

Financial Inclusion of Moroccan SMEs: Assessing FinTech's Adoption and Exploring Decentralized Finance Perceptions in Morocco

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Abstract

This study investigates the factors influencing the adoption of financial technology (FinTech) and decentralized finance (DeFi) among small and medium-sized enterprises (SMEs) in Morocco. The research aims to shed light on the current landscape of digital financial services and explore the potential for DeFi implementation in the Moroccan context. Using a quantitative research method, data was gathered through self-administered questionnaires distributed to SMEs in Morocco. The Diffusion of Innovation Theory serves as the theoretical framework to understand the factors driving FinTech and DeFi adoption. The results reveal a strong and positive correlation between "Relative Advantage" and "Adoption" (0.323), indicating that SMEs perceive FinTech and DeFi as beneficial and advantageous for their businesses. Additionally, a positive correlation is found between "Trial Ability" and "Adoption" (0.277), suggesting that SMEs' ability to experiment with these technologies influences their adoption behavior. Furthermore, a weaker positive correlation is observed between "Compatibility" and "Adoption" (0.152), implying that the alignment of FinTech and DeFi with existing practices and systems plays a role in their adoption. Regarding DeFi implementation, the study finds that 64% of Moroccan SMEs maintain a neutral stance, while 5% express serious concerns about its future in the Moroccan financial landscape. This finding highlights the need for further education and awareness-raising efforts to foster a more positive perception of DeFi among SMEs. This research contributes to the existing body of knowledge by providing empirical evidence of the factors influencing FinTech and DeFi adoption among SMEs in Morocco. The findings offer valuable insights for policymakers, financial institutions, and technology providers in designing strategies to promote the adoption of these technologies and enhance financial inclusion in Morocco.

Keywords

FinTech, Decentralized Finance (DeFi), Digital Financial Services, Financial Inclusion, Diffusion of Innovation Theory, Small and Medium-Sized Enterprises (SMEs), Morocco

1. Introduction

The banking sector has undergone a series of revolutions, enabling individuals and businesses to access a wide range of financial products and services. However, despite these advancements, financial inclusion remains a challenge, with many individuals and SMEs struggling to access traditional banking services.

Technological innovations, such as Automated Teller Machines (ATMs), blockchain technology, and decentralized finance (DeFi), have the potential to transform the financial landscape and promote financial inclusion. DeFi offers unique opportunities for individuals and businesses to engage in financial activities autonomously and without relying on intermediaries.

In Morocco, financial authorities are actively promoting financial inclusion and digital transformation. However, the ban on cryptocurrencies, the primary tool for DeFi, presents a challenge. This study aims to investigate the factors influencing the adoption of financial technologies and the prospects for adopting DeFi among SMEs in Morocco.

This study investigates the following research question: To what extent do small and medium-sized enterprises (SMEs) in Morocco adopt financial technologies and have the capability to embrace decentralized finance (DeFi)? The study aims to achieve the following objectives: 1) Identify the factors that influence the adoption of financial technologies among SMEs in Morocco. 2) Assess the current level of awareness and understanding of DeFi among SMEs in Morocco. 3) Explore the potential benefits and challenges of DeFi adoption for SMEs in Morocco. 4) Provide recommendations for policymakers, financial institutions, and SMEs to promote the adoption of DeFi in Morocco.

This study contributes to the existing body of knowledge on financial technology adoption and DeFi in emerging markets. The findings will provide insights into the factors driving the adoption of financial technologies among SMEs in Morocco and the potential for DeFi to address the challenges faced by SMEs in accessing traditional financial services. Also, it has practical implications for policymakers, financial institutions, and SMEs in Morocco. The recommendations provided will inform policy decisions, support financial institutions in developing innovative DeFi products and services, and guide SMEs in leveraging DeFi for financial growth and inclusion.

A mixed-methods research approach was applied, combining quantitative and qualitative data collection and analysis. A survey will be conducted among SMEs in Morocco to gather data on their adoption of financial technologies and their

awareness and understanding of DeFi. In-depth interviews will be conducted with key stakeholders, including policymakers, financial institution representatives, and SME owners, to gain a deeper understanding of the challenges and opportunities associated with DeFi adoption in Morocco.

2. Theoretical Framework

Studies conducted in the realm of technology use within the banking sector have used various research models and theories to elucidate the factors contributing to the adoption of technological advancements. Among the most notable models we mention the Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), Theory of Reasoned Actions (TRA) and Diffusion of Innovation Theory. Given the multitude of conflicting theories and models aimed at elucidating technology acceptance, the most viable models, capable of accurately predicting and comprehending individual attitudes and actions towards embracing and utilizing technology, are adopted. This article will adopt the Diffusion of Innovation Theory following the same road of earlier studies.

