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The Role of Digitalization in Improving the Performance of Microcredit Institutions in Morocco

ELBAKOUCHI MOUNIR
Laboratoire des sciences économiques et politiques publiques
FSJES
Ibnotofail – Kénitra - Maroc
NOURI KHALID
Laboratoire des sciences économiques et politiques publiques
FSJES
Ibnotofail – Kénitra - Maroc
LOULIDI LAMIAE
Laboratoire des sciences économiques et politiques publiques
FSJES
Ibnotofail – Kénitra - Maroc

Abstract: This research analyzes the impact of digitalization on the performance of microcredit institutions in Morocco. By focusing on the automation of operations, digital access, cybersecurity, and the expansion of mobile services and online platforms, the study evaluates how these dimensions influence efficiency, cost reduction, and financial inclusion in the microfinance sector.

Data was collected through interviews with executives and questionnaires sent to various key stakeholders within microcredit institutions. The data analysis, conducted using multivariate statistical tools, revealed that the digitalization of operations significantly improves operational efficiency by automating processes and reducing processing times. Digital access has expanded financial inclusion by facilitating access to services for marginalized populations, while cybersecurity enhances customer trust by protecting sensitive data.

The results show that the expansion of mobile services and online platforms reduces operational costs by decreasing reliance on physical branches and optimizing management processes. In conclusion, digitalization constitutes a crucial lever for improving the performance of microcredit institutions, with significant implications for efficiency, accessibility, and security. Institutions should continue to invest in these technologies to enhance their impact and support greater financial inclusion.

Keywords: Digitalization, Automation, Digital Access, Cybersecurity, Performance Improvement, Microcredit Institutions in Morocco.

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1. Introduction

The digitalization of financial services has radically transformed the global economic landscape, and its impact on microcredit institutions is particularly significant, especially in developing countries like Morocco. These institutions, which play a central role in the financial inclusion of marginalized populations, face structural challenges, particularly in terms of operational efficiency, risk management, and achieving profitability. In this context, digitalization emerges not only as an opportunity but also as a necessity to improve their performance and expand their reach.

Historically, microcredit institutions have operated within a largely manual framework, where administrative processes were not only time-consuming but also prone to errors. Digitalization now enables the streamlining of these processes by introducing technologies that automate administrative tasks, facilitate data collection and analysis, and thereby reduce human errors [1]. Thanks to these advancements, microcredit institutions can process a greater number of loan applications in a shorter time, which not only enhances their operational efficiency but also their ability to respond quickly to client needs.

Furthermore, reducing operational costs is another key advantage of digitalization. Digital technologies allow for the dematerialization of many operations that previously required costly physical infrastructure. For example, the adoption of mobile platforms and online banking solutions has enabled microcredit institutions to reduce their reliance on physical branches by offering remotely accessible services. This is particularly relevant in rural and remote areas of Morocco, where access to traditional financial services is limited [2]. The cost reduction associated with digitalization thus directly contributes to improving the financial performance of these institutions.

In addition, digitalization expands access to financial services by making them more inclusive. In a country like Morocco, where a significant portion of the population remains unbanked, the integration of digital technologies offers a viable solution to reach these segments of the population. Mobile financial services, for instance, allow clients to take out microloans, repay loans, and manage their accounts without having to travel. This fosters greater financial inclusion, particularly for marginalized populations who do not have access to traditional banking institutions [3].

Risk management is also an area where digitalization has a significant impact. Digital technologies facilitate the collection of accurate data on clients' financial behaviors, allowing for a more refined assessment of the risks associated with each loan. Real-time data analysis, made possible by digital platforms, enables microcredit institutions to make more informed decisions and minimize the risk of loan defaults [4]. Moreover, the increased traceability of digital transactions enhances transparency and customer trust, which is essential for the sustainability of microcredit institutions.

Finally, digitalization paves the way for continuous innovation in the products and services offered by microcredit institutions. For example, credit products tailored to the specific needs of small businesses or digital insurance products can be developed to meet the varied expectations of clients. These

innovations not only help retain customers but also attract new market segments, thereby strengthening the competitiveness of microcredit institutions in an increasingly digitized environment [1].

