

# AI Adoption In Tunisian Banking: Implications For Consumer Experience And Trust

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**Received:** 22/10/2025  
**Revised:** 28/10/2025  
**Accepted:** 27/11/2025  
**Published:**  
30/11/2025

## ABSTRACT

This research explores the adoption of the artificial intelligence (AI) in the Tunisian banking industry with a focus on the perceptions, perceived advantages, and challenges being recognized by the banking practitioners. Using semi structured interviews with eight practitioners who are working in different banking institutions, the study attempts to provide an in-depth insight of AI perception, advantages, and obstacles in the industry. The paper identifies such critical themes as enhancing customer experience, data protection, and automation and also discusses such issues as the complexity of the integration, cost, and compliance with the regulations. Results indicate that despite the acknowledgment of AI use as an efficient resource in operations and individualized banking services, it is still faced with major issues regarding technological infrastructural and cybersecurity concerns, as well as staff training. The paper has added to the existing literature on the use of AI in banking by providing information about the specific situation in Tunisia.

**Keywords:** Artificial Intelligence, Banking, Tunisia, Adoption, Technology Acceptance Model, Customer Experience, Automation



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## 1. INTRODUCTION

The banking sector is experiencing a radical change with the development of the artificial intelligence (AI), which can potentially revolutionize the way banks provide their services, mitigate risks, and handle customers. The use of AI in predictive credit risk analytics, chatbots to support customer service, and fraud detection systems are not on the margins anymore as they have been at the core of the strategic agenda of major financial institutions (Brynjolfsson and McAfee, 2014; Davenport and Ronanki, 2018). According to surveys conducted globally, a large percentage of banks already implemented AI in their work; in the United Kingdom, 75 per cent of the surveyed financial companies used AI, and 10 per cent of them are going to use it in the next three years (Bank of England, 2024). This trend provides the critical thrust behind the transformative capabilities of AI in terms of efficiency, security, and personalization in banking.

Nevertheless, even in the developed economies where AI is broadly used, the uptake of AI in banking systems in the emerging markets is still not evenly distributed and is often limited by situational circumstances. A study conducted in Indonesia, as an illustration, shows that a lack of awareness, inadequate knowledge of AI, and barriers within organisations are the primary obstacles to the use of AI in financial services (Yulia and Tantri, 2025). An analysis of the implementation of generative AI (GenAI) at banks in Southeast Asia recognises regulatory, organisational, and

environmental forces as the key determiners of AI implementation (Xu et Cho, 2025). Moreover, in spite of the fact that the majority of banks spend a lot of money on AI, a research by BCG (2024) revealed that 74 per cent of businesses continue to have difficulties with scaling the value of AI, noting that it was rather difficult to take the results of AI experimentation and move to large-scale, meaningful use.

The AI adoption in the case of Tunisia presents a unique opportunity and challenge. On the one hand, AI applications can have a major positive impact on Tunisian banks by helping them to improve their operational efficiency, better customer service, and risk management (Alharbi, 2025). Conversely, the industry is experiencing obstacles to complete adoption of AI, such as the existence of obsolete IT platforms, regulatory obstacles, and lack of local expertise in AI technologies (Chouaibi et al., 2022). These aspects reflect the problems of the wider emerging markets where banking systems tend to be based on outdated technologies, which makes the implementation of AI more difficult (Alharbi, 2025).

Regardless of the increased attention to AI, there is limited empirical research on its implementation into the banking industry of Tunisia. An overview of the literature indicates that, even though the world is interested in the potential of AI to improve customer experience and operate effectively, there is very limited literature that has analyzed the specific obstacles faced by Tunisian banks. In addition, the current studies show

**How to cite:** Dr. Sonia ZGOLLI, AI Adoption In Tunisian Banking: Implications For Consumer Experience And Trust *Advances in Consumer Research*, vol. 2, no. 5, 2025, pp. 2831-2837.

that an obstacle of AI adoption in Tunisia is primarily regulatory issues and the necessity to invest heavily in infrastructure and training (Chouaibi et al., 2022).

