

Innovative Banking Practices in Algeria: Assessing Financial Roles in Digital Transformation and Economic Growth

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Abstract

This article explores the evolving landscape of banking innovation in Algeria, focusing on how digital transformation and modern practices are reshaping the sector's financial roles in driving economic growth. It provides an overview of the current state of the Algerian banking sector, highlighting the adoption of digital tools, technological advancements, and customer-centric innovations. The study examines the contributions of Algerian banks to economic development, including their role in facilitating investment, promoting financial inclusion, and supporting entrepreneurship. Additionally, it compares Algerian banks' practices with regional and global trends, identifying key challenges such as regulatory constraints, infrastructure gaps, and cultural resistance. Finally, the article offers actionable recommendations to strengthen the adoption of innovative banking practices and maximize their impact on Algeria's economic growth.

Keywords :Algerian banking sector, Digital transformation, Financial innovation, Economic growth, Financial inclusion, Sustainable banking.

1-Introduction

The banking sector in Algeria plays a pivotal role in the country's economy, acting as a cornerstone for financial intermediation, investment, and economic stability. Algeria's banking industry consists of both public and private institutions, with public banks dominating the market. These institutions are responsible for facilitating financial transactions, funding developmental projects, and providing credit to businesses and individuals (Benamraoui et al., 2022). Despite these critical functions, the Algerian banking sector has historically been characterized by reliance on traditional banking methods, limited financial inclusion, and bureaucratic inefficiencies. However, as global banking practices shift toward digitalization, Algerian banks are gradually embracing innovative solutions to modernize their operations and meet the demands of a digital economy.

The advent of financial technologies (fintech) and the increasing adoption of digital tools have presented a unique opportunity for Algeria's banking sector to enhance its efficiency, expand its customer base, and support national economic growth. As countries worldwide invest in digital transformation to strengthen their financial sectors, Algeria must adapt to remain competitive in the global financial landscape (World Bank, 2023). The shift from conventional

banking to innovative, technology-driven models is no longer a luxury but a necessity for sustainable economic development.

Innovation and digital transformation are at the heart of modern banking practices, reshaping the financial landscape across the globe. These advancements improve operational efficiency and allow banks to offer more accessible and inclusive financial services. The importance of digital transformation in Algeria cannot be overstated, particularly as the country seeks to diversify its economy beyond its reliance on hydrocarbons (Achir et al., 2021). Through digital banking solutions, banks can reach underserved populations, reduce operational costs, and contribute to the formalization of Algeria's informal economy, which constitutes a significant portion of its economic activity.

Moreover, digital transformation aligns with Algeria's broader economic goals, including fostering entrepreneurship and supporting small and medium-sized enterprises (SMEs). These businesses are crucial drivers of economic growth and job creation. By adopting innovative practices such as mobile banking, e-payment systems, and fintech partnerships, Algerian banks can better meet the needs of these enterprises and enhance the overall efficiency of the financial sector (OECD, 2022).

This article aims to assess how Algerian banks are adopting innovative practices and leveraging digital transformation to enhance their financial roles and contribute to economic growth. It examines the current state of the banking sector, highlights key innovative initiatives, and identifies challenges and opportunities for further transformation. The study also explores the broader implications of these practices on financial inclusion, entrepreneurship, and sustainable economic development. By providing insights into these dynamics, the article seeks to underscore the importance of innovation in strengthening Algeria's banking sector and its critical role in shaping the country's economic future.

2. Overview of the Algerian Banking Sector

2.1. Historical Context: Development of Banking in Algeria : The Algerian banking sector has undergone significant transformations since the country gained independence in 1962. Initially, the banking system was heavily influenced by the socialist economic policies of the government, which prioritized state control over financial institutions. In the early years, banks were nationalized, with public entities dominating the financial landscape. These banks were tasked with funding state-led industrial and agricultural projects, aligning with the government's centralized economic planning (Benamraoui et al., 2022).

By the 1990s, Algeria initiated financial reforms to modernize its banking sector and transition to a more market-oriented economy. This period saw the introduction of private banks and the liberalization of financial services. However, the transition was slow, hindered by political instability, economic challenges, and a lack of regulatory infrastructure. Despite these obstacles, the banking sector began to diversify, with increasing participation from international financial institutions (Achir et al., 2021).