The purpose of this research is therefore to determine how digitalization, by altering operations, service access, and cybersecurity, influences the overall performance of microcredit institutions in Morocco. In other words, how do the different dimensions of digitalization affect the operational efficiency, cost reduction, and financial inclusion of these institutions?

This question aims to explore the direct relationships between the dimensions of digitalization and the performance of microcredit institutions, with a focus on efficiency, cost reduction, and financial inclusion. It seeks to provide answers on how these factors contribute to improving the operations and outcomes of microcredit institutions in a constantly evolving digital environment.

2. Literature Review

2.1. Digitalization: Definition and Context

Digitalization, a powerful driver of transformation across various sectors, refers to the integration of digital technologies into organizational, economic, and social processes. It signals a new era where data and digital tools become essential engines of change.

2.1.1. Definition of Digitalization in the Financial Sector

Digitalization in the financial context refers to the integration of digital technologies into banking and financial processes, enabling the dematerialization of services traditionally provided in person or on paper. This digital transformation includes the use of online platforms, mobile applications, online banking services, and fintech solutions, which allow for the automation and simplification of financial services. According to a study by [5], digitalization has revolutionized the financial sector by making services more accessible, faster, and often less costly for both customers and financial institutions.

The term "fintech" refers to the application of technology to improve financial activities. These innovations have enabled the creation of personalized financial services based on the individual needs of clients, using advanced algorithms and big data analytics. Thus, digitalization is not limited to the mere automation of existing services but also includes innovation and the creation of new financial products [6].

2.1.2. Context of Digitalization in Morocco

In Morocco, the digitalization of financial services is rapidly expanding, supported by public policies aimed at encouraging financial inclusion and modernizing the banking sector. The Moroccan government, in collaboration with Bank Al-Maghrib and the National Telecommunications Regulatory Agency (ANRT), has implemented several initiatives to promote the use of digital technologies in the financial sector. Among these initiatives is the development of mobile payment services, which allow users to conduct financial transactions via their mobile phones a particularly advantageous technology in rural areas where access to bank branches is limited [7].

The country's digital infrastructure has also seen significant improvements, with increased internet coverage and better access to communication technologies, even in remote regions. These advancements have strengthened the adoption of digital financial services by an increasingly connected population. In 2022, Morocco had over 30 million mobile phone users, many of whom utilize mobile banking services [8].

However, despite these advances, the full digitalization of the Moroccan financial sector still faces several challenges, including resistance to change from some traditional institutions and the need for adequate regulation to govern these new practices. According to [9], a clear legal framework and consumer protection measures are essential to ensure the safe and effective adoption of digitalization in the Moroccan financial sector.

In summary, digitalization in Morocco represents a significant opportunity to improve access to financial services and enhance the efficiency of financial institutions. Ongoing efforts to modernize the digital infrastructure and encourage the adoption of innovative technologies are crucial to the success of this transformation.

2.2. Impact of Digitalization on the Operations of Microcredit Institutions

The digitalization of microcredit institutions has significantly transformed their operational dynamics, enhancing efficiency, expanding outreach, and enabling more streamlined processes. By leveraging digital tools, these institutions are able to provide more accessible financial services, particularly to underserved populations.

2.2.1. Improvement of Operational Efficiency

Digitalization plays a crucial role in enhancing the operational efficiency of microcredit institutions in Morocco. By integrating advanced digital technologies, these institutions can optimize their internal processes and provide faster and more reliable services to their clients

- Automation of Administrative Processes

The automation of administrative processes is one of the main benefits of digitalization. Manual and repetitive tasks, such as data entry, client file management, or transaction tracking, are now performed by computerized systems, reducing the risk of human errors and improving the accuracy of operations [10]. For instance, the use of integrated management software allows for the centralization and real-time updating of client information, facilitating decision-making and coordination among different branches of a microcredit institution.

Additionally, automation helps free up human resources that can be reallocated to higher-value activities, such as personalized financial advice or the development of new products and services. This not only enhances operational efficiency but also improves the quality of service provided to clients [11].

- Reduction of Loan Application Processing Time

Digitalization also significantly reduces the processing time for microcredit applications. Through online platforms and mobile applications, clients can submit their loan applications quickly and easily,

without the need to physically visit a branch [12]. Digital systems automatically assess applicants' creditworthiness using predictive algorithms and up-to-date databases, which speeds up the approval and disbursement process.