According to (Rogers, 1995), Diffusion of Innovation Theory aims to investigate the characteristics of technology adopters who accept innovative technology. This theory aims to explain why, how, and at what rate new ideas or technology spread. (Rogers, 1995) has also defined diffusion as the gradual popularization of an innovation throughout a social system over time. Within the framework of embracing technology, this theory forms the foundation for the cognitive stages that individuals go through to become aware of an innovation and ultimately initiate its utilization. The diffusion of innovation theory emphasizes the four main elements at the center of any innovation, these being the innovation itself, communication channel, social system and time (Iluba & Phiri, 2021). Additionally, (Rogers, 1995) emphasizes that the process of decision-making is individualized, yet it's probable that external influences from others within the social system will play a role.

In **Figure 1** provided below, (Rogers, 1995) present the diffusion of innovation theory to illustrate the elements propelling the adoption of technology.

We detail below the elements influencing the adoption of the technologies presented in the table above.

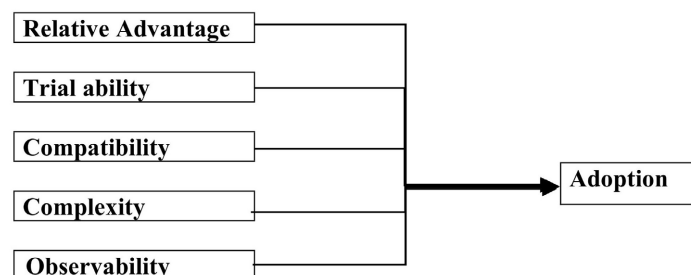


Figure 1. Diffusion of innovation theory model.

Relative advantage:

“Relative advantage” is a pivotal concept within the Diffusion of Innovation theory. This characteristic underscores the notion that individuals are more likely to adopt an innovation if they perceive it to offer significant advantages over the existing alternatives (Rogers, 1995). These advantages can manifest in various forms, such as improved efficiency, enhanced effectiveness, cost savings, greater convenience, or other tangible benefits.

Trialability:

Trialability pertains to users’ openness to experimenting with the innovation. For instance, in the realm of FinTech advancements like mobile money, adopting it as a practical payment method needs users to register their mobile numbers, followed by tries to send and receive funds (Iluba & Phiri, 2021).

Observability:

Gaining insights into the outcomes of innovation performance post-implementation can significantly influence an individual’s decision to adopt or abstain from adopting the innovation (Rogers, 1995). Whether drawing from personal encounters or learning from the experiences of others, this attribute holds significance in shaping one’s conviction on the utility of the innovation for their overall well-being.

Complexity:

The level of ease associated with the use of an innovation plays a pivotal role in motivating its adoption among individuals (Rogers, 1995). When an innovation proves cumbersome to navigate, it’s highly probable that users will be disinclined to embrace it.

Compatibility:

This pertains to how seamlessly an innovation integrates with an individual’s lifestyle or existing circumstances. Users typically expect that the innovation will not necessitate a drastic or substantial departure from what they consider as their usual norms (Iluba & Phiri, 2021).

Our study focuses on the Diffusion of Innovation Theory, which explores the characteristics of technology adopters and how new ideas, or technology spread within a social system over time. It delves into the key factors influencing technology adoption, including relative advantage (perceived benefits), trialability (willingness to experiment), observability (outcomes and experiences), complexity (ease of use), and compatibility (integration with existing norms). Understanding these factors is essential for promoting the adoption of innovative technology in the banking sector.

3. Literature Review

This section offers a comprehensive overview of two critical aspects in the modern financial landscape: measures of financial inclusion and the factors influencing the adoption of FinTech.

3.1. Literature on Measures of Financial Inclusion

Financial inclusion refers to the ongoing process of providing safe, suitable, and reasonably priced basic formal financial services to every individual in an economy, ensuring their access and use (Jin, 2022). According to (Monye, 2023), the concept of financial inclusion encompasses crucial aspects such as quality, convenience, availability, affordability, and dignity. In the development of inclusive financial models, it is essential to ensure that they still are within the financial reach of the intended users and avoid compromising on quality or creating a cumbersome system. Neglecting these factors would defeat the primary goal of fostering financial inclusion. In fact, (Ozili, 2020) defines financial inclusion as the systematic effort to provide access to essential financial services within the formal financial sector, with a particular focus on ensuring accessibility for individuals, especially those who are economically disadvantaged.

To date, financial inclusion gained the interest of academics and policy-makers due to its necessity to make an inclusive financial system. The significance of this focus is well-founded, as financial inclusion contributes to the advancement of 7 out of the 17 sustainable development goals established by the United Nations (Monye, 2023). Financial inclusion stands as a crucial and indispensable driver of sustainable development, based on the hypothesis that bolstering financial inclusivity is essential for reaching sustainable economic progress. By promoting socially inclusive growth and diminishing income inequality, financial inclusion plays a pivotal role in fostering sustainable development. Most studies contend that achieving financial inclusion can be realized by emphasizing financial literacy, financial innovation, financial technology, and other related factors.

As financial inclusion is characterized by various definitions, it is also assessed through diverse methodologies, figuring out an individual's banking status, formal inclusion, informal sector inclusion, or complete exclusion from financial services. Previous research on gauging the levels of financial inclusion can be categorized into three perspectives: from the demand side, the supply side, or both (Jin, 2022).