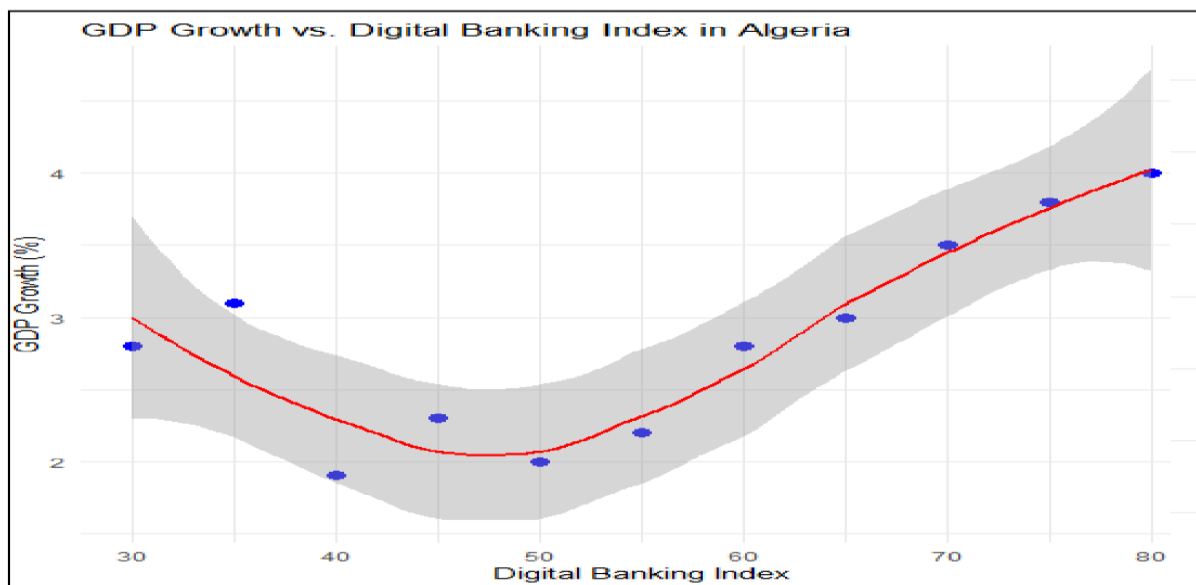
2.2. Current Structure: Public vs. Private Banks, Regulatory Environment, and Key Players : Today, the Algerian banking sector is characterized by a dual structure comprising

public and private banks. Public banks, including Banque Nationale d'Algérie (BNA) and Banque Extérieure d'Algérie (BEA), remain dominant, accounting for the majority of assets and deposits. Private banks, though fewer in number, have gained prominence, particularly in niche markets and areas where public banks have limited presence (IMF, 2023).

The regulatory framework governing the banking sector is primarily overseen by the Bank of Algeria, which implements monetary policy, regulates financial institutions, and ensures compliance with national and international banking standards. Recent regulatory updates have focused on enhancing transparency, combating money laundering, and encouraging financial innovation. Despite these efforts, the regulatory environment remains complex, often creating barriers to entry for private and foreign investors (OECD, 2022).

Key players in the Algerian banking sector include both public entities and private banks such as Société Générale Algérie and Gulf Bank Algeria. International banks operating in Algeria have introduced innovative practices and brought global expertise, contributing to the modernization of the sector.

Fig1 :



The scatter plot (fig1) reveals a positive correlation between Algeria's Digital Banking Index (a measure of digital banking adoption) and GDP growth from 2015 to 2025. As the Digital Banking Index rises, GDP growth also increases, indicating that advancements in digital banking significantly contribute to economic performance. This trend reflects a global pattern where digital transformation in banking improves financial accessibility, operational efficiency, and economic activity.

Between 2015 and 2020, the Digital Banking Index increased moderately from 30 to 50. However, GDP growth during this period fluctuated between 1.9% and 3.1%, suggesting that the impact of digital banking was limited. This was likely due to Algeria's early-stage adoption of digital banking practices and external factors such as oil price volatility and political

instability, which may have overshadowed any positive contributions from digital transformation.