This quick processing is crucial to meeting the urgent needs of micro-entrepreneurs and low-income individuals, for whom rapid access to financing can be vital for the survival and growth of their economic activities [13]. Therefore, reducing processing times enhances client satisfaction and strengthens the competitiveness of microcredit institutions in the financial market.

2.2.2. Cost Reduction

The digital transformation of microcredit institutions' operations significantly contributes to reducing operational costs, thereby allowing for a more efficient allocation of financial and human resources.

- Dematerialization of Services and Reduction of Dependence on Physical Branches

The dematerialization of financial services through digitalization reduces the need to maintain a large network of physical branches, resulting in notable reductions in costs related to infrastructure, maintenance, and personnel [14]. Clients can access financial services via digital channels such as websites, mobile apps, or USSD services, offering increased accessibility and improved convenience.

This shift to digital services is particularly beneficial in rural and remote areas of Morocco, where establishing and maintaining physical branches is often costly and logistically challenging. By reducing dependence on physical infrastructure, microcredit institutions can extend their geographic reach while keeping operational costs low [15].

- Examples of Mobile Services and Online Platforms

In Morocco, several microcredit institutions have adopted innovative mobile solutions to provide financial services to their clients. For instance, the "M-Wallet" platform allows users to perform financial transactions, check their balances, and repay their loans directly from their mobile phones [16]. These mobile services reduce transaction costs for both clients and institutions, while improving the speed and efficiency of the services provided.

Furthermore, the use of online platforms facilitates the management and monitoring of loan portfolios, providing institutions with better visibility into their financial operations and allowing for more informed and proactive decision-making [17]. These technologies help create a more agile and resilient financial ecosystem, capable of rapidly adapting to market changes and client needs.

2.2.3. Improvement of Risk Management

Digitalization provides microcredit institutions with powerful tools to enhance the management of risks associated with their lending activities, by strengthening their ability to assess and monitor risks more accurately and proactively.

- Real-Time Data Collection and Analysis

Digital technologies enable the collection and analysis of vast amounts of data in real time, providing institutions with valuable insights into clients' financial behaviors and risk profiles [18]. The use of predictive analytics and advanced credit scoring models helps identify potentially risky clients and adjust loan conditions accordingly, thereby reducing exposure to defaults. Moreover, the availability of real-time data facilitates the early detection of negative trends and anomalies in loan portfolios, allowing institutions to implement quick and effective corrective measures [19]. This data-driven approach enhances the robustness and resilience of microcredit operations in the face of economic and financial uncertainties.

- Loan Monitoring and Reduction of Default Rates

With digital systems, microcredit institutions can ensure continuous and accurate monitoring of granted loans, tracking repayment deadlines and sending automated reminders to clients [20]. These monitoring mechanisms improve repayment discipline and help reduce default rates.

Furthermore, digital platforms facilitate communication between institutions and clients, enabling transparent and efficient information exchange. Clients can easily access their loan information, request adjustments, or report payment difficulties, which promote proactive and collaborative management of credit risks [21].

2.3. Expansion of Financial Access through Digitalization

Digitalization has played a pivotal role in expanding financial access, particularly for underserved communities, by offering more inclusive and accessible financial services. Through digital platforms and innovations, microcredit institutions can reach a broader clientele, overcoming traditional barriers to financial inclusion.

2.3.1. Financial Inclusion and the Unbanked Population

Digitalization plays a crucial role in financial inclusion, particularly for unbanked populations, which represent a significant portion of the population in Morocco. By facilitating access to financial services, digitalization helps reduce economic inequalities and promotes more equitable economic development.

- Increased Access to Services for Rural and Marginalized Populations

Rural and marginalized populations have historically been excluded from the traditional financial system due to various barriers, including geographical remoteness, distrust of financial institutions, and the high cost of conventional banking services. Digitalization has overcome these barriers by providing financial solutions accessible through digital platforms, including mobile phones [21].

With the growing adoption of mobile banking, individuals in remote areas can now access basic financial services such as money transfers, bill payments, and savings without having to visit a physical bank branch [22]. In Morocco, where over 40% of the population lives in rural areas, mobile banking usage has experienced exponential growth, supported by government initiatives aimed at promoting financial inclusion [23].