In one hand, most of studies tries to measure financial inclusion by focusing on some indicators like formal account ownership, use of formal savings, use of credit (Jin, 2022). Our primary emphasis lies in deposit account usage for distinct reasons, even though formal financial institutions present a wide range of financial services. One compelling parameter is the consistency of account ownership across countries, which differs from credit services that may vary in terms of maturity, interest rates, collateral requirements, and other factors (Allen et al., 2016). Account ownership forms a fundamental gateway for people to access an array of financial services. In addition to formal account ownership, we need to be interested about the frequency use of this account, because individuals create their owner account without using it and that can distort the reliability of the first indicator. The second parameter is the use of formal savings; this parameter serves to describe individual's saving behavior. Specifically, who have saved their

funds in general over the last 12 months. The final parameter relates to the use of formal credit, gathering data on the purpose and origin of borrowing, as well as the usage of credit cards.

In the second hand, (Sarma, 2008) introduces a comprehensive index of financial inclusion that employs a multidimensional approach, considering three key aspects to assess the extent of financial inclusion in different economies at a given point in time. This financial inclusion index has gained significant traction in most studies, as it allows researchers to explore empirical inquiries related to the connections between diverse factors and the advancement of financial inclusion. Furthermore, it serves as a valuable tool for tracking the advancements made in incorporating individuals and businesses into the financial system of an economy. The measurement of financial inclusion is dissected into three principal dimensions, namely banking penetration, the accessibility of banking services, and the use of these services. Banking penetration forms a crucial dimension in the assessment of financial inclusion. Its primary goal is to gauge the extent of the banked population, specifically measuring the number of individuals who own a bank account. The higher banking penetration rate, the greater the number of individuals who can receive help from and take part in the formal financial system, fostering economic development and empowerment for a more inclusive society. This metric is assessed by calculating the ratio of total bank account numbers to the overall population. Concerning the accessibility of banking services, it denotes the ease with which customers can access these services, commonly referred to as bank density. Bank density can be gauged through the number of bank branches and/or ATMs per 1,000 population or the number of bank employees per customer (Sarma, 2008). The final aspect of financial inclusion is the use of banking services, a dimension that addresses the issue of underbanked individuals, as highlighted below. Simply having a bank account does not suffice for a truly inclusive financial system. Instead, the focus is on the adequate and regular usage of banking services. Typical indicators used to measure this dimension encompass various fundamental financial services, including payments, savings, and borrowing.

These indicators can be approximated by either the volume of loans and deposits in relation to the country's Gross Domestic Product (GDP) or by the number of bank borrowers and depositors per 1000 adults (Sarma, 2008; Jin, 2022). By checking the use of banking services, we gain insights into how effectively the financial system is serving the diverse needs of the population. Higher levels of service usage show a more inclusive financial environment, where individuals and businesses can fully take part in economic activities, foster savings, and access credit opportunities, thereby contributing to overall financial stability and growth.

In Morocco and according to Bank Al-Maghrib, in 2019, the bank penetration rate was projected to exceed 78%. Nevertheless, when factoring in individuals with multiple accounts and focusing solely on the adult population, this rate

would range between 34% and 54%, depending on the chosen calculation method. Since 2013, there has been a 26 percent increase in the number of bank accounts and a 32% increase in the number of bank cards. Presently, Morocco boasts approximately 13.8 million bank accounts, but a staggering 10 million Moroccan adults still lack access to a bank account.

The data reveals that in 2017, nearly 80% of men held at least one bank account, whereas only 40% of women did so (FSB, 2018). This discrepancy can be partially attributed to the limited involvement of women in Morocco's labor market, which stood at less than 23%. Similarly, disparities in account ownership were seen between urban (80%) and rural (30%) areas. These statistics underscore the exclusion of various population segments that could potentially become customers of Moroccan banks. Furthermore, a considerable proportion of personal accounts that are opened serve primarily as channels for receiving salary payments or pensions and for making withdrawals. In fact, irrespective of the extent of banking services available, the rate of payments conducted through these accounts stays notably low. However, it's worth noting that 77% of adults without bank accounts possess a mobile phone, with 42% of them owning smartphones. Furthermore, 91% of Moroccan adults with inactive accounts have access to a mobile phone.

The concept of financial inclusion, as defined by Jin (2022), involves an ongoing process that aims to provide safe, suitable, and reasonably priced formal financial services to every individual in an economy. Monye (2023) elaborates on crucial aspects such as quality, convenience, availability, affordability, and dignity within this context. Financial inclusion has gained academic and policy-maker interest due to its relevance to seven out of the 17 United Nations sustainable development goals. This study explores financial inclusion through various dimensions, emphasizing the significance of banking penetration, accessibility of banking services, and the use of these services. In Morocco, despite a reported bank penetration rate exceeding 78% in 2019, disparities exist among population segments, with certain groups, especially women and those in rural areas, experiencing limited access to banking services. The study highlights the need for effective service usage to create a more inclusive financial environment and addresses the challenges and opportunities for enhancing financial inclusion in Morocco.