From 2020 to 2025, the Digital Banking Index surpassed 50, and GDP growth showed a steady upward trend, reaching 4.0% in 2025. This period likely reflects a maturing digital banking ecosystem in Algeria, characterized by increased adoption of mobile banking, e-payment systems, and online platforms. These innovations likely reduced transaction costs, improved access to financial services, and supported the growth of small and medium-sized enterprises (SMEs), which are crucial to the Algerian economy.

The observed relationship highlights several critical roles of digital banking in economic growth. First, digital banking facilitates economic activity by enhancing transaction efficiency and access to credit, enabling businesses to thrive. Second, it promotes financial inclusion by reaching rural and marginalized populations, broadening the base of economic participants. Lastly, digital banking supports the modernization of Algeria's financial system, transitioning it from cash-based to formal and transparent financial operations, which boosts investor confidence and economic stability.

To sustain this positive trajectory, Algeria should focus on several strategic areas. Investments in digital infrastructure, such as expanding broadband internet and secure digital payment systems, are essential for maintaining growth in digital banking. Policymakers must also modernize banking regulations to encourage innovation while ensuring financial stability. Additionally, public education campaigns to raise awareness about digital tools and their benefits can drive further adoption and amplify the economic impact of digital banking.

Overall, the scatter plot emphasizes the critical role of innovative banking practices in Algeria's economic transformation. By addressing existing challenges and fostering a supportive environment for digital banking, Algeria can unlock the full potential of its financial sector and drive sustained economic growth.

2.3.Challenges : The Algerian banking sector faces several challenges that impede its full potential. Bureaucratic hurdles remain a significant issue, with complex administrative processes discouraging both domestic and foreign investment. Additionally, financial inclusion in Algeria is limited, with a large portion of the population relying on informal financial systems. This is particularly evident in rural areas, where access to banking services remains scarce (World Bank, 2023).

Another critical challenge is the sector's reliance on traditional banking models. Many institutions are slow to adopt technological advancements, which limits their ability to compete in a globalized financial environment. The lack of robust digital infrastructure and resistance to change further exacerbate this issue.

3. Innovative Banking Practices in Algeria

3.1.Digital transformation : is gradually reshaping the Algerian banking sector, enabling institutions to modernize their services and enhance customer experiences. Adoption of Digital Banking Services.

Banks in Algeria are increasingly adopting digital platforms to offer services such as mobile banking, online account management, and remote financial transactions. For example, Banque Nationale d'Algérie launched a mobile banking application to facilitate account access and payment services for customers. These platforms have enhanced convenience and accessibility, particularly for urban populations (Achir et al., 2021).

The integration of financial technology (fintech) solutions is gaining traction in Algeria. Partnerships between banks and fintech startups are fostering innovation, particularly in payment systems and loan processing. Fintech solutions have enabled faster transaction processing, improved customer engagement, and reduced operational costs. However, regulatory challenges and limited funding for startups remain barriers to widespread adoption (OECD, 2022).

E-payment systems have seen significant growth in Algeria, driven by government initiatives to promote digital payments. The introduction of platforms like Algérie Poste's e-payment service has revolutionized how transactions are conducted, particularly in retail and e-commerce. These systems are gradually reducing the reliance on cash-based transactions, aligning with global banking trends (IMF, 2023).

3.2. Technological Advancements : Technological advancements are becoming integral to banking operations in Algeria, enabling institutions to streamline processes and enhance efficiency.

Some Algerian banks are exploring the use of artificial intelligence (AI) for fraud detection, credit risk assessment, and customer service. Blockchain technology is being considered for secure transaction processing and record-keeping, while big data analytics are being used to understand customer behavior and improve decision-making (Benamraoui et al., 2022). Automation has been introduced in several banking operations, such as loan approval and account management. By automating routine tasks, banks have reduced processing times and improved accuracy. This has also allowed employees to focus on more strategic functions, enhancing overall productivity.

Customer-centric innovations are at the forefront of modern banking practices, with Algerian banks focusing on personalization and expanding financial services to underserved populations. Banks are leveraging data analytics to offer personalized services tailored to individual customer needs. For instance, targeted loan products and customized savings plans have been introduced to meet the specific financial goals of clients. This approach has improved customer satisfaction and loyalty (World Bank, 2023).