The conditions being what they are, the two main research questions in the context of Tunisia are imperative:

- What are the perceptions of the banking professionals in Tunisia regarding the possibility of the benefits of AI implementation?

- What do you consider were the main obstacles to successful implementation of AI in the banking sector in Tunisia?

The research issue considered in this paper is therefore two-fold: first, to explore the beliefs of banking professionals about the strategic relevance, usefulness, and ease of implementing AI; and second, to reveal and examine technological, financial, regulatory, and organisational issues that prevent its implementation. This research will help us to extrapolate this adoption models to the context of Tunisian banks in an effort to offer insights into how these issues can be overcome by policymakers, banking leaders, and technology developers.

## II. LITERATURE REVIEW

This section reviews three interlinked strands as (1) theoretical frameworks for technology adoption, (2) empirical findings on adoption of AI in banking globally and (3) barriers and enablers of AI adoption in the banking context, with an emerging focus on emerging markets such as Tunisia.

### 2.1. Theoretical Frameworks to Technology Adoption

The adoption of technological innovations within organisations has been modelled for a long time using seminal frameworks, notably the Technology Acceptance Model (TAM) and the Diffusion of Innovation Theory (DOI). Indeed, TAM, which was introduced by Davis (1989), suggests that perceived usefulness (PU) and perceived ease of use (PEOU) form a major antecedent of an individual's intention to utilise a technology. This model has had extensive application both in banking and information systems research. For example, the review of TAM influence within research related to the adoption of banking at Uula & Avedta (2023) highlights ease of use and usefulness in the central area as constructs to consider. Rogers (2003) further emphasizes the factors like relative advantage, compatibility, complexity, trialability, and observability are important for the diffusion of innovations.

Further to these classical models, more recent literature highlights how organisational adoption of AI is influenced by factors that are multi-level determinants: individual perceptions, organisational readiness, environmental/regulatory context and technological infrastructure (Venkatesh & Bala, 2008). Given that AI simultaneously stands for a technology and a strategic capability, scholars call for the integration of innovation management and organisational change theories, which include organisational culture and strategic alignment,

into TAM and DOI, which will capture the comprehensive adoption dynamics that exist in complex sectors such as banking.

### 2.2. Empirical Evidence on the Adoption of AI in Banking

A growing body of empirical work explores the way in which AI is adopted and implemented in banking. Lazo & Ebarido (2023) do a systematic review of AI adoption in the banking industry where they identify drivers such as operational efficiency gains and better customer service, as well as major obstacles such as skill deficits, regulatory uncertainty and high costs, and legacy systems. Similarly, Simbolon et al. (2025) explore the intention to adopt AI in Indonesian banks and found that the perceived usefulness, trust, and organisational readiness have positive effects on the adoption intentions. More recently, Yaseen & Al - Alemarek (2025) study on AI - driven fraud detection in banking sector in UAE and Qatar and identify trust, transparency and fairness in algorithmic decision - making process as a key enabler of adoption.

These results show that, in addition to the traditional factors of usefulness and ease, banking situations present additional dimensions - i.e., regulation scrutiny, trust in autonomous systems, and ethical or algorithmic fairness. Concurrently, recent work on the determinants of adoption of AI in financial institutions (2024) highlights the importance of organisational, technological and external factors - including regulatory and competitive factors. The changing literature suggests that empirical modeling of AI adoption in banking needs broader models that go beyond TAM and DOI and include variables such as trust, transparency, regulatory compliance, firm resources, and ecosystem readiness.

### 2.3. Obstacles and Enablers to the Implementation of AI in Banking

The implementation of artificial intelligence (AI) in the banking industry is a complicated scenario of facilitators and obstacles that are technological, organizational, and regulatory in nature. Although there are several reasons why AI should be included in the banking operations, several challenges still exist especially when it comes to banks in the emerging markets. These enablers and obstacles are discussed in the following section with more detail, thus explaining the complexity of AI adoption.