3.2. The Literature on the Factors Influencing the Adoption of FinTech

Nowadays, the use of technology is essential. Technology is a fundamental pillar for the economic, social, and cultural development of the society. It's understood as the application of materials, tools and new processes to the different activities, which are daily done (Barroso & Laborda, 2022). The recent technological activity in the financial industry has led to the entrance of new agents in the market, known as FinTech. The term comes from the association of the words Finance

and Technology. As defined by the Financial Stability Board (FSB), FinTech companies encompass technologically enabled innovations within financial services that have the potential to introduce novel business models, applications, processes, or products, exerting a substantial impact on financial markets, institutions, and the delivery of financial services (FSB, 2018). According to (Amer & Buckley, 2015) FinTech is defined as technology-enabled entities delivering financial services ordinarily believed to have been provided by banks. To respond to changing competitive environment and the FinTech boom, Banks have adopted a separate way of innovating and digitalized their operations to create a much leaner and faster operation.

Among the main challenges that slow down the wheel of innovation within banks are the technological infrastructures that are inadequate for the changes that generate extremely high costs. This has encouraged the explosion of entrepreneurship and improved the culture of creating startups as a window for FinTech companies. This implies that a growing number of banks are establishing venture capital funds specifically dedicated to supporting FinTech initiatives, and in certain instances, pursuing acquisition strategies (Iluba & Phiri, 2021). This stance is driven by banks' strategic efforts to address the competitive challenge posed by FinTech companies. Consequently, banks have embarked on the quest to discover more efficient channels for serving their clientele. Traditional banks have found themselves under increased pressure, as FinTech firms use innovative technology to supply commercial and corporate banking products and services, thereby enhancing the customer experience.

The technological evolution of the banking sector has sparked considerable scholarly debate in recent times, leading to numerous studies examining the substantial growth of digital banking in recent years (Ligon et al., 2019; Mhlanga & Denhere, 2020; Kaur et al., 2021). Recent research has investigated the variables influencing the adoption of digital banking across various countries (Montazemi & Qahri-Saremi, 2015; Zins & Weill, 2016; Ege Oruç & Tatar, 2017; Alalwan et al., 2018; Matthews, 2019). Digital banking offers advantages to customers by easing enhanced and swift delivery of financial products, while also reducing transactional costs for banks. This, in turn, boosts their profitability, cost savings, and the overall quality of service provided to customers (Alnemer, 2022).

Concerning corporate finance and accessibility to financing, Morocco's ranking is low when compared to countries with a similar level of development, standing at approximately 100 out of 180 countries according to the World Bank's "Doing Business" criteria in 2021. Consequently, small, and even medium-sized enterprises in Morocco encounter challenges in securing credit from local banks. During the initial phases of business establishment, the primary sources of funding are typically family members, friends, or colleagues (constituting 45 percent), followed by banks and financial institutions (at 17 percent), and government programs and grants (making up eight percent) as per data from (The World

Bank, 2019).

The issue of financial exclusion is particularly pronounced at the micro level, affecting small businesses, those with limited revenue streams, and those who lack confidence in the banking system. Despite efforts to improve the situation, accessing financing still is a significant hurdle for small enterprises. Bank loans often entail high collateral requirements, which are seen as particularly burdensome for the smallest firms. Lastly, the private credit to GDP ratio hovers around 73 percent, while household credit to GDP stands at around 31 percent in Morocco.

Since the privatization of Morocco's telecommunications infrastructure in the early 1990s and later regulatory reforms in the mobile sector, the country's digital landscape has experienced significant changes. These developments have led to a notable surge in the number of Internet users. As of early 2023, Morocco boasted a total of 33.18 million Internet users, which accounted for an Internet penetration rate of 88.1%. This stood for an increase from the previous year when the penetration rate was 84%. Furthermore, there were 21.30 million active social media users in Morocco, making up 56.6% of the total population. Additionally, the country had 50.19 million active mobile connections, which surpassed the population itself at 133.3%. Despite these impressive statistics, there still exists a digital divide between rural and urban areas, with variations in network access quality. Between 2022 and 2023, the number of Internet users in Morocco increased by 341 thousand, marking a growth rate of 1.0%. However, at the beginning of 2023, there were still 4.47 million people, equivalent to 11.9% of the population, who did not have access to the Internet (Kemp, 2023).

These statistics show the potential for using mobile platforms to encourage more active account usage across various demographics. Capitalizing on this opportunity could facilitate access to mobile money accounts and other financial services from remote locations (Abdelkhalek et al., 2021).

The contemporary era emphasizes the crucial role of technology as a fundamental pillar for the economic, social, and cultural development of society. This involves the application of materials, tools, and new processes to daily activities, with recent technological advancements leading to the emergence of FinTech, denoting the integration of finance and technology. FinTech companies, driven by technologically enabled innovations, present a challenge to traditional banks, prompting the latter to adopt innovative digital strategies. However, banks face challenges in innovation due to inadequate technological infrastructures. This has fostered entrepreneurship and the startup culture, with banks establishing venture capital funds to support FinTech initiatives. The evolution of technology in the banking sector has sparked scholarly debate, particularly regarding the substantial growth of digital banking. In Morocco, the digital landscape has witnessed significant changes, with a notable surge in Internet users, active social media users, and mobile connections. Despite these advancements, a digital divide persists between rural and urban areas. Leveraging mobile platforms holds

potential for encouraging active account usage and facilitating access to financial services, especially in remote locations.