Efforts to expand financial services to rural and underserved areas have gained momentum. Mobile banking and agent banking models have been instrumental in reaching populations with limited access to traditional banking infrastructure. These initiatives contribute to financial inclusion, fostering economic empowerment in marginalized communities (Achir et al., 2021).

The Algerian banking sector is undergoing a period of transformation, driven by digital innovation and the adoption of modern practices. While challenges such as bureaucratic inefficiencies and limited financial inclusion persist, the sector is making significant strides in embracing digital transformation, technological advancements, and customer-centric innovations. By addressing these challenges and leveraging opportunities, Algerian banks can play a pivotal role in driving the country's economic growth and integrating into the global financial landscape.

4. Financial Roles of Algerian Banks in Economic Growth

Algerian banks play a crucial role in driving the country's economic growth through their financial activities. As the primary intermediaries between savers and borrowers, they facilitate investments, promote financial inclusion, support entrepreneurship, and foster sustainability. These roles are vital for a country seeking to diversify its economy and reduce its reliance on hydrocarbon revenues.

4.1. Role in Funding Infrastructure Projects and SMEs : One of the critical contributions of Algerian banks to economic growth is their role in funding large-scale infrastructure projects and small and medium-sized enterprises (SMEs). Public banks such as Banque Nationale d'Algérie (BNA) and Banque de Développement Local (BDL) have historically provided long-term financing for infrastructure projects, including transportation, energy, and housing (Achir et al., 2021). These investments are essential for creating jobs, enhancing productivity, and fostering regional development.

In addition to infrastructure, banks play a pivotal role in supporting SMEs, which are considered engines of economic growth and innovation. SMEs account for a significant portion of Algeria's private sector, and their development is closely tied to the availability of affordable and accessible financing. Banks offer specialized credit lines and financial products tailored to the needs of these enterprises, enabling them to scale operations, expand markets, and adopt new technologies (OECD, 2022).

4.2. Contribution to National Development Programs : Algerian banks are actively involved in financing national development programs initiated by the government. Programs such as "Ansej" (National Agency for Support of Youth Employment) and "Angem" (National Agency for Management of Microcredit) have partnered with banks to provide microloans and financial support to entrepreneurs and small businesses. These collaborations align with the government's broader objective of fostering inclusive economic growth and reducing unemployment, particularly among youth and women (Benamraoui et al., 2022).

Outreach to Rural and Marginalized Areas through Innovative Banking Solutions
Financial inclusion remains a critical challenge in Algeria, where a significant portion of the population, particularly in rural areas, lacks access to formal banking services. Algerian banks have recognized this gap and are working to bridge it through innovative banking solutions. Mobile banking, for instance, has become a powerful tool for reaching underserved populations. By leveraging technology, banks can provide essential financial services, such as savings

accounts and payment systems, to individuals who previously had no access to formal financial institutions (World Bank, 2023).

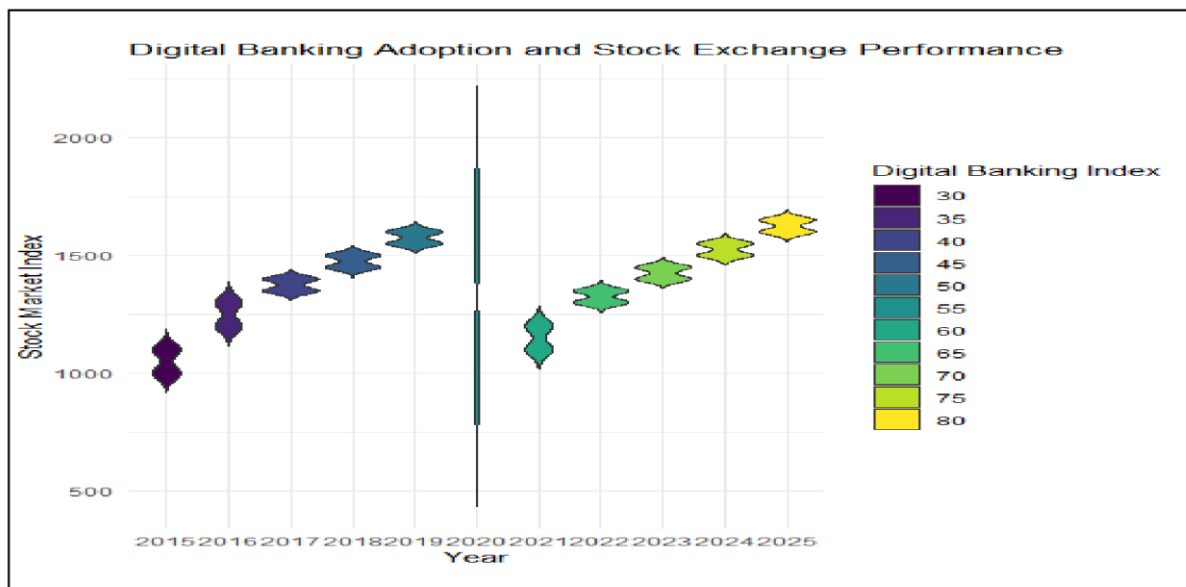
Agent banking models, where local agents act as intermediaries between banks and customers, have also been introduced in some regions to enhance accessibility. These efforts not only empower marginalized communities but also contribute to the formalization of Algeria's largely informal economy, thereby broadening the tax base and boosting economic stability.

