

EXPLORING FINANCIAL TRANSFORMATION: KEY FACTORS OF AI'S IMPACT ON BANKING SYSTEMS

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Introduction

AI is the contributing factor that changes the financial system by enhancing efficiency, bringing improvement in customers' experiences and facilitating data-driven decision making. The paper explores the drivers of AI adoption in the financial sector with regard to technological readiness, organizational culture, consumer acceptance, regulatory compliance, competitive pressure, data quality and ethical considerations. The objective is to investigate the major enablers and obstacles to the adoption of AI, showing in detail how financial institutions can effectively incorporate AI into operations. Some of the critical problems it touches on include technological limitations, resistance to change, regulatory constraints and ethical dilemmas concerning the implementation of AI in financial intermediaries. This research tries to find ways of overcoming these challenges while maximizing the benefits of AI in banking.

Methodology

The design of the study followed a holistic approach; thus, it has examined the determinant factors that influence the AI diffusion in the banking sector. First was the literature review in which some useful information was extracted from a wide array of scholarly articles, industry reports and case studies. The review aimed at distinguishing the key factors affecting AI adoption, technological, organizational and customer-related dimensions. The data have been identified and collected from a wide array of credible sources in a systematic manner in order to ensure the relevance and accuracy of the findings. The statistical data were analyzed and represented in charts, indicating the trends and patterns of AI adoption in the banking industry. These visual aids were used in interpreting the data and drawing meaningful insights. Additionally, market analysis was provided to give a wider context and competitive environment in which the adoption of AI is set. This integration of qualitative and quantitative data enabled the investigation of the subject holistically, since the drawn conclusions would be sound and applicable in real banking environments.

Findings. Apart from these, technological readiness, organizational culture and aspects of customer acceptance are considered the most important elements in AI adoption in the financial sector. For the effective implementation of AI solutions, a financial institution

has to invest in infrastructure that support AI solutions, a skilled IT workforce and measures regarding cybersecurity. The critical success factors that are needed to integrate AI into the workplace include the organizational culture of openness to innovation and change. Key aspects that involve customers in their acceptance of AI technologies are trust in AI technologies, privacy issues, and perceived value. In addition, key factors facilitating AI in banking possible include regulatory compliance, competitive pressures, and high-quality data. Conversely, ethical considerations and leadership play a vital role in the adoption of AI as evidenced by the findings. In practice, AI will need corrections in algorithms with respect to bias, data privacy safeguards, and the implementation of transparency mechanisms to gain customer confidence. More importantly, highly supportive leadership and clearly articulated strategic vision have been considered crucial drivers of AI initiatives, alignment to the goals of the institution, and managing organizational change. In sum, AI adoption is taking a holistic direction in the banking industry, as any successful consideration needs to bring in technology, organization, regulation, and ethics that will help surmount the challenges and realize the opportunities of such new and transformative technology.

Literature review

The adoption of artificial intelligence into the financial system is influenced by a myriad of factors that encompass technological, organizational, and customer-related dimensions. While banks and other financial institutions are trying to enhance their operation efficiency and customer service, there is an increasing need to understand these elements. The following paper will conduct a critical review of the literature available on various factors affecting AI adoption in financial institutions.

One of the primary factors is the *technological readiness of the institutions*. Banks must possess the necessary infrastructure and technological capabilities to implement AI solutions effectively. Research indicates that the integration of AI technologies, like machine learning and data analytics, will go a long way in improving the operations in financial sector, which will translate to a better customer experience, coupled with operational efficiencies [Deivasigamani et al., 2023. 1348].

The organizational culture is also a critical determinant of AI implementation. An innovative organization with an open structure for easy change allows the implementation of AI technologies [Rahman, Ming, Baigh, Sarker, 2021, 4273]. Another important factor affecting the adoption of AI in financial markets and institutions is *consumer acceptance*. The acceptance by consumers of AI-based services, including but not limited to chat bots and robot advisors, is based on their perception about the reliability, security, and effectiveness of the technology [Piotrowski, 2022, 115].