4. Methodology

The research methodology outlines the approach employed for data collection to address the research questions (Saunders, Lewis, & Thornhill, 2012). For this study, a quantitative research design was chosen. Aliaga and Gunderson (2002) define quantitative research as a method of explaining phenomena by gathering numerical data that are then analyzed using mathematical techniques. (Durbarry, 2017) suggests that quantitative research is particularly suitable for testing hypotheses when the researcher seeks not only to figure out if there is a relationship between variables but also to understand the nature of that relationship.

Given the substantial population of FinTech users in Morocco, (Cochran, 1977) provides a mathematical formula to determine a sample size that accurately represents the entire population, especially when the population size is too vast to consider comprehensively. In this study, a convenient non-probability sampling method was employed to randomly select the sample. The sampling frame consisted of Moroccan SMEs who used a financial technology. Respondents were selected based on the researcher's judgment, and the sample size was figured out using a statistical formula:

$$N_o = \frac{z^2 P(1-P)}{e^2}$$

The sample size (denoted as "No") is figured out using the following factors:

- "Z" stands for the two-tailed area under the normal curve at a significance level (α) of 0.05, with a corresponding z value of 1.96.
- " e^2 " denotes the acceptable sampling error.
- " p " is the assumed population proportion with a desired attribute, often assumed to be 0.5 to maximize the sample size.

With these values and an acceptable sampling error of 5%, the sample size was calculated to be 385. These 385 SMEs were then administered questionnaires using a convenient sampling method, with the target group being bank account holders and FinTech users.

The SMEs responding were chosen based on their ability to offer constructive and pertinent contributions that would enhance the value of the study's topic and structured questionnaires were dispensed to collect primary data from them.

The questionnaire was constructed following the conceptual model mentioned above, which draws from the Diffusion of Innovation Model. It was organized into distinct sections, with the first part primarily centered on collecting demographic information from the respondents. The next section concentrated on exploring the adoption of technological innovations and employed variables from the Diffusion of Innovation model to formulate the questions. The last sec-

tion aims to gauging the perceptions of respondents about the adoption of Decentralized Finance (DeFi) in Morocco.

The data analysis involved both basic descriptive statistics and inferential statistics, particularly using Pearson Correlation. The Statistical Package for Social Sciences (SPSS) software was employed for data analysis. The results were visually presented through charts and tables to ease comprehension.

5. Results and Discussion

This section supplies an overview of the study's findings, focusing on the demographic characteristics of the sample population being investigated and its correlational analysis. The perspectives on possibilities of implementing DeFi in Morocco are also presented in this section.

5.1. Demographic Characteristics

The sample size was composed of males, accounting for 77%, while the remaining 23% were females (as illustrated in **Figure 2**).

50% of the respondents fell within the age group of 30 - 39, while 32% were in the age range of 18 - 29. There were also respondents in the age groups of 40 - 59 and more than 60 years old were respectively at 14% and 4% (as illustrated in **Figure 3**).

As depicted in **Figure 4**, the educational level of managers is presented. The results show that 45% of respondents have a university level education, followed by 32% of managers who have completed high school. Additionally, 14% of managers have a college-level education, while 9% have an education at the primary level.

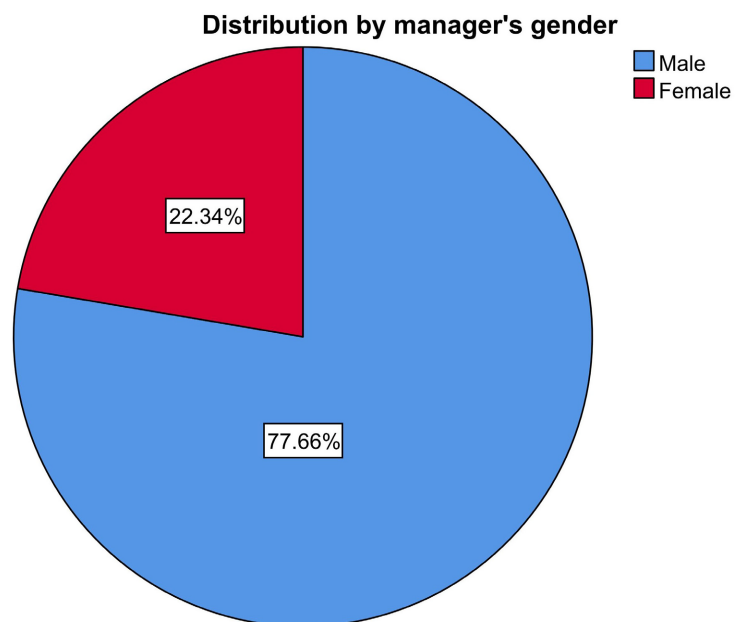


Figure 2. Gender distribution.

