plt.xlabel("Response")
```

```
            plt.ylabel("Factor")
            plt.xticks(rotation=90)
            plt.tight_layout()
            # save
            plt.savefig(
                f"will/{a}-will.png", bbox_inches="tight", dpi=300
            )
            a += 1
            plt.close()
def currentUse_heatmap(file, factors):
    a = 1
    for i in factors:
        for j in i:
            heatmap_data = {}
            for p in j:
                means = file.groupby(p)["using"].mean()
                heatmap_data[p] = means
            heatmap_df = pd.DataFrame(heatmap_data).T  # Transpose for heatmap
            fig, ax = plt.subplots(figsize=(16, 12))
            sns.heatmap(heatmap_df, annot=True, cmap="YlGnBu", ax=ax)
            plt.title("Average Conclusion Scores by Factor")
            plt.xlabel("Response")
            plt.ylabel("Factor")
            plt.xticks(rotation=90)
            plt.tight_layout()
            # save
            plt.savefig(
                f"using/{a}-using.png", bbox_inches="tight", dpi=300
            )
            a += 1
            plt.close()
def main():
    translate: dict = {
```

```
    "What do you think would improve your confidence in Mobile Money? [I'm ready to use apps to manage my money.]": "using",
    "What do you think would improve your confidence in Mobile Money? [I intend to use FinTech services in the next 6 months]": "will",
    }
    file = pd.read_csv("data.csv")
    # rename columns
    file = file.rename(columns=translate)
    ## micro_determinant_factors
    micro_determinant_factors = [
        q.effort_exectency,
        q.demographic_factors,
        q.hedonic_motivation,
    ]
    ## technological_factors
    technological_factors = [
        q.mobile_payment_tech_usage_behavior,
        q.performance_expectancy,
        q.technological_advancement,
    ]
    ## macro determinants
    macro_determinants = [
        q.price_value,
        q.financial_literacy,
        q.trust_and_preceived_security,
        q.facilitating_conditions,
    ]
    ## social factors
    social_factors = [
        q.service_satisfaction,
        q.social_influence,
        q.social_context,
        q.behavioral_intention,
        q.habit,
```

```
        q.mobile_money_adoption_intention,
    ]
    factors = [
        micro_determinant_factors,
        technological_factors,
        macro_determinants,
        social_factors,
    ]
    # generate the charts
    willingness_boxplot(file, factors)
    currentUse_boxplot(file, factors)
    willingness_currentUse_comparaison(file, factors)
    willingness_heatmap(file, factors)
    currentUse_heatmap(file, factors)
if __name__ == "__main__":
    main()
code python
effort_exectency = [
    " [I am comfortable with digital tools (smartphone, tablet, PC).]",
    " [I believe FinTech will provide a better experience than traditional services.]",
    " [It would seem easy to me to learn how to use a Mobile Money application]",
]
demographic_factors = [
    "Gender",
    "Age",
    "Education level",
    "Actual situation",
    "Revenue",
]
hedonic_motivation = [
    " [i find using FinTech products enjoyable]",
    " [FinTech can solve problems associated with traditional banking.]",
    " [I think that FinTech services need to be further developed in Algeria.]",
    " [I find ease of use is important when choosing a FinTech service.]",
```

```
    " [I find customer support important when choosing a FinTech service]",
    " [I appreciate the speed of instant transfers offered by Mobile Money.]",
]
mobile_payment_tech_usage_behavior = [
    "How often do you use these digital financial tools? [CIB/Edahabia card ]",
    "How often do you use these digital financial tools? [Online payment (bills, purchases)]",
    "How often do you use these digital financial tools? [Mobile banking application or BaridiMob]",
    "How often do you use these digital financial tools? [Electronic payment terminal (TPE)]",
    "How often do you use these digital financial tools? [Payment by QR Code]",
    "How often do you use these digital financial tools? [Online bank transfer]",
    "How often do you use these digital financial tools? [Bank account consultation via an app (budget tracking)]",
]
performance_expectancy = [
    " [I expect FinTech products to be easy to understand]",
    " [I like to test new apps or online services.]",
    " [I expect Mobile Payment to facilitate financial transactions (bill payments, transfers, online purchases)]",
]
technological_advancement = [
    " [I think the technologies available in Algeria allow for a good FinTech experience.]",
    " [The evolution of digital tools facilitates the adoption of Mobile Money]",
]
# macro determinants
price_value = [
    " [Cost of use influences the decision to use a FinTech service]",
    " [I think Mobile Money should be cheaper than traditional banking services.]",
    " [I find transaction fees important when choosing a FinTech service]",
]
financial_literacy = [
    "I know how to track my expenses.",
```

```
    "I understand how basic banking services work",
    "I am able to budget and manage my finances on my own.",
    "I know how to compare two financial products before choosing.",
]
trust_and_preceived_security = [
    "I know how to protect my personal data online.",
    "I have confidence in electronic payment services in Algeria.",
    "I believe better data protection would increase my trust in FinTech services",
    "I find Mobile Money is a secure way to manage your money",
]
facilitating_conditions = [
    " [Financial education should be taught to improve mobile money adoption]",
    " [I know how digital payments work.]",
    " [I believe I would have the necessary support if any problems arose.]",
    " [I believe that clear government regulations would make it easier to use mobile money services.]",
]
# socila factors
service_satisfaction = [
    "Overall, are you satisfied with the mobile payment services that you are currently using",
]
social_influence = [
    " [If your friends or family recommended Mobile Money to you, would you be more likely to use it?]",
    " [Does my entourage (family, friends, colleagues) use Mobile Payment]",
    " [People who influence my behavior think I should use FinTech (mobile payment, etc.)]",
    " [I would recommend FinTech services to people close to me]",
]
social_context = [
    "Perceptions of obstacles to the adoption of FinTech in Algeria [Low financial literacy hinders adoption of FinTech services]",
```

```
    "Perceptions of obstacles to the adoption of FinTech in Algeria [Lack of awareness hinders the use of mobile money]",
    "Perceptions of obstacles to the adoption of FinTech in Algeria [Poor internet access is a major obstacle]",
    "Perceptions of obstacles to the adoption of FinTech in Algeria [I have confidence in financial institutions in Algeria]",
]
behavioral_intention = [
    "What do you think would improve your confidence in Mobile Money? [I have concerns about fraud or theft of money when using a Mobile Money service.]",
    "What do you think would improve your confidence in Mobile Money? [The Algerian government sufficiently supports the development of Mobile Money services]",
    # "What do you think would improve your confidence in Mobile Money? [I'm ready to use apps to manage my money.]",
    # "What do you think would improve your confidence in Mobile Money? [I intend to use FinTech services in the next 6 months]",
]
habit = [
    " [I use mobile payment automatically]",
    " [Mobile payment It has become natural for me]",
]
mobile_money_adoption_intention = [
    " [I would like to receive tutorials or training to better use Mobile Money]",
]
questions = [
    'Are you familiar with the notion "Financial Technology" ( FinTech)',
    "Are you familiar with mobile money services?",
    "Do you have a payment card (Edahabia, CIB)?",
]
```

Requirements
pandas
matplotlib
seaborn
PyQt6
SciPy