4.3.Financing Start-ups and Supporting Innovation-Driven Enterprises :Entrepreneurship is a cornerstone of economic development, and Algerian banks are playing a growing role in nurturing this sector. Start-ups and innovation-driven enterprises often face significant challenges in securing funding due to their perceived risks. To address this, Algerian banks have introduced venture capital financing and specialized loan programs designed to support entrepreneurial ventures. For example, Banque Extérieure d'Algérie (BEA) has launched initiatives to finance technology start-ups and knowledge-based enterprises (IMF, 2023).

Additionally, banks collaborate with incubators and accelerators to provide not only financial support but also mentorship and training to entrepreneurs. This comprehensive approach enhances the likelihood of success for start-ups, contributing to job creation and technological advancement.

The integration of financial technology (fintech) into Algeria's banking sector has opened new opportunities for supporting entrepreneurship. Banks are increasingly partnering with fintech startups to develop innovative financial products and services. These collaborations enable start-ups to leverage advanced technologies such as blockchain, artificial intelligence, and digital payment systems, reducing barriers to entry and fostering innovation across industries (Achir et al., 2021). The violin plot (fig2) demonstrating the relationship between digital banking adoption and stock exchange performance offers valuable insights into how advancements in Algeria's digital banking sector might influence the country's financial markets. By visualizing the distribution of stock market performance (measured by the stock market index) across different years, the plot provides a clear view of the potential impact of digital banking adoption on financial market growth and stability.

Fig2 :



From the plot, it is evident that as the Digital Banking Index increases from 2015 to 2025, there is a noticeable upward shift in the stock market index. This trend suggests a positive correlation between digital banking adoption and stock market performance, where years of higher digital banking adoption align with stronger stock market growth. The distribution of stock market index values also narrows as the Digital Banking Index rises, indicating a greater degree of consistency and stability in stock market performance during these years. This stability likely reflects increased confidence among investors, driven by enhanced financial transparency, improved access to banking services, and better financial infrastructure enabled by digital banking innovations.

The widening of the distribution for stock market performance in years with lower digital banking adoption (such as 2015) indicates that during these times, the stock market was likely more volatile. This volatility could be attributed to a lack of financial inclusion and limited access to capital markets, which often restricts investor participation and market development. The concentration of stock market values at higher digital banking index levels, particularly in the latter years (2020-2025), suggests that digital banking may have played a role in fostering a more predictable and secure financial environment, encouraging both institutional and retail investor activity.

Another key takeaway from the plot is the relationship between digital banking and investor confidence. Digital banking provides enhanced data accessibility, lower transaction costs, and a broader reach for financial services. These factors collectively boost market transparency and efficiency, which can attract more investors, both local and international. The introduction of digital payment systems, mobile banking, and e-payments likely plays a significant role in encouraging stock market participation, particularly among younger, tech-savvy investors who might otherwise have been excluded from traditional financial systems.

Economically, the growth in the stock market index in parallel with higher digital banking adoption signifies a structural shift in the financial ecosystem of Algeria. The stock market

index represents a barometer of economic health and investor confidence. Therefore, the positive trend shown in the plot indicates that innovations in digital banking could be acting as a catalyst for broader economic growth. As digital banking reduces the barriers to financial access, it opens up new avenues for investment, particularly in undercapitalized sectors such as small and medium-sized enterprises (SMEs), which are often the backbone of emerging economies.