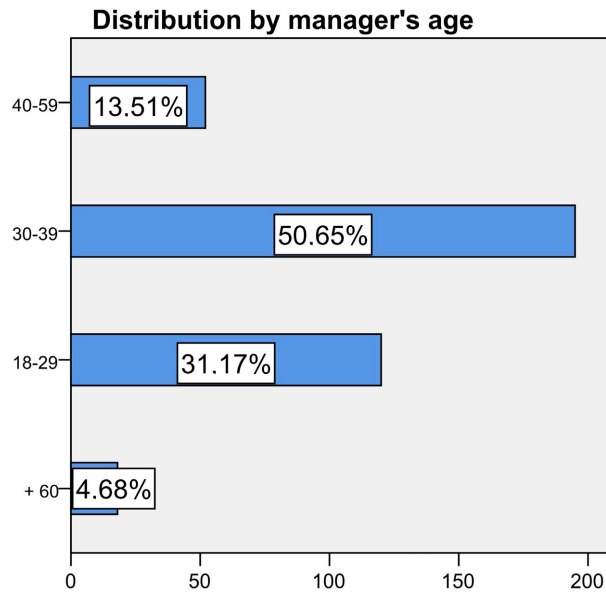


Figure 3. Age distribution.

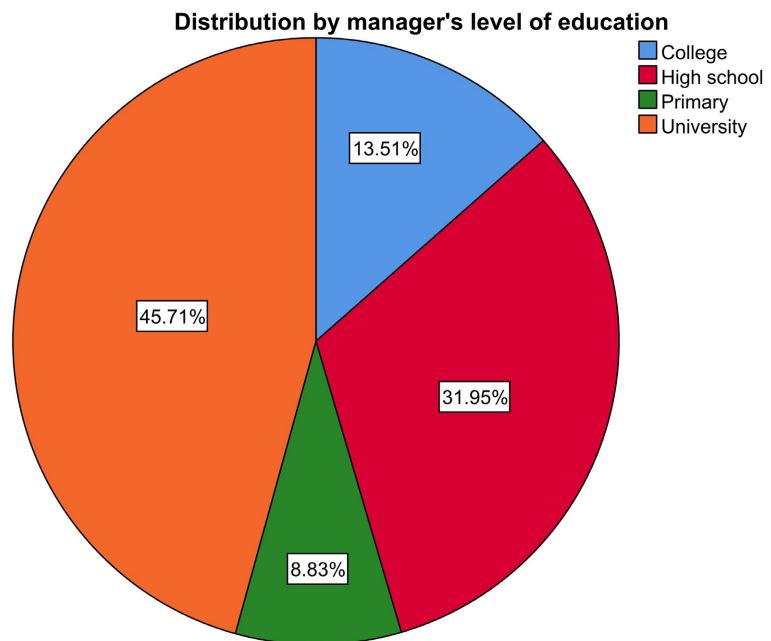


Figure 4. Level of education distribution.

The surveyed population was asked about the frequency of their technology usage in their daily lives. The results show that 59% of them often use technology in their daily lives, while 18% use technology occasionally. Furthermore, 14% of the respondents use technology very often in their daily lives, while 9% only use technology rarely.

5.2. Correlation Analysis

After completing a correlational analysis, the findings on the hypothesis are as

follows: To figure out the significance of the results, a test was applied, which says that if the p -value ≤ 0.05 or 0.04 , the research hypothesis should be accepted. However, if the p -value > 0.05 or 0.01 , the research hypothesis should be rejected. The choice between 0.05 and 0.01 as the significance level depends on the size of the p -value. If the p -value is small, 0.01 is used, while if the p -value is relatively larger, 0.05 is used.

The provided **Table 1** shows a significant relationship between “Relative Advantage” and “Adoption”. This is clear from the extremely low p -value of 0.000 , which is less than the standard significance level of 0.01 . Additionally, the study shows a strong positive correlation of 0.323 between “Relative Advantage” and “Adoption”.

Table 2 presented clearly shows a significant relationship between “Trialability” and “Adoption”. This is supported by the remarkably low p -value of 0.000 , which is well below the conventional significance threshold of 0.01 . Furthermore, the study reveals a positive correlation of 0.277 between “Trialability” and “Adoption”.

The provided **Table 3** shows a significant relationship between “Compatibility” and “Adoption”. This is clear from the low p -value of 0.003 , which is less than the standard significance level of 0.01 . Additionally, the study shows a weak positive correlation of 0.152 between “Compatibility” and “Adoption”.

The study in **Table 4** shows a significant relationship between “Complexity” and “Adoption”. This is clear from the extremely low p -value of 0.000 , which is less than the standard significance level of 0.01 . Additionally, the study shows a positive correlation of 0.324 between “Complexity” and “Adoption”. Furthermore, this positive correlation can be explained by the questions posed in the study, which aimed to investigate how reducing the complexity of technologies can enhance the use of the latest innovations. The findings suggest that as the perceived complexity decreases, there is an increased tendency for individuals to adopt and embrace these newer technologies.

Table 5 presented clearly shows a significant relationship between “Observability” and “Adoption”. This is supported by the remarkably low p -value of 0.000 , which is well below the conventional significance threshold of 0.01 . Furthermore, the study reveals a positive correlation of 0.265 between “Observability” and “Adoption”.