We should also mention the importance of *regulatory issues*. The financial services industry is one of the most regulated sectors and its legal and ethical conformities are an

important feature of any technological implementation. Banks have to operate within a highly complex web of regulations that oversee data privacy, cybersecurity and consumer protection—challenging the rapid adoption of AI technologies [Dawodu, 2023, 231].

Furthermore, the *competitive nature within the financial industry* is also driving the pressure to implement AI with urgency. Because fintech companies are using AI to challenge conventional banking, incumbent companies are left with little choice but to innovate and offer better service to retain customers [Ononokpono, 2023, 133]. Apart from all these factors, the *quality of the data* available is of immense relevance in the successful implementation of AI in banks. AI systems require a large volume of high-quality data in order to work effectively and banks need to ensure this is provided while observing relevant privacy regulations. Besides, other strong factors for investment in AI technologies by banks are *operational efficiency and cost reduction*. This is because AI automates the routine tasks; hence, the processes become more smoothed-out for better decision-making and it improves productivity while saving costs significantly [Narang, 2022, 48]. The adoption of AI in financial sector is not without its *ethical implications*: the biases within the AI algorithms, data privacy concerns and job security threats are some of the critical issues the banks will have to grapple with as they gradually implement AI into the fabric of operations. Financial organizations that consider ethical considerations in the design of their AI strategies will probably generate much more trust and acceptance by customers and stakeholders. Lastly, *leadership and strategic vision* are critical in the adoption of AI. It can champion the integration of the AI technologies into organizations and at the same time create an innovative culture [Ghandour, 2021, 1585]. A complex set of interplaying technological, organizational, customer-related, regulatory, competitive and ethical factors influence AI adoption in banks. Clearly understanding these elements would be important for those companies wanting to use AI as a conduit to better their operations and customer experiences.

Analysis

Understanding the abovementioned factors in unison provides a comprehensive view of the dynamics affecting AI adoption in banking and highlights the multifaceted approach required for successful implementation. Some sub-factors for each of the main factors affecting artificial intelligence adoption in banks, along with references where applicable and presented in Graph 1. It is a multidimensional effort whereby a multitude of interlinked factors influences the adoption of Artificial Intelligence in the financial sector. While financial organizations are undertaking this transformative journey, it becomes evident that an all-encompassing approach is needed to cope with various challenges and opportunities arising due to AI. Thus, technological readiness is one of the main factors in the successful adoption of AI. It requires financial companies to invest in advanced infrastructure and also ensure that their IT workforce is proficient enough in AI technolo-

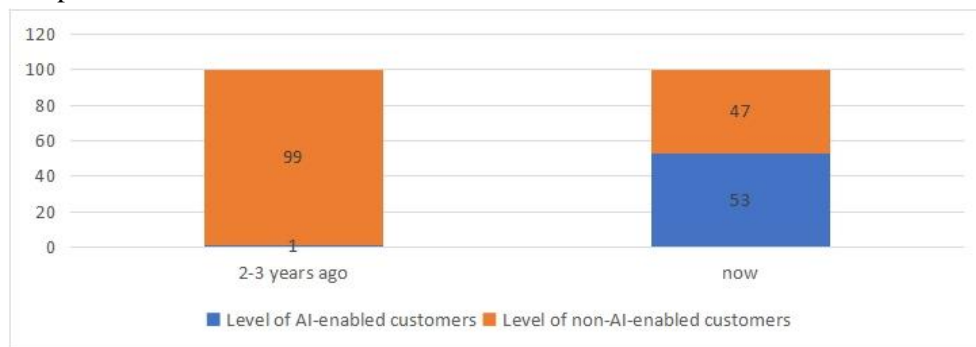
gies. Integration with the already existing systems must also be complemented with effective cybersecurity for reaping the proper benefits of AI [Kumar, Gupta, Singh, 2023, 39]. Without strong technological backing, the full potentiality of AI cannot be utilized.