The narrower distribution of stock market performance in the latter years further underscores the stability introduced by digital banking adoption. This trend is crucial for building investor trust and encouraging long-term investment in the stock market, a key driver of economic development. Stable financial markets are essential for securing foreign direct investment (FDI), facilitating the flow of capital, and enabling both corporate and government financing for infrastructure and development projects.

In summary, the violin plot illustrates that as digital banking adoption increases in Algeria, there is a corresponding improvement in the stability and performance of the stock exchange. This relationship suggests that further investments in digital banking infrastructure—such as mobile banking, fintech solutions, and secure e-payment systems—could play a pivotal role in enhancing Algeria's financial markets. Policymakers should consider fostering this digital shift, as it not only supports the growth of financial markets but also contributes to overall economic stability and growth by enabling broader financial inclusion and more efficient capital allocation.

Sustainability has emerged as a critical global priority, and Algerian banks are beginning to align their operations with sustainable development goals. Green financing, which refers to investments in environmentally friendly projects, has gained traction in Algeria. Some banks have introduced green loan products to support projects such as energy-efficient buildings, waste management systems, and sustainable agriculture (Benamraoui et al., 2022).

These initiatives not only address environmental concerns but also open up new economic opportunities by creating green jobs and fostering innovation in eco-friendly technologies. By supporting sustainable projects, banks contribute to the long-term resilience of the Algerian economy.

Algeria's significant potential in renewable energy, particularly solar and wind, presents an opportunity for economic growth and energy diversification. Banks are playing a pivotal role in financing renewable energy projects, providing long-term loans to developers and supporting public-private partnerships in the energy sector. For instance, the financing of solar farms in the Sahara region has been a focus of some Algerian banks, contributing to the country's goal of achieving 27% renewable energy in its energy mix by 2030 (OECD, 2022).

In addition to renewable energy, banks are encouraging investment in sustainable industries such as eco-tourism and clean manufacturing. These sectors not only contribute to environmental protection but also enhance Algeria's competitiveness in the global market.

The financial roles of Algerian banks extend far beyond traditional banking functions, encompassing critical contributions to investment facilitation, financial inclusion,

entrepreneurship support, and sustainability. By funding infrastructure projects and SMEs, banks drive economic growth and job creation. Their innovative solutions, such as mobile banking and fintech collaborations, address the challenges of financial exclusion, while their focus on entrepreneurship nurtures innovation and competitiveness. Furthermore, the adoption of green financing and support for renewable energy projects underscores their commitment to fostering a sustainable and resilient economy. As Algeria continues its journey toward economic diversification and modernization, the banking sector will remain a cornerstone of this transformation.

5. Case Studies and Comparative Analysis

The evolution of Algeria's banking sector has witnessed a growing focus on innovation and modernization, aiming to address economic challenges and enhance financial inclusion. To illustrate the sector's progress, examining case studies of Algerian banks adopting innovative practices and comparing them regionally and globally offers valuable insights.

5.1. Success Stories: Examples of Algerian Banks Adopting Innovative Practices

Firstly BNA, one of Algeria's largest public banks, has made significant strides in embracing digital transformation. In 2021, the bank launched its mobile banking application, enabling customers to perform transactions, monitor accounts, and pay bills remotely. This initiative marked a pivotal moment in expanding digital banking accessibility to a broader customer base, particularly during the COVID-19 pandemic, when physical banking faced restrictions (Benamraoui et al., 2022). The success of BNA's digital solutions demonstrates how technological adoption can enhance customer satisfaction and operational efficiency. secondly, Crédit Populaire d'Algérie (CPA) has focused on advancing Algeria's e-payment infrastructure. By deploying point-of-sale (POS) terminals and promoting electronic card usage, CPA has contributed to reducing the reliance on cash transactions. As of 2023, CPA reported a significant increase in e-payment adoption, attributed to its user-friendly platforms and widespread public awareness campaigns (World Bank, 2023). This success aligns with Algeria's broader goal of transitioning to a cashless economy. also, Trust Bank Algeria has gained recognition for its strategic collaborations with fintech startups to enhance service delivery. By integrating fintech solutions, such as AI-powered credit scoring systems and digital wallets, the bank has improved customer onboarding processes and credit evaluation efficiency. This partnership highlights the potential for traditional banks to leverage fintech innovation to modernize operations and tap into underserved markets (Achir et al., 2021).