#### 2.3.1. Facilitators to AI Adoption

- Technological Infrastructure: Another key condition to the adoption of AI in the banking sector is the existence of an effective technological infrastructure and this includes data infrastructure, cloud computing solution, as well as legacy systems renovations. According to Lazo and Ebarido (2023), the successful adoption of AI is highly dependent on modernization of the technological structure of banks. Banks do not have sufficient infrastructure to serve AI systems, like complex data processing and storage services, thus they are bound to find it hard

to implement it effectively. Therefore, a technological upgrade, such as the data management and IT system improvements, is a background requirement to the effective implementation of AI.

- **Regulatory Frameworks:** Besides the technological factor, effective and conducive regulatory frameworks are also essential in promoting the adoption of AI. Yaseen and AlAmarneh (2025) claim that the higher readiness to AI is shown by banks, the less strict the regulation is imposed on them, but rather encourages innovation. An open regulatory framework balancing safety with innovation will prompt financial institutions to invest in AI technologies because they cannot be unnecessarily constrained by the compliance issue when adopting them. Ethical application of AI can also be encouraged by regulatory frameworks that advance data privacy regulations and algorithmic transparency, which can make the implementation more favorable.
- **Trust, Openness and Engineered Ethics:** According to Yaseen and Al-Amarneh (2025), the perceived reliability and understandability of the technology is a key factor in its adoption of AI. Stakeholders both customers and employees are more probable to accept and adopt AI solutions when the AI systems are formulated in a transparent manner where their decision making processes are adequately explained. Furthermore, the ethical design, which concerns the questions of fairness and accountability, is the key to overcoming the skepticism towards AI. The key to establishing trust and encouraging the widespread acceptance of the systems lies in the ethical AI, which implies that the systems should not be used to propagate bias and should be designed to consider user privacy.

### 2.3.2. Barriers to AI Adoption

Unlike the facilitators, there are multiple obstacles to the large-scale implementation of AI in the banking industry. These challenges are common due to technological, financial, organizational, and regulatory barriers, which the banks face in their attempt to incorporate AI into their workflow.

- **High Implementation Costs:** The high cost of implementation is one of the strongest hindrances to the adoption of AI. Smaller banks or banks that act in the emerging markets, like Tunisia, have frequent problems finding the massive amount of financial resources to deploy AI. Lazo and Ebardo (2023) point out that initial expenses of getting AI infrastructure, such as high-level hardware, software, and human resources may be prohibitively expensive to banks with limited financial resources. Such financial limitations make the AI implementation more complex to those institutions that lack the means, thus limiting their capacity to compete in a more technologically intensive financial landscape.
- **Obsolete Systems and Data of Low Quality:** The other significant obstacle is related to legacy systems that still exist at most banks, especially in the emerging economies. Such outdated infrastructure

may be a major hitch towards AI integration, considering that it is unfit in most cases to meet the current AI technologies (Lazo and Ebardo, 2023). Also, bad data quality which is characterized as incomplete, unformatted or inconsistent data is also a significant challenge. To be effective, AI systems demand high-quality data and when banks have older or poor data systems, they might not be able to produce correct insights using AI models, which limits their ability to achieve AI benefits.