A notable example is the "Maroc Digital 2025" initiative, which aims to extend the coverage of digital financial services across the entire national territory. This initiative has connected many rural communities to financial services for the first time, providing them with economic opportunities that were previously inaccessible [24].

- Example of Mobile Banking Usage in Morocco

The example of mobile banking in Morocco illustrates how digitalization can transform access to financial services. Platforms such as "MobiCash" and "WafaCash" allow users to perform financial transactions directly from their mobile phones, including bill payments, money transfers, and even instant microloans [25].

These services are particularly beneficial for unbanked populations who would otherwise have no access to formal financial services. Mobile banking has enabled millions of Moroccans to join the financial system, providing them with tools to better manage their personal finances and develop their economic activities [26]. Additionally, the ease of use and 24/7 availability of these digital services make them an ideal solution for rural areas where access to bank branches is limited.

2.3.2. Personalization of Services

In addition to expanding access to financial services, digitalization allows for greater personalization of offerings, addressing the specific needs of different customer segments. This customer-centric approach enhances satisfaction and engagement, while opening new opportunities for microcredit institutions.

- Tailored Offers for Different Customer Segments

The ability of microcredit institutions to collect and analyze large amounts of data through digital tools enables them to better understand their customers' needs and behaviors. This information is used to design personalized financial products tailored to the specific needs of each customer segment, whether it be micro-entrepreneurs, women entrepreneurs, or young individuals seeking to finance their education [27].

For example, institutions can offer microloans with flexible repayment terms suited to the income cycles of farmers or seasonal traders [28]. Similarly, financial education programs can be developed for youth and women, providing them with the knowledge needed to manage their finances effectively and succeed in their ventures.

- Development of New Financial Products (Credit, Insurance, Savings)

Digitalization has also facilitated the development of new financial products, addressing needs that were previously unmet by traditional financial sectors. For instance, digital micro-insurances allow vulnerable populations to protect themselves against specific risks, such as natural disasters or health emergencies, at affordable costs [29].

Additionally, digital savings solutions have been introduced, enabling clients to save small amounts of money regularly and securely, directly via their mobile phones. These savings products are often associated with incentives such as preferential interest rates or bonuses for regular deposits, thereby encouraging savings among low-income populations [30].

These innovations demonstrate how digitalization can be a catalyst for financial inclusion by offering financial products tailored to diverse customer needs and facilitating access to services that were once reserved for urban elites. The development of these digital financial products contributes not only to financial inclusion but also to economic stability by providing risk management mechanisms and investment opportunities to a broader segment of the population.

2.4. Challenges and Risks Associated with Digitalization

While digitalization offers numerous benefits, it also presents significant challenges and risks for microcredit institutions, including cybersecurity threats, data privacy concerns, and the potential for digital exclusion. Navigating these complexities requires a careful balance between innovation and the protection of both institutional and client interests.

2.4.1. Technological and Cybersecurity Risks

The digitalization of financial services, while offering numerous benefits, also exposes microcredit institutions to technological and cybersecurity risks. These risks must be carefully managed to protect clients and ensure the sustainability of operations.

- Vulnerability to Cyberattacks

One of the primary concerns associated with digitalization is increased vulnerability to cyberattacks. As microcredit institutions digitize their operations, they become potential targets for cybercriminals who may attempt to compromise IT systems to steal sensitive data or disrupt financial services [31]. In Morocco, several cybersecurity incidents have been reported, highlighting the need for institutions to bolster their defenses against digital threats [32].

Cyberattacks can lead to significant financial losses, damage the institution's reputation, and decrease client trust in digital services. To mitigate these risks, it is crucial for microcredit institutions to invest in advanced cybersecurity technologies, such as data encryption, intrusion detection systems, and enhanced authentication protocols [33].

- Protection of Client Data

Protecting client data is another major challenge faced by microcredit institutions in the digital age. With the collection and processing of large amounts of personal and financial data, institutions must ensure that this information is stored and used securely, in compliance with data protection regulations [34].

Ensuring robust data protection involves implementing stringent security measures to prevent unauthorized access, data breaches, and misuse of sensitive information. Institutions must also educate their staff and clients about data privacy and security best practices to foster a culture of cybersecurity awareness and vigilance.