5.2. Regional and Global Comparisons

a. Alignment with Neighboring Countries: Morocco and Tunisia : Compared to regional peers, Algeria's banking sector has made notable progress in digital transformation, but it still faces challenges in financial inclusion and technological adoption. For example, Morocco's banking sector has been a regional leader in mobile banking and fintech integration, driven by robust regulatory frameworks and strong public-private partnerships (OECD, 2022). Morocco's

flagship digital initiative, "M-Wallet," has significantly boosted mobile payment adoption across the country.

Similarly, Tunisia has prioritized digital banking through initiatives like the "Digital Tunisia 2025" strategy, emphasizing blockchain, AI, and e-payment platforms. Tunisian banks, such as Amen Bank, have established digital labs to foster innovation, positioning the country as a fintech hub in North Africa. Algeria, in comparison, is in the early stages of developing such comprehensive strategies, reflecting a lag in policy coordination and technological investment.

b. Comparison with Global Trends : On the global stage, Algeria's banking sector trails behind advanced economies in adopting cutting-edge technologies such as blockchain and AI. For instance, leading global banks like JPMorgan Chase and HSBC have already integrated blockchain into cross-border payment systems, drastically reducing transaction costs and enhancing security. In contrast, Algerian banks are still exploring pilot projects in blockchain technology, with limited large-scale implementation (IMF, 2023).

In terms of financial inclusion, Algeria lags behind global benchmarks. Countries like Kenya, with its widely acclaimed M-Pesa mobile payment platform, have set global standards for expanding banking access to rural and low-income populations. Algeria's rural financial inclusion efforts, though growing, are yet to achieve similar transformative results.

5.3.Factors Behind Regional and Global Gaps

Several factors contribute to Algeria's relative lag in certain areas compared to regional and global benchmarks:

- **Regulatory Challenges:** While Algeria has made strides in improving its banking regulations, certain policies still hinder rapid technological adoption, such as restrictions on private sector participation and delays in approving fintech startups.
- **Cultural Resistance to Change:** A reliance on cash and traditional banking models persists among segments of Algeria's population, slowing the adoption of innovative banking solutions.
- **Investment Constraints:** Limited private and foreign investment in Algeria's banking sector, particularly in fintech, restricts the scope of large-scale transformation.

Lessons for Algeria

To bridge these gaps, Algeria can draw valuable lessons from successful regional and global practices:

- **Strengthening Public-Private Partnerships:** Collaborating with private tech firms and fintech startups, as seen in Morocco and Tunisia, can drive innovation and scale digital solutions.
- **Policy Reforms:** Streamlining regulatory processes to facilitate the entry of new players and technologies will create a more competitive and dynamic banking environment.
- **Enhancing Customer Education:** Conducting nationwide awareness campaigns to promote the benefits of digital banking can address cultural resistance and accelerate adoption.

- **Investing in Infrastructure:** Expanding broadband access and improving digital infrastructure, particularly in rural areas, is essential for supporting digital banking platforms.

While Algeria's banking sector has made commendable progress in adopting innovative practices, it still faces challenges in matching the advancements of regional and global peers. Success stories from Algerian banks like BNA and CPA illustrate the sector's potential, but gaps in financial inclusion, policy coordination, and technological investment must be addressed. By learning from regional leaders like Morocco and Tunisia and adopting global best practices, Algeria can enhance its banking sector's role as a catalyst for economic growth and modernization.

6.Challenges and Barriers

6.1.Regulatory Framework : One of the primary challenges facing Algeria's banking sector is its outdated regulatory framework. The existing policies, often rooted in conventional banking practices, fail to accommodate the rapid advancements in financial technologies. For instance, strict capital controls and restrictions on foreign exchange operations hinder the participation of global players in Algeria's banking ecosystem (Benamraoui et al., 2022). Additionally, the slow pace of regulatory approvals for fintech startups and innovative banking solutions stifles competition and innovation. This regulatory rigidity creates a gap between Algeria and other countries that have implemented fintech-friendly frameworks to accelerate digital transformation in banking (IMF, 2023).