- **Regulatory Uncertainty:** Law ambiguities also form a major obstacle. Dawson (2021) claims that banks and service providers are hesitant to adopt AI technologies when they are unsure of the regulatory climate of the technology because of the risks involved in compliance costs and possible changes in regulations. Since the development of AI technologies can be compared to a blistering ozone, the regulatory frameworks are usually in lag, which creates confusion in the boundaries of data privacy regulations, accountability of algorithms, and consumer protection regulations. This regulatory uncertainty may not encourage banks to invest in AI at scale in geographical areas with complicated or evolving regulation.
- **Resistance to change: Cultural, Organizational:** There is also a significant obstacle in cultural and organizational resistance to change in banks. The introduction of AI is not a technology change only but a paradigm shift in the decision-making. According to Uula and Avedta (2023), to ensure AI success, banks have to re-imagine the decision-making process, starting with the customer service to credit risk appraisals. The factors that may slow down the process of adoption are resistance to such changes, which is often based on the organizational culture and unwillingness of the employees to implement new technologies. To eliminate such resistance, it is important to invest in change-management strategies that would create the culture of innovation and technology acceptance.
- **Ethical Issues, Fairness and Algorithms Bias:** With the increasing integration of AI into the banking industry, issues of ethics, especially in terms of algorithmic bias and fairness, have become some of the most prominent barriers to its use. Yaseen and Al-Amarneh (2025) claim that AI systems can increase inequalities in case the systems reproduce the already existing biases or fail to be transparent, which results in lack of trust and unwillingness among customers and employees. To address these barriers and ensure that people trust AI systems, it is necessary to make sure that they are efficient, fair, transparent, and accountable.
- **Trust in AI Systems:** Lastly, confidence in AI systems is also one of the most important variables affecting adoption. Emphasizing the statement made by Bredmann et al. (2024), lack of trust on the customers or employees in the decision making processes of AI will greatly reduce the increase in its adoption. The issue of privacy, data security, and fairness based on the algorithms can compromise the

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trust. Transparency and explaining the mechanism of working with AI, as well as giving users control over their data, are the key to getting over this barrier.

### III. Methodology

A qualitative research design is used in the study to explore the use of artificial intelligence (AI) within the banking industry in Tunisia. In particular, the semi-structured interviews with professionals of eight banks in Tunisia were held. The interviews were 45 to 60 minutes long and recorded on tape and transcribed to be analyzed further.

Thematic analysis with the help of NVivo software was the main method of analysis. NVivo allows a systematic coding of large qualitative datasets, identification of themes and visualizing a relationship between codes, which improves the quality of analytical rigor and transparency. A qualitative study using NVivo is performed under the methodology described by Aloui, Chaouali and Sdiri (2022), who showed that NVivo can be employed to find meaningful themes in interview data to conduct research.

### IV. RESULTS

In this section, the findings of the qualitative research aimed at examining the barriers and enablers that impact the adoption of artificial intelligence (AI) in Tunisian banks are provided. The data was collected in the form of semi-structured interview with professionals working in eight Tunisian banks (table 1 in annex 1) and analyzed using NVivo software to find major themes and trends associated with AI adoption (annex 2).

#### 4.1. Theme Recognition and Frequency Counting

The research showed that there were four primary themes, which were Perceptions of AI, Advantages of AI, Concerns and Barriers, and Adoption Behaviors. The NVivo coding process was used to identify the themes and pulled together data in the interviews into these categories as per the opinions and experiences of the respondents.

Table 4 below shows the frequency of references of each sub-theme, in terms of the number of times in the interviews.

Table 4. Frequency Table of Key Themes from Nvivo

Theme	Sub-theme	Occurrences
Perceptions of AI	Importance for banking services	19
	Data management and security	14
	Process automation and reactivity	5
Advantages of AI	Customer experience improvement	10
	Personalization and data analysis	6
Concerns and Barriers	Integration complexity and costs	7
	Maintenance and security risks	4
	Need for employee training	5
Adoption Behaviors	Use of chatbots for service optimization	6
	Integration of compliance processes	3
	Use of predictive analytics for personalization	2

#### 4.2. Detailed Thematic Analysis

The thematic analysis identified four main themes, which depict the main features of AI implementation in the Tunisian banking industry.

##### 4.2.1. Perceptions of AI in Banking

Most of the participants had favorable views about the AI potential in the banking industry. AI was seen as strategic to modernize services and enhance the efficiency of operations. Banks considered AI as the necessary step to remain competitive in a more digital market, as the primary advantages mentioned in the case are improved customer experience, data security, and fraud detection. An example of such a respondent commented:

*'AI is needed to modernise our services, especially in enhancing customer experiences on the basis of automation and faster data processing.'* (InterviewA.)