In Morocco, Law No. 09-08 on the protection of personal data imposes strict obligations regarding data management and security. Institutions are required not only to comply with these regulations but also to implement rigorous internal policies to prevent data breaches and privacy violations [35]. Failure to adhere to these standards can lead to severe legal penalties and damage client trust in digital services.

2.4.2. Obstacles to Digitalization Adoption

Although digitalization offers significant advantages, its adoption in the microcredit sector still faces several obstacles, both at the institutional and infrastructural levels.

- Resistance to Change within Institutions

Resistance to change is a key factor that slows the adoption of digitalization in some microcredit institutions. This phenomenon is often related to a conservative organizational culture where employees and leaders may be hesitant to adopt new technologies due to fear of the unknown or loss of control [36].

Moreover, digitalization requires organizational transformation, which involves not only adopting new technologies but also revising internal processes, training employees, and reorganizing governance structures. This complexity can provoke resistance and delay the implementation of digital innovations [37]. To overcome these obstacles, it is essential to establish change management programs and internal communication strategies that raise awareness among employees about the benefits of digitalization and engage them in the transformation process.

- Digital Infrastructure Issues in Certain Regions

Digital infrastructure or the lack thereof, is another major obstacle to the adoption of digitalization, especially in rural and remote areas of Morocco. In these regions, limited access to high-speed internet, stable electricity, and affordable digital equipment hinders the penetration of digital financial services [38].

Microcredit institutions thus face logistical and technical challenges in extending their digital services to these areas. Investments in telecommunications infrastructure, as well as partnerships with mobile operators and local agencies are necessary to address these challenges and ensure equitable access to financial services [39].

2.4.3. Regulation and Legal Framework

The digitalization of financial services requires an appropriate regulatory and legal framework to support its development and protect the interests of consumers and institutions.

- Need for an Appropriate Regulatory Framework to Govern Digitalization

The rapid pace of digital innovation presents significant challenges for regulators, who must balance promoting innovation with protecting consumers and ensuring financial stability. An appropriate regulatory framework is necessary to oversee the digitalization of financial services, ensuring the security of transactions, protection of personal data, and transparency of operations [40].

In Morocco, the regulation of digital financial services is still developing, although significant progress has been made in recent years. Regulators must continue to adapt and strengthen existing frameworks to address the new challenges posed by digitalization, while facilitating innovation and financial inclusion [41].

- Legislative and Regulatory Initiatives in Morocco

Morocco has undertaken several initiatives to strengthen the regulatory framework governing the digitalization of financial services. For example, Law No. 54-19 on e-commerce and payment services was adopted to regulate online transactions and protect consumers from fraud [42].

In addition, Bank Al-Maghrib has implemented specific guidelines for financial institutions to promote the security of digital systems and compliance with international data protection standards [43]. These initiatives reflect Morocco's commitment to creating a regulatory environment that fosters innovation while ensuring the stability and security of the financial sector.

3. Study Hypotheses

The study aims to identify the role of digitalization, expressed through the digitalization of operations (DO), digital access (DA), improved cybersecurity and data protection (CPD), and the expansion of mobile services and online platforms in microcredit institutions in Morocco, and its impact on improving their performance. The research hypotheses that were tested, using regression analysis, on a sample of 34 microcredit institutions in Morocco are:

-H1: The digitalization of operations (DO) has a direct positive impact on the operational efficiency of microcredit institutions in Morocco.

-H2: Digital access (DA) has a direct impact on expanding financial inclusion by increasing access to microcredit services for unbanked populations.

-H3: Improved cybersecurity and data protection (CPD) have a direct impact on customer trust, which results in increased satisfaction and performance of microcredit institutions (PMI).

-H4: The expansion of mobile services and online platforms enhances the performance of microcredit institutions in Morocco.

Based on these hypotheses, the conceptual model presented in Figure 1 offers a visual representation that illustrates the relationships and key elements involved in the context under study.