6.2.Technological and Infrastructure Gaps : Algeria's banking sector faces significant technological and infrastructure deficits that impede digital transformation. Internet penetration in the country remains limited, particularly in rural areas, where connectivity issues persist (World Bank, 2023). Without reliable internet access, digital banking services such as mobile apps and online platforms fail to reach a substantial portion of the population. Furthermore, the lack of robust IT infrastructure within banks themselves results in inefficiencies, making it difficult to deploy advanced technologies like blockchain, artificial intelligence (AI), and big data analytics (Achir et al., 2021).

6.3.Cultural Resistance : Cultural resistance poses another major barrier to the adoption of innovative banking practices in Algeria. Many customers and employees exhibit reluctance to embrace digital tools due to a lack of trust in technology, limited digital literacy, and an ingrained preference for traditional banking methods. For example, the heavy reliance on cash transactions reflects a cultural inertia that slows down the transition to a cashless economy (OECD, 2022). Employees in the banking sector also face challenges in adapting to new technologies, as limited training programs and fear of job displacement contribute to resistance.

7.Recommendations for Strengthening Innovation in Algerian Banks

7.1.Policy Enhancements : Modernizing Algeria's regulatory framework is crucial for fostering innovation in the banking sector. Policymakers should develop fintech-friendly regulations that encourage investment in digital banking technologies and facilitate the entry of international players. For example, Morocco and Tunisia have introduced sandboxes that allow

fintech startups to test their innovations in a controlled regulatory environment (IMF, 2023). Algeria could adopt similar measures to create a dynamic ecosystem for financial innovation. Simplifying licensing processes and relaxing foreign exchange controls would also attract global expertise and boost competition within the sector.

7.2. Investment in Technology : Public-private partnerships (PPPs) can play a vital role in addressing technological and infrastructure gaps. The government should incentivize private investment in expanding internet coverage and upgrading banking infrastructure. Programs that provide tax breaks or subsidies for banks investing in AI, blockchain, and digital payment systems can accelerate technological adoption (Benamraoui et al., 2022). Additionally, prioritizing the rollout of 5G networks and improving rural connectivity would enable digital banking solutions to reach underserved populations.

7.3. Capacity Building : Building the capacity of both customers and employees is essential for fostering a culture of innovation. Banks should invest in training programs to equip their workforce with the skills needed to operate and manage new technologies. For example, workshops on data analytics, cybersecurity, and fintech applications can empower employees to adapt to digital transformation. On the customer side, awareness campaigns and financial literacy programs are necessary to educate the public about the benefits of digital banking. Initiatives such as mobile banking tutorials and community-based training can help overcome cultural resistance and build trust in technology (World Bank, 2023).

7.4. Collaboration : Encouraging partnerships between banks, fintech companies, and academic institutions can spur innovation and drive growth in Algeria's banking sector. Collaborative ventures, such as hackathons and research projects, can generate innovative solutions tailored to local challenges. For example, banks could partner with universities to establish fintech incubators, fostering a new generation of tech-savvy professionals and entrepreneurs. Additionally, collaboration with fintech firms can enable traditional banks to leverage advanced technologies, such as AI-driven credit scoring and blockchain-based payment systems, to enhance operational efficiency and customer service (Achir et al., 2021).

8. Conclusion

The Algerian banking sector plays a critical role in driving digital transformation and supporting economic growth. However, significant challenges remain, including outdated regulations, technological deficits, and cultural resistance. Despite these barriers, success stories from leading banks like Banque Nationale d'Algérie and Crédit Populaire d'Algérie demonstrate the potential for innovation in the sector. Comparisons with regional peers such as Morocco and Tunisia highlight areas where Algeria lags but also provide valuable lessons for improvement. Looking ahead, innovative banking practices have the potential to reshape Algeria's economic landscape by fostering financial inclusion, supporting entrepreneurship, and promoting sustainable development. With the right mix of policy reforms, technological investments, and capacity-building initiatives, Algeria can transform its banking sector into a catalyst for economic modernization. By embracing partnerships and leveraging global best practices,

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Algerian banks can overcome existing challenges and position themselves as leaders in the region's financial ecosystem.

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