5.3. Perspectives of DeFi in Morocco

According to our research, which was carried out on a sample of small and medium-sized enterprises in Morocco, with the goal of evaluating the factors affecting their adoption of technology and their perception of decentralized finance, we have noted that 77% of the surveyed population has not been exposed to the term “DeFi” or decentralized finance, as depicted in **Figure 5**. In contrast, 23% of the respondents have already met this term and have a comprehension of its characteristics, associated risks, and potential opportunities.

Table 1. Correlational analysis between relative advantage and adoption.

Correlations			
		Relative Advantage	Adoption
Relative Advantage	Pearson Correlation	1	0.323**
	Sig. (2-tailed)		0.000
	N	385	385

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

Table 2. Correlational analysis between trial ability and adoption.

Correlations			
		Trialability	Adoption
Trial ability	Pearson Correlation	1	0.277**
	Sig. (2-tailed)		0.000
	N	385	385

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

Table 3. Correlational analysis between compatibility and adoption.

Correlations			
		Compatibiliy	Adoption
Compatibility	Pearson Correlation	1	0.152**
	Sig. (2-tailed)		0.003
	N	385	385

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

Table 4. Correlational analysis between complexity and adoption.

Correlations			
		Complexity	Adoption
Complexity	Pearson Correlation	1	0.324**
	Sig. (2-tailed)		0.000
	N	385	385

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

Table 5. Correlational analysis between observability and adoption.

Correlations			
		Observability	Adoption
Observability	Pearson Correlation	1	0.265**
	Sig. (2-tailed)		0.000
	N	385	385

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

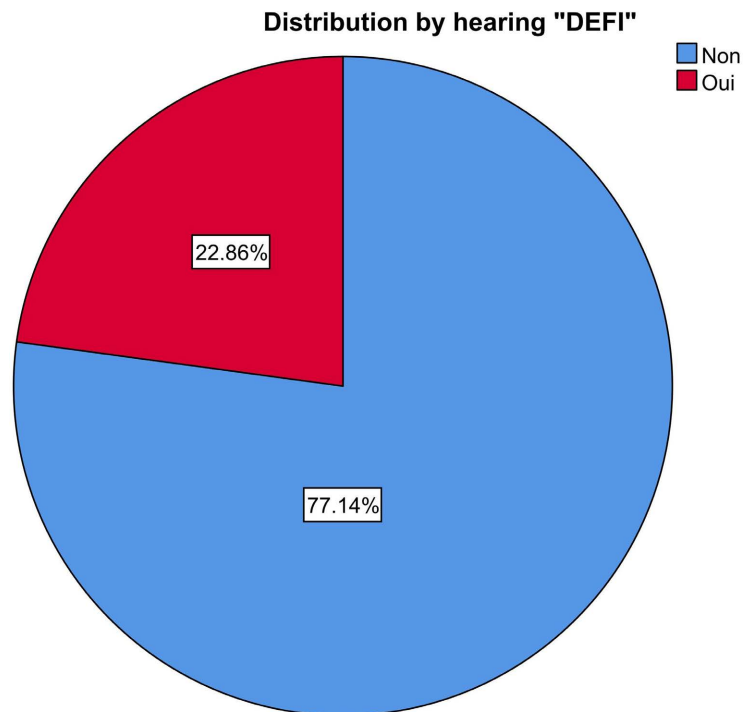


Figure 5. Distribution by hearing “DeFi”.

Most respondents who are already familiar with decentralized finance tend to define it primarily by its “decentralized” characteristic. They suggest that it embodies a virtual financial system that works independently from central banks, and it is confined to digital currencies accessible exclusively through sophisticated applications. These applications help users in engaging in online buying and selling worldwide at their convenience.

Following this study as presented in **Figure 6**, 64% of Moroccan small and medium-sized enterprises keep a neutral stance on the feasibility of introducing decentralized finance (DeFi) in Morocco. This perspective is contingent upon competent authorities setting up a supportive infrastructure for DeFi. Conversely, 22% and 9% show a higher degree of confidence in the development of the necessary financial and regulatory framework for financial technologies and DeFi. In contrast, 5% hold serious concerns about the future of decentralized finance in Morocco.

The research establishes a significant relationship between “Relative Advantage,” “Trial Ability,” “Compatibility,” “Observability,” and “Adoption,” as indicated by an extremely low *p*-value. Positive correlations are identified, with a strong association between “Relative Advantage” and “Adoption”, a positive correlation between “Trialability” and “Adoption”, and a weak positive correlation between “Compatibility” and “Adoption”. Additionally, the study reveals a significant relationship between “Complexity” and “Adoption,” and a positive correlation. Furthermore, the study indicates that a significant portion of the surveyed population is unfamiliar with the term “DeFi”. Regarding the feasibility