Conceptual Model

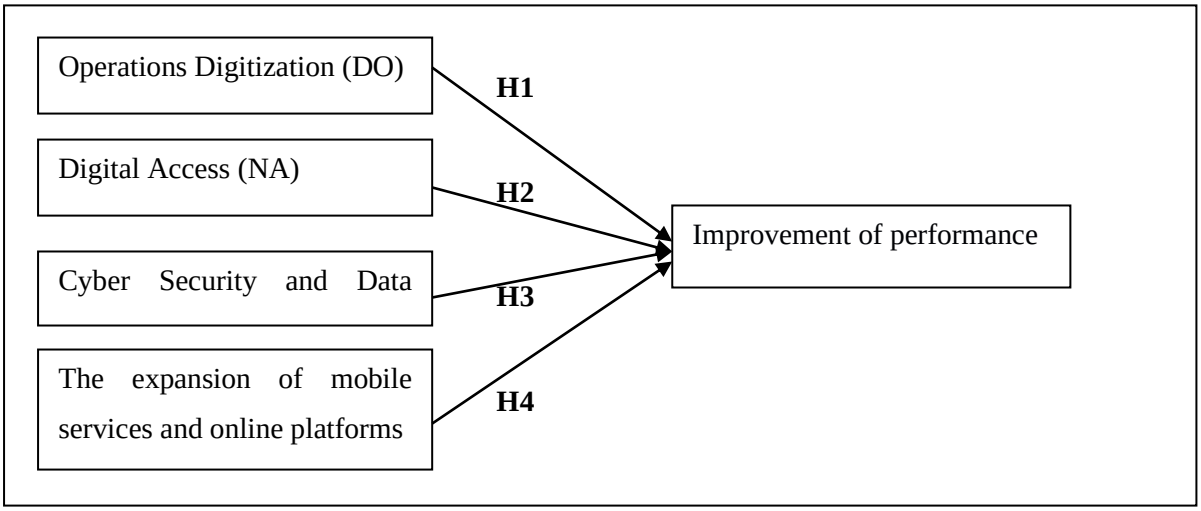

Figure 1: Conceptual Model

Throughout this work, this article explores the investigation of the impact of digitalization on performance improvement, using microcredit institutions in Morocco as the field of study.

4. Methods:

This section of the study describes the analytical techniques used to examine the models, variables, developing research hypotheses, and the interdependence between digitalization and performance improvement within microcredit institutions in Morocco.

4.1. Data Collection:

The data used in the empirical research described in this article were obtained through face-to-face interviews with executives from microcredit institutions in Morocco. These data focus on digitalization and digitization. In this context, it is important to note the absence of a documented database on digital transformation within these institutions. Moreover, this research places particular emphasis on the use of primary data. Therefore, we distributed a questionnaire covering various topics, in addition to the one examined in this article, to various stakeholders such as branch managers or supervisors (8.82%), general managers (14.70%), regional directors (26.47%), regional controllers and audit managers (20.59%), regional mission officers (17.65%), and credit sales managers (11.77%). It is worth noting that personal relationships played a decisive role in our research, facilitating the scheduling of appointments with targeted respondents. Using the questionnaire tool, we examined 34 of the initially targeted microcredit institutions, with a particular focus on those that went beyond basic digital transformation and had been in operation for one year or more.

4.2. Data Processing:

After receiving the data, a processing phase was carried out using two multivariate statistical tests, with the help of SPSS 25 software.

The first test included factor analysis, specifically principal component analysis (PCA), as well as Cronbach's alpha, to refine the measurement scales of the dependent variable in the conceptual model (the role of digitalization in improving performance in microcredit institutions in Morocco). At this stage, a clear factor structure was recorded for the two modes of this variable, exceeding the thresholds recommended by [44] in terms of reliability and validity of the measurement scales (Table 1).

Table1: Results of the validity and reliability of measurement scales

Components	**Alpha Cronbach**	**Items**	**% variance explained**	**no of items**
Operations Digitization (DO)	0,735	-Automatisation des processus administratifs -Réduction des délais de traitements -Intégration des systèmes numériques -Facilité d'utilisation des systèmes numériques	76,76%	4
Digital Access (NA)	0,748	-Utilization des services mobiles. -Plateformes en ligne. -Amélioration de l'infrastructure numérique. -Accessibility et formation des clients. -Portée Géographique des Services Numériques	74,56%	5
Cyber Security and Data Protection (CPD)	0,738	-Sécurité des Systèmes Numériques - Protection des Données Clients - Formation et Sensibilisation - Gestion des Incidents de Sécurité - Conformité Réglementaire	76,42%	5

The expansion of mobile services and online platforms	0,728	- Disponibilité des Services Mobiles - Portée des Plateformes en Ligne - Accessibilité et Usabilité - Adoption et Utilisation - Support et Assistance	67,887%	5
improvement of performance	0,773	- Efficacité Opérationnelle - Réduction des Coûts - Inclusion Financière - Satisfaction des Clients	75,64%	4

The tests of the second type focus on multiple linear regression analysis. They are used to evaluate, on one hand, the overall validity of the conceptual model, and on the other hand, the individual significance of its explanatory variables.