##### 4.2.2. Advantages of AI

The main benefits that were found were personalization, efficiency and reduction of cost. The respondents stressed that AI would enable the personalization of the

banking services based on the analysis of customer data, and forecasting of their needs. Being able to offer customer support 24/7 with the help of chatbots and the virtual assistants was often cited as a major advantage. An other Bank installed in Tunisia respondents emphasized the contribution of AI to the fraud detection and risk management:

*'AI can be used to detect fraud, to automate processes, and to eventually increase the customer satisfaction by delivering more personalized services'* (InterviewB, D).

##### 4.2.3. Fears and Objections to the use of AI.

Although the perspective is positive, a number of challenges to the adoption of AI were reported. The biggest ones were the expensive nature of AI implementation, integration complexities with the current systems, and the security of the data. Banks interviewees also brought up issues regarding technical complexity of the integration of AI into the current banking system, as well as the threat of cybercrime posed by dealing with sensitive information about customers:



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*Introduction of AI in our current systems is a very big challenge considering the security risks and high costs of it (InterviewB).*

#### 4.2.4. Adoption Behaviors

The implementation of AI technologies in Tunisian banks is marked by the slower adoption of AI systems to perform a limited set of functions, including detecting fraud, better serving customers, and predictive analytics. Banking is a sector that is becoming more and more experimentative in the field of chatbots to simplify customer relations, and some are even experimenting with AI in predictive analytics to provide individual financial advice. For example, another bank manager stated:

*An example of this application of AI in personalized advice based on customer behavior and preferences is providing credit recommendations, among other applications (InterviewC, F, H).*

### V. DISCUSSION

The findings of this research point to the ambivalent nature of AI adoption in the Tunisian banking industry - on the one hand, the potential of AI to improve the efficiency of operations and customer satisfaction is high, on the other hand, a number of challenges are still open that may slow down the process of adoption.

#### 5.1. The Perceptions and Benefits of AI.

In line with the results obtained by Alharbi (2025), most Tunisian banks see AI as a disruptive technology that can bring substantial customer experience and efficiency to operations. Automation of routine activities and customization of services were also mentioned as the key advantages, which corresponds to the forecasts of Davenport and Ronanki (2018) who stress that AI could be used to enhance the efficiency of operations in the financial sphere. Moreover, data security and fraud detection were often cited as two of the major areas in which AI might have a significant impact, which also indicate the trends in the industry (Xu et Cho, 2025).

#### 5.2. Barriers to AI Adoption

High costs, technical complexity, and data security issues, identified in the present study as the key obstacles to the adoption of AI, are correlated with the literature about AI adoption in the banking sector (Alharbi, 2025). Such obstacles are especially acute in the emerging markets such as Tunisia where the use of AI technologies has to be integrated through the legacy systems and a limited level of technical expertise (Chouaibi et al., 2022). The implementation fees, especially when working with smaller financial institutions, are reflective of the issues presented by Davenport and Ronanki (2018) that explain the high initial fees as a strong disincentive to smaller banks.

#### 5.3. Adoption Behaviors and Future Trends.

This analysis has shown that the use of AI by banks in Tunisia is being implemented slowly and carefully with the first applications being non-critical like chatbots and the automation of customer service. This is in line with

the observation by Venkatesh and Bala (2008) who propose that adoption of technology in the banking sector is usually a progressive process with most organizations first engaging in simple implementation of applications before expanding. One of the most notable examples that could be discussed as the use of predictive analytics to provide personalized financial guidance by UBCI Bank is also the evidence of a wider trend of applying AI-based, personalized elements to the banking industry (Xu et Cho, 2025).

### VI. CONCLUSION

This paper presents critical information regarding the implementation of artificial intelligence (AI) within the banking industry in Tunisia and provides an understanding of the perceived advantages as well as the serious concerns that financial institutions face. The results highlight the complex nature of the potential AI application in improving customer experience, data protection, and performance. With the digital change of banks around the world, AI comes into the spotlight as an effective weapon to simplify the service, optimize the work, and offer customized financial services to users. These benefits are especially relevant to Tunisia, as the efficiency and technological modernization are becoming more and more demanded in the industry (Xu et Cho, 2025; Davenport and Ronanki, 2018).