Graph 1. Factors and sub-factors affecting AI adoption in banking sector

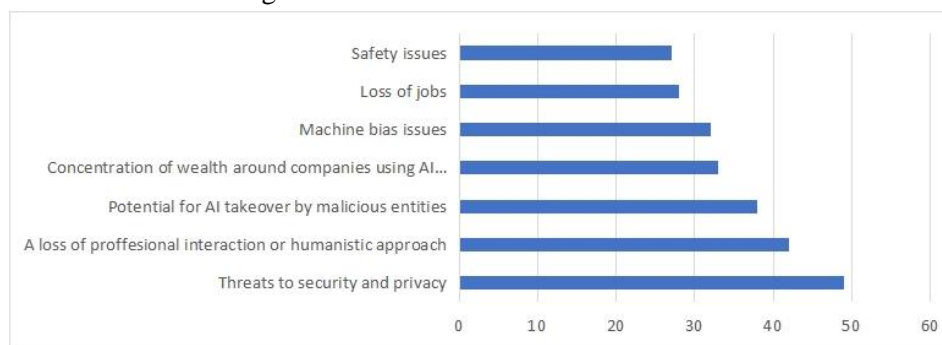
Organizational culture also forms the bedrock of success in AI projects. Innovative cultures, well-managed change, and employee engagement with transitioning to AI will more often reach their aims in AI projects. Training programs and clear internal communication form part of this cultural evolution that provides a softer path to the adoption process. It would require customer acceptance of AI use in banking. There is a need to address the issue of trust in AI services, privacy and value addition. To be able to achieve this acceptance, AI solutions should ensure ease of use and provide apparent advantages

compared to traditional solutions. On the part of the banks, it is important to ensure that the privacy concern is dealt with while proving the value addition that AI will bring to enhance customer experience. This will help to engender trust and encourage the adoption of AI [Lankton, McKnight, 2011, 38]. According to a report by The Financial Brand, the utilization of artificial intelligence in banking has grown leaps and bounds in recent years. In fact, today, more than half of all financial institutions being surveyed by Capgemini reported 40% or more customer interactions to be AI-enabled.



Graph 2. Level of AI-enabled and non-AI-enabled customers in the banking sector (%)

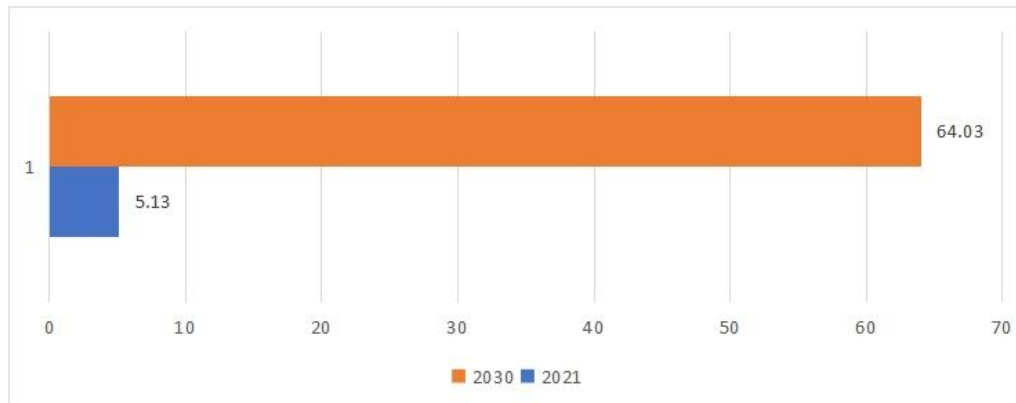
Not to mention the regulatory considerations: the use of AI requires compliance with various regulations, data protection laws, and ethical guidelines that make it legal and ethical. Compliance with these regulations facilitates stakeholder trust in a company and reduces the risk of utilizing AI.