5. RESULTS

Regarding the results of the conceptual model test (Table 2), the probability associated with the Fisher test in the ANOVA model presents a value lower than the 5% error threshold (Sig = 0.000 < 0.05), thus indicating that the null hypothesis is rejected and the model is globally significant. In particular, the portion explained by the model (regression = 21.928) significantly surpasses the unexplained portion (residuals = 12.072).

Table2: Regression Indices of ANOVA Model

ANOVA[a]

variable		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21,928	4	5,482	15,355	,000[b]
	Residuals	12,072	30	,357		
	Total	34	34			

a. Dependant variable: improvement of performance

b. Predictors: (Constant), Operations Digitization (DO), Digital Access (NA), Cyber Security and Data Protection (CPD), The expansion of mobile services and online platforms.

This observation is consistent with the adjusted R-squared statistic value (0.542), which also provides insights into the quality of the econometric model (Table 3). Thus, it demonstrates that the variables representing the digitalization of Moroccan financial institutions explain 54.2% of the variance in the improvement of their performance.

Table3 : Summary of the models

					Edit statistics					
Model	R	R-two	R-two adjusted	Standard error of estimate	Variation of R-two	Variation n of F	ddl1	ddl2	Sig. Variation of F	Durbin-Watson
1	,736[a]	,542	,454	,39598	,542	15,355	4	30	,000	1,653

a. Predictors: (Constant), Operations Digitization (DO), Digital Access (NA), Cyber Security and Data Protection (CPD), the expansion of mobile services and online platforms.

b. Dependent Variable: improvement of performance.

Regarding the evaluation of the significance of the variables (Table 4), the values and probabilities associated with the Student's t-test generated by SPSS 25 indicate that the four variables are statistically significant (t > 2 and sig < 5%). These variables include the digitalization of operations, digital access, cybersecurity and data protection, and the expansion of mobile services and online platforms in Moroccan financial institutions to improve their performance.

Table 4: Coefficients of individual significance

Coefficients [a]								
Model		Non-standardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Error standard	Beta			Tolerance	VIF
	(Constant)	**-,023**	**,510**		**-,045**	**,964**		
	Operations Digitization	**,344**	**,070**	**,401**	**2,047**	**,013**	**,534**	**4,873**
	Digital Access	**,668**	**,228**	**,764**	**3,059**	**,003**	**,103**	**5,108**
	Cyber Security and Data Protection	**,414**	**,189**	**,539**	**2,426**	**,017**	**,230**	**4,887**
	The expansion of mobile services and online platforms.	**,448**	**0,139**	**,526**	**2,350**	**,027**	**0,225**	**4,081**

a. Dependent Variable: improvement of performance.

Table 5 presents a summary of results obtained.

Table 5: Synthesis of hypotheses results

Hypotheses	**Explanatory variables**	**Variables to explain**	**Coefficient β**	**Significance**	**t Student**	**Validation**
H 1	Operations Digitization	improvement of performance.	0,344	0,013	2,047	Confirmed
H 2	Digital Access	improvement of performance.	0,668	0,003	3,059	Confirmed
H 3	Cyber Security and Data Protection	improvement of performance.	0,414	0,017	2,426	Confirmed
H 4	The expansion of mobile services and online platforms.	improvement of performance.	0,448	0,027	2,350	Confirmed

6. Discussion of Results and implications

➢ Discussion of Results

The results of this study on the impact of digitalization on the performance of microcredit institutions in Morocco provide significant insights and demonstrate a notable improvement in response to the implementation of digital practices.

Regarding the Validity and Reliability of the Model:

The validity and reliability tests of the measurement scales show that the conceptual model is robust. The reliability indices, measured by Cronbach's alpha, exceed the recommended thresholds, indicating that the measurement scales for the variables Digitalization of Operations (DO), Digital Access (DA), Cybersecurity and Data Protection (CPD), and Expansion of Mobile Services and Online Platforms are reliable for assessing their impact on the Improvement of Performance of microcredit institutions. The alpha values range from 0.728 to 0.773, demonstrating acceptable internal consistency for each variable.