Nevertheless, the study also points out that there are a number of major obstacles to the effective adoption of AI in the banking industry. Implementation cost is particularly a major deterrent because it is high, especially to the smaller financial institutions. These budgetary limitations are compounded by the fact that implementing AI in conjunction with already established legacy systems is still complicated and is still seen in most banks of Tunisia (Chouaibi et al., 2022). Moreover, the issue of data security and the necessity of the strong cybersecurity tools to protect the sensitive information remains a continuing challenge that is to be overcome in order to promote the trust in the AI systems (Venkatesh and Bala, 2008).

With the banks of Tunisia still in the process of finding ways to embrace AI more, they must base their efforts on investing in infrastructure and training employees. An effective technological system should be provided, such as improved data systems and sophisticated cybersecurity systems, to enable easy integration of AI (Alharbi, 2025). Moreover, employee training and development are essential because they make sure that employees have the skills and the ability to harness AI technologies to their advantage. A holistic view of human capital building will not directly facilitate the process of adoption but will also help achieve the sustainability of AI efforts in the industry over the long run (Davenport and Ronanki, 2018).

Additionally, the importance of regulatory frameworks cannot be overrated. The adoption of AI needs a favorable and well-defined regulatory framework to ensure that Tunisian banks can fully utilize it to promote innovation at the expense of the interests of consumers. The policymakers should collaborate with the banking heads to develop and implement laws that enable AI to

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be implemented in different ways especially in issues like data privacy, transparency of the algorithms and ethical AI practices. A regulatory framework like this would not only limit the risks but would also provide a friendly environment where banks can experiment and scale AI technologies (Yaseen & Al-Amarneh, 2025). Overall, the research paper is relevant to the existing literature regarding the adoption of AI, especially in the emerging market. It provides helpful insights on the obstacles and enablers that are unique to the banking sector in Tunisia, thus giving a more profound insight into the issue that needs to be adopted regarding the challenges that financial institutions in the country encounter. The evidence supports the relevance of strategic investments in infrastructure and capacity building among employees as well as alignment of the regulatory environment to facilitate the effective integration of AI in banking. The research paper provides useful suggestions to banking managers, industry players, and policy makers, urging them to consider a comprehensive approach that includes both the technological and the human component of the introduction of AI in the Tunisian banking industry (Lazo and Ebardo, 2023; Chouaibi et al., 2022).

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Annex 1. Table 1. Roles and Key Viewpoints of Individuals Interviewed Regarding AI in the Banking Sector

Role	Key Viewpoints
Anonymous Employee (Bank A)	Participates in AI and digital conferences. Emphasizes the need for employee training on AI and expresses concerns about data security.
IT Operations Manager (Bank B)	Stresses the importance of AI for managing growing banking operations, improving processes, and reducing tasks, while expressing concerns about data breaches.
Anonymous Employee (Bank C)	Over two years of experience with AI integration. Values AI's responsiveness and automation but worries about security risks and dependency on the technical team.
Anonymous Banker (Bank D)	Views AI as strategic, though not yet adopted by the bank. Highlights automation and fraud detection but is concerned about implementation costs and cyberattacks.
Anonymous Employee (Bank E)	Acknowledges the importance of AI, though the bank has not yet adopted it. Notes reduction in repetitive tasks but underscores the high investment costs and the need for human interaction.
Anonymous Employee (Bank F)	Sees AI as essential for the development of banks. Appreciates AI's predictive capabilities and sentiment analysis, though mentions the constraint of regular maintenance.
Anonymous Employee (Bank G)	Sees AI as a strategic tool for modernizing services. Emphasizes fraud detection and process optimization, highlighting the need for staff training and enhanced data security.

Marketing Department (Bank H)	Head	Uses AI to personalize services and improve customer experience. Highlights AI's benefits in financial advice but mentions the risks of technological dependence and potential job losses.
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## Annex 2. Word cloud from Nvivo