Distribution by perspectives possibility of implementing DEFI in Morocco

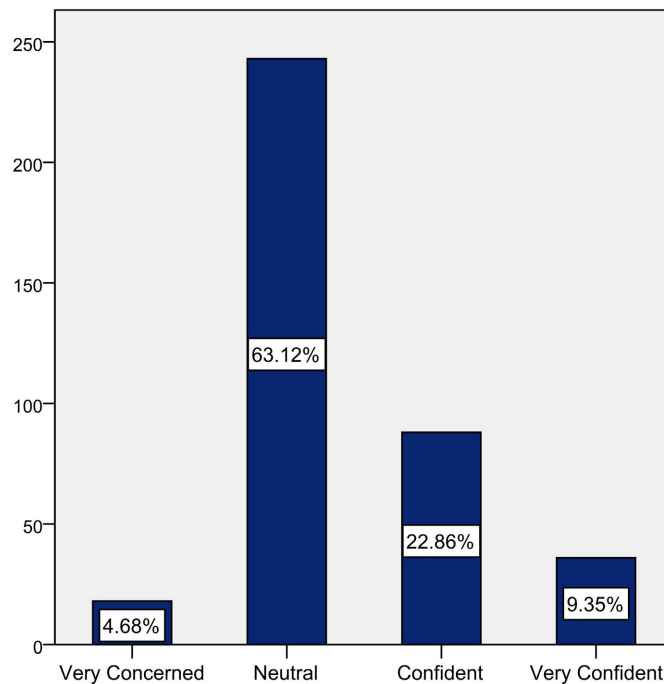


Figure 6. Distribution by perspectives on possibility of implanting DeFi in Morocco.

of introducing DeFi in Morocco, 64% of SMEs maintain a neutral stance, while 22% express confidence, and 9% harbor concerns about the financial and regulatory framework.

6. Conclusion and Recommendation

This study is being conducted within the Moroccan context, with the aim of surveying small and medium-sized enterprises. The goal is to find and evaluate the factors that influence the adoption of financial technologies among this population and to explore the prospects for adopting decentralized finance (DeFi) in Morocco.

The Diffusion of Innovation theory, as articulated by Rogers, offers a comprehensive framework for understanding the determinants of innovation success and the elements that foster the adoption of such innovations. The findings of the correlational analysis were grounded in the principles of this diffusion model, which served as the foundation for formulating hypotheses about the attributes that drive innovation adoption. After the completion of the correlational analysis, the study unveiled the following associations in alignment with the first hypothesis:

The study shows a significant relationship between “Relative Advantage”, “Trial-Ability”, “Compatibility”, “Observability” and “Adoption”. This is clear from the extremely low p -value of 0.000, which is less than the standard significance level of 0.01.

The study shows a strong positive correlation of 0.323 between “Relative Advantage” and “Adoption”. Additionally, it reveals a positive correlation of 0.277 between “Trial Ability” and “Adoption”. Furthermore, the study shows a weak positive correlation of 0.152 between “Compatibility” and “Adoption”. The study also reveals a positive correlation of 0.265 between “Observability” and “Adoption”.

The study shows a significant relationship between “Complexity” and “Adoption”. This is clear from the extremely low p -value of 0.000, which is less than the standard significance level of 0.01. Additionally, the study shows a positive correlation of 0.324 between “Complexity” and “Adoption”. Furthermore, this positive correlation can be explained by the questions posed in the study, which aimed to investigate how reducing the complexity of technologies can enhance the use of the latest innovations. The findings suggest that as the perceived complexity decreases, there is an increased tendency for individuals to adopt and embrace these newer technologies.

The study reveals that 77% of the surveyed population has not been exposed to the term “DeFi” or decentralized finance and most respondents who are already familiar with decentralized finance tend to define it primarily by its “decentralized” characteristic. They suggest that it embodies a virtual financial system that works independently from central banks, and it is confined to digital currencies accessible exclusively through sophisticated applications. These applications help users in engaging in online buying and selling worldwide at their convenience.

Following this study, 64% of Moroccan small and medium-sized enterprises keep a neutral stance on the feasibility of introducing decentralized finance (DeFi) in Morocco. 22% and 9% exhibit a higher degree of confidence in the development of the necessary financial and regulatory framework for financial technologies and DeFi. In contrast, 5% hold serious concerns about the future of decentralized finance in Morocco.

To promote financial inclusion among small and medium-sized enterprises (SMEs) in Morocco and encourage their first adoption of FinTech before the establishment of decentralized finance in the country, we recommend next suggested measures:

- Reducing Entry Barriers: Banks are encouraged to lower entry barriers by offering lower fees and free accounts for young entrepreneurs.
- Expanding Presence: Banks should consider expanding their branch networks and strengthening their presence in rural areas.
- Digital Outreach: Digital channels are considered the most suitable means to reach a considerable number of unbanked individuals.
- Digital Development Strategies: To promote digital development strategies by offering full digital account opening and everyday transactions.
- User Support: To ease the adaptation of potential FinTech users, supply illustrative capsules and demonstrative versions.

- Financial Education: The government and relevant authorities should actively promote financial education among the Moroccan population.

These recommendations aim to create an enabling environment for SMEs, foster financial inclusion, and prepare the groundwork for the eventual adoption of decentralized finance in Morocco.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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