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#### FinTech Disruption and Transformation in Banking: Mediating Effect of Artificial Intelligence

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	Abstract
<p><b>Umer Akbar</b> Lecturer Commerce, Department of Commerce, Thal University, Bhakkar. <a href="mailto:umer.akbar@uos.edu.pk">umer.akbar@uos.edu.pk</a></p> <p><b>Fahad Asghar</b> Visitng Lecturer Commerce, Department of Commerce, Thal University, Bhakkar. <a href="mailto:fahadasghar514@gmail.com">fahadasghar514@gmail.com</a></p> <p><b>Muhammad Arshad</b> Lecturer Commerce, Department of Commerce, Thal University, Bhakkar. <a href="mailto:arshadsial.75@gmail.com">arshadsial.75@gmail.com</a></p>	<p>This study investigates the mediating role of Artificial Intelligence (AI) in the relationship between FinTech disruption and banking transformation within the context of emerging financial regions in Pakistan. As FinTech innovations increasingly challenge traditional banking systems, AI has emerged as a strategic enabler for institutions aiming to adapt and evolve. Utilizing a quantitative research design, data were collected from 350 banking professionals through a structured questionnaire. Statistical analyses, including correlation, regression, and mediation (via PROCESS Macro), revealed that both FinTech disruption and AI significantly contribute to banking transformation. More importantly, AI was found to positively mediate the relationship between FinTech disruption and banking transformation, indicating that banks can only fully leverage FinTech-driven innovation by adopting AI technologies. The study provides practical implications for financial institutions in underdeveloped areas, emphasizing the need for strategic investment in AI to remain competitive and agile in the face of technological disruption.</p>
<b>Keywords:</b>	<i>FinTech Disruption, Artificial Intelligence, Banking Transformation, Mediation, Digital Banking, Emerging Markets, Financial Innovation</i>



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### Introduction

The finance industry of the world is going through a phenomenon of change that has never been witnessed before, partly due to the emergence of the Financial Technology (FinTech). FinTech is a working concept that implies the introduction of innovative digital technologies into the financial sector, which radically changes the functioning of financial institutions, means of services provision and clients behaving with money. Among the innovations of this technological revolution are blockchain, mobile payment solutions, robo-advisory services, peer-to-peer lending operations and cryptocurrencies. The fact is that these developments have enabled new entrants to disrupt the status quo of traditional banking institution due to the provision of superior financial services based on better agility, availability, and affordability (Mohsen, Hamdan, & Shoaib, 2025). This means that conventional banks cannot sustain their business models anymore and have to find ways to incorporate new technologies to remain competitive and relevant in this fast changing environment. As the disruptive potential of FinTech, we can point out that it is successfully undermining the traditional monopoly of financial services by traditional banks. Through the use of digital platforms, FinTech companies have made finance more accessible, both in underserved and unbanked areas and personalized it to a level that has never been witnessed in banking (Hidayat-ur-Rehman, & Hossain, 2024). This upheaval does not end with retail banking; it extends to investment services, lending, insurance and even regulatory compliance. As an illustration, the emergence of such platforms as LendingClub and Revolut is not only changing the way people can borrow or spend but also develop and manage their wealth. This has meant that competitive forces in the financial service industry have changed and this poses a challenge as well as opportunity to the incumbent banks.

What adds particular strength to FinTech as a disruptive power is the fact it interacts with Artificial Intelligence (AI) symbiosis. AI which includes machine learning, natural language processing, and deep learning are of great importance in operationalizing FinTech innovations. AI facilitates an ability of financial service providers to analyze huge amounts of data in real-time, forecast the habits of consumers, identify fraudulent activity and present personalized products and services with minimal human input (Yan et al., 2022). Such capabilities do not only increase efficiency of operations, but importantly customer satisfaction, risk management and compliance. In numerous instances, AI functions as an invisible force fuelling the engine driving FinTech platforms, through an algorithmization of decision-making, individualization of user experience, and streamlining of service delivery. As an example, robo-advisors employ AI to offer customised investments recommendations on the basis of the financial objectives set out by a client, risks they may be able to take, and current prices used. In the same way, chatbots and other virtual assistants enhanced by AI revolutionization have reshaped customer service in banking, as they are available 24/7, have a lower wait result, and help liberate human workers to do more sophisticated tasks (Gyau et al., 2024). In that way, AI supports FinTech, but, in fact, it enhances its effects and, therefore, its incorporation into the financial services environment plays a critical role in ensuring sustainable innovation and growth. The importance of considering the criterion of AI as the mediating factor of FinTech-based transformation in banking is of significance since it is in part how the digital innovation of a given organization can be converted to a real organizational change. A change in banking requires FinTech by itself, as long as the support elements exist to facilitate it. AI is that empowering infrastructure expanding digital input into strategic business results like increased agility, customer experience, operational resilience, and lower cost. In the absence of AI, numerous FinTech solutions would implement only theoretical models or be confined to small cruisers; on the contrary, using AI, solutions become distributable, promising in intelligence, and adaptable or responsive (Goncalves et al., 2023). Besides, AI plays a special regulatory and compliance innovation role which is significant in the financial services. A subsector of FinTech, Regulatory Technology (RegTech) applies AI to assist an institution to comply with the changing regulations more cost-effectively and correctly. AI solution can allow financial institutions to be compliant in real-time, minimize human error, and evade regulatory risks (Rasiwala & Kohli, 2021) by automating monitoring, detecting anomalies, and predictive analysis. This not only increases the transparency and accountability but also creates trust in digital financial cultures.