Graph 3. Ethical concerns regarding use of artificial intelligence (AI) technologies in financial services industry worldwide

Another influential aspect of an AI adoption strategy is the factor of competition. "Banks will need to use AI in ways that differentiate them, drive innovation, and create cost efficiency." With this said, using AI as a competitive advantage for maintaining market share will assure that its AI efforts will surely fall in line with its strategic objectives. In this regard, Verified Market Research proof that AI In Banking Market size valued at USD 5.13 Billion in 2021 and is projected to reach USD 64.03 Billion by 2030, growing

at a CAGR of 32.36% from 2023 to 2030. Success with AI applications requires high-quality and available data. In this regard, extensive and accurate datasets have to be provided to the banks, supplemented by good governance practices of data, for efficient training and deployment of AI models. Capabilities for real-time processing of data raise the added value of AI applications and the quality of decision-making [Wamba, Akter, Edwards, Chopin, 2015, 237].



Grap 4. Global AI in banking market

Finally, AI's potential in financial industry promotes scalability, versatility, and automation, thereby driving the adoption strategy. The capability of AI in decision-making, trend predictions, and automation will result in huge benefits for financial institutions; hence, AI has formed the top of the strategic agenda for banks [Davenport, Ronanki, 2018, 110].

Conclusion

The process of adopting AI in the financial sector is quite complex, multilayered and multidimensional, being dependent on other factors than pure technological advances. Based on this fact, it appeared relevant to identify and analyze the most relevant aspects that influence the adoption of AI, including technological readiness, organizational culture, customers' acceptance, regulatory considerations, competitive pressures, data quality and ethical implications. These ranges from the very critical factors that will determine whether AI integration in banking will be successful, and thus a holistic approach is required for AI adoption.

Technological preparedness, infrastructure, skilled manpower and cybersecurity measures are the basis on which AI initiatives can rest. Where there is no strong technological base, AI just cannot rise to full prominence. However, it is not about the technology. The culture within the financial institution has to be congruent, where innovation and change are embraced, supported by leadership with a clearly stipulated strategic vi-

sion. Such initiatives toward AI would also require employee engagement and effective change management for a seamless transition to AI-enabled processes.

Then, there is customer acceptance of AI-driven services. For customers to accept AI solutions, they need to be convinced on three main areas, among others: trust, privacy, and value proposition. Besides, meeting the regulatory requirements forms a very important basis, as these ensure legality and ethics in AI deployment, thus instilling confidence in stakeholders.

Moreover, the competitive environment pressures financial organizations to adopt AI if they are to keep ahead in the market. In a nutshell, with the sustained remodeling of the financial services space with AI, the companies which will be most capable of leveraging AI to drive innovation and cost efficiency will probably emerge as the leaders in this industry. The last straw is the quality and availability of the data, since AI systems depend on the accuracy and completeness of the datasets to work well. Finally, this must be a strategic and integrated approach in every respect so that the finance companies can realize the full capacity of AI in their operations and remain competitive in the face of increasing changes in the digital era.

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Exploring financial transformation: key factors of AI's impact on banking systems

Key words: AI integration, financial institutions, banking efficiency, regulatory compliance, customer acceptance, technological readiness, ethical considerations

The rapid integration of artificial intelligence (AI) is transforming the financial system by enhancing operational efficiency, improving customer experiences and facilitating data-driven decision-making. This paper examines the key drivers influencing AI adoption in financial institutions, especially, in banking, including technological readiness, organizational culture, customer acceptance, regulatory compliance, competitive pressure, data quality and ethical considerations. Through a mixed-method approach involving literature review, statistical analysis and market evaluation, the study identifies critical challenges such as technological limitations, resistance to change, regulatory constraints and ethical dilemmas. It also offers practical recommendations for overcoming these obstacles, aiming to guide financial organizations in effectively implementing AI. By addressing these factors, financial intermediaries can leverage AI to enhance security, efficiency, and customer-centric services while aligning with regulatory requirements and ethical standards. The findings provide a comprehensive understanding of the complexities surrounding AI adoption in financial sector, highlighting the need for a holistic strategy to navigate the rapidly evolving financial landscape.