For the Overall Significance of the Model:

The ANOVA analysis indicates that the model is globally significant (Sig = 0.000 < 0.05). This means that the explanatory variables of the model (Digitalization of Operations, Digital Access, Cybersecurity and Data Protection, and Expansion of Mobile Services and Online Platforms) significantly explain the variance in the improvement of performance among microcredit institutions. The adjusted R-squared value of 0.542 shows that these variables explain 54.2% of the variance in performance improvement, indicating a good fit of the model.

- For the Individual Significance of the Variables:

The coefficients of the variables demonstrate that all hypotheses are confirmed, with each variable having a statistically significant effect on the improvement of microcredit institutions' performance:

- Digitalization of Operations (DO):

With a coefficient of 0.344 (p = 0.013), this variable has a significant positive impact on performance. The automation of processes and reduction in processing times contribute notably to institutional performance improvement.

- Digital Access (DA):

The coefficient of 0.668 (p = 0.003) indicates a significant and positive impact. Increasing digital access and improving digital infrastructure are crucial for expanding service reach and enhancing financial inclusion.

- Cybersecurity and Data Protection (CPD):

With a coefficient of 0.414 (p = 0.017), cybersecurity and data protection have a significant effect on performance. Securing systems and protecting client information strengthen customer trust and satisfaction, leading to better institutional performance.

- Expansion of Mobile Services and Online Platforms:

The coefficient of 0.448 (p = 0.027) also shows a significant positive impact. Expanding mobile services and online platforms improves the accessibility of financial services and enhances the user experience.

➢ Practical Implications

These results have significant implications for microcredit institutions in Morocco. Digitalization, through the enhancement of operations, digital access, cybersecurity, and the expansion of online services, proves to be a powerful lever for improving performance. Institutions should continue to invest in these areas to strengthen their operational efficiency, reduce costs, expand their reach, and secure their clients' information.

➢ Limitations and Future Directions

While the results are promising, it is important to acknowledge some limitations. The research is based on data collected through interviews and questionnaires, which may introduce bias. Additionally, the study focuses on a specific sample of institutions, which may limit the generalizability of the results. Future research could include longitudinal data and a more in-depth analysis of the long-term impacts of digitalization.

In conclusion, digitalization plays a crucial role in enhancing the performance of microcredit institutions in Morocco. The results confirm the hypotheses and highlight the importance of continuing to develop and integrate digital technologies in the microfinance sector.

7. Conclusion

This article examined the impact of digitalization on the performance of microcredit institutions in Morocco, highlighting how the integration of digital technologies improves various aspects of these institutions. The study demonstrated that digitalization plays a crucial role in enhancing the performance of microcredit institutions through several key dimensions:

-Optimization of Operations: Digitalization of operations has led to increased automation of administrative processes, reducing processing times and increasing operational efficiency. These operational improvements have allowed microcredit institutions to operate more efficiently and better serve their clients.

-Access and Financial Inclusion: The expansion of mobile services and online platforms has broadened access to financial services for rural and marginalized populations, thereby increasing financial inclusion. Enhanced digital access has facilitated the integration of clients who were previously underbanked or unbanked.

-Cybersecurity and Data Protection: Increased focus on cybersecurity and data protection has strengthened customer trust and reduced risks associated with digitalization. Institutions that invested in securing their systems have observed an improvement in their overall performance.
-Cost Reduction: Digitalization has reduced operational costs by decreasing reliance on physical branches and optimizing management processes. This cost reduction has had a direct impact on the profitability and financial efficiency of microcredit institutions.
In conclusion, digitalization represents a powerful lever for improving the performance of microcredit institutions in Morocco. It enables better operational efficiency, cost reduction, expanded access to financial services, optimized risk management, and greater capacity for innovation. These combined factors contribute not only to the growth of microcredit institutions but also to financial inclusion and the overall economic development of the country. In a rapidly evolving technological landscape, it is essential for microcredit institutions in Morocco to continue adopting and integrating digital solutions to remain competitive and meet the ever-changing needs of their clients.

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