The revolutionization of banking in FinTech and AI is also indicated by the like of how organizations organize their operation and strategic planning. Conventional banking organization structures are being replaced by high-performance, cross-cutting teams devoted to the product development, user experience and data science. The digital transformation is not just a necessity written on the wall of boardroom, it is about positioning Chief Digital Officers and Chief Innovation Officers to be the flag bearers of organizational strategy. The most significant part of this change is the use of AI which helps make decisions based on the data and creates a culture of constant evolution. Also, Activities at FinTech have led to the rapidity in financial inclusion especially in developing economies. The advancement in the field of artificial intelligence is offering financial services to millions of unbanked by providing mobile banking applications, digital wallets, and microfinance platforms. AI algorithms determine creditworthiness on alternative data, including mobile phone usage, social media activity, and transaction histories, and allow lenders to extend credit to credit invisible populations (Arefin, 2023). This not only widens the market of the financial institutions but also helps to economically empower the individuals and uplifts the poverty. Although driven by the power of change,



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connecting FinTech and AI with banking is not free of issues. There are issues concerning data privacy, algorithmic discrimination, securing cyberspace, and job loss, which should be resolved with solid regulatory systems and ethical AI operations. Financial institutions have an unavoidable responsibility to be transparent about AI decision making, protect the data of customers, and match AI strategies with organizational interests or values which concern the society. Furthermore, legislators should be able to adapt to the development of the new technology to make sure that innovation cannot hurt monetary stability or consumer security (Sarfray et al., 2022). The level of FinTech and AI influence on the banking transformation also depends on the region and the setting of the institutional background. Whereas other banks have managed to adopt digital transformation entirely, others are faced with legacy systems, organizational boundaries, and regulatory unpredictability. A successful implementation of AI usually requires an institution to be digitally mature (the level of digital maturity maturity), be able to find the talent it needs, and be ready to invest into long-term innovation. Consequently, empirical studies are required to perceive the mediation effect of AI on the connection between FinTech disruption and banking transformation in various contexts.

FinTech and AI have been explored in the current literature as isolated innovation drivers in the financial service industries, and there is a lack of the literature that would study the interactions between FinTech and AI in achieving a transformational change in the banking business. The majority of research simply looks at customer adoption, technology implementation or regulatory implication on their own. Yet, to obtain a more comprehensive picture, it is necessary to discuss the use of AI as a mediating mechanism which helps fill a gap between digital disruption and strategic transformation in banking institutions. To bridge that gap, this study intends to explore the relationship between (1) FinTech disruption and (2) banking transformation mediated by AI through qualitative and quantitative methods. With the banking sector constantly changing under the influence of a digital challenge, the role of AI in a strategic perspective is bound to increase. Banks can no longer simply digitalize what they are already doing, but they have to reconsider how they define value propositions, relationships with customers, and their working models. Such rethinking can be achieved through AI as it gives access to the tools of innovation, effectiveness, and resilience in the option of a turbulent financial environment. To the policymakers, the knowledge of this dynamic is important in the creation of regulatory frameworks that promote innovation, yet guard the stability of the system. To the practitioners, it provides ideas on how practitioners might best endeavor to exploit AI/FinTech to create sustainable value (Elmahdy et al., 2025). Hence, the combination of FinTech and AI can be discussed as a change-maker in the contemporary banking industry that changes the way financial services are conceived, produced, and used. AI is the pivot point where innovative FinTech creates the value of transformative change in the nature of banking work, strategy and the customer experience. Researching on the mediating role of AI in such a relationship does not only lead to academic knowledge but also contribute to real world knowledge on how financial institutions can deal with the complexity of digital disruption. With the evolution of financial ecosystems, this type of research is essential to ensure that the innovation can transform to the achievement of inclusive, safe, and future-proof banking systems.

### Literature Review

#### FinTech Disruption

Financial technology, in turn, or FinTech is the incorporation of technology in the offerings made by a financial services dominant company to enhance their utilization and distribution to the consumers. FinTech disruption refers to the changes that such technologies bring to the classic banking activities, operations, and business models. Disruption is defined in terms of appearance of non-traditional providers of financial services using digital tools, blockchains, peer-to-peer lending, robo-advisors, cryptocurrencies, mobile banking apps and neobanks. Such institutions compete with established banks by delivering quicker and more convenient and many times cheaper services (Hafeez et al., 2023). Accessibility, automation, disintermediation, and data-driven decision-making are the major features of FinTech disruption. These developments change the expectations of customers and require financial institutions to be innovative in order to survive. Research highlighted that FinTech companies are more dynamic, reactive, and economical that enables them to offer personalised services to underserved groups and target market that is not reached by the traditional financial institutions (Asghar et al., 2023). It places a strain on older banks to automate their services, decrease the level of manual interference as well as implement customer-oriented ideas.

The disruptive nature of FinTechs is led by their ability to reduce barriers to entry in the financial services sector, financial inclusion, and lessening reliance on conventional financial systems. As an example, mobile money has transformed the access to the finances in the developing world. In Kenya, FinTech has been utilized to provide millions of people with access to financial transactions even without an account by building platforms, such as M-Pesa (Murinde, Rizopoulos, & Zachariadis, 2022). But disruption also increases regulatory, security and systemic risks. The absence of uniform regulations of the FinTech companies can cause a chaotic situation in case of unregulated competition and economic instability. Thus, FinTech disruption cannot be described only as a technical matter but a strategic and regulatory one by banks. The works of FinTech in the profitability of banks, their culture of innovation, and customer retention have been analysed recently to indicate that there is more to FinTech as a threat to banks than there are opportunities to come together in co-creation and change (Asghar et al., 2025). To conclude, FinTech disruption implies radical change in the financial

services industry, in which technologically-focused business models are disrupting conventional banking standards. According to the literature available, it is possible to confirm that this disruption is pressing the changes in the development of the banks to change and accommodate the digital solutions and reconsider their strategic priorities in a more competitive and a more digitalized financial environment.

### **Artificial Intelligence**

Artificial Intelligence (AI) refers to the ability of a machine or in this case computer systems to simulate the process of human intelligence. These are learning (acquisition of information and rules), reasoning (usage of rules to have conclusions), and self-correction. When it comes to banking and finance, AI is a core technology influencing most FinTech developments and helping typical financial players improve their degree of operation and strategic abilities (Manser, Pelitier, & Barger, 2021). The AI as a mediator is revolutionary, as it allows banks to take advantage of FinTech breakthroughs effectively. With the ability to provide machine learning, natural language processing, and computer vision, AI enables institutions to automate common tasks, enhance their customer engagements, recognize fraud, and generate personalized financial products. This performance assists the old banking institutions to respond to the rising demand in speed, precision, and user-friendly services offered by the FinTech companies (Almansour, 2023). Among the most mentioned AI uses in banking, one can list customer support with chatbots and virtual assistants having real-time answers to the questions and therefore, improving the experience and decreasing the demands towards human agents. Credit risk assessment is another scene of critical importance where AI methods can use any type of data instead of the traditional data to take a more accurate assessment of the risk of a borrower, compared with the traditional scoring. AI has also played a critical role in fraud detection since it can recognize abnormal trends on the spot and mark transactions that should be reviewed as suspicious (Chawla et al., 2023).

In the literature, the role played by AI in digital transformation in the banking sector has been highlighted as an enabler. It is a solution connecting technological change and value creation by aiding processes that facilitate handling of large volumes of data, discovering insights and arriving at intelligent decisions at institutions. Moreover, AI enables regulatory compliance with RegTech systems helped by automation of audits, compliance measurement, and the reporting of anomaly (Kumar & Rani, 2024). As an intervening variable, AI articulates the manner in which FinTech upheaval is converted to transformation in a banking institution. It gives the technological support needed to absorb the disruption and transform it into enhanced performance, increased customer interaction, and streamlining of operations. The scalability and applicability of numerous FinTech innovations would be hampered tremendously without the intervention of AI. Research, including the one by Bresciani et al. (2023), indicates that the availability of strong AI facilities greatly helps a bank to undergo the changes brought as a result of FinTech transformations. Finally, AI cannot be reduced only to a part of the technology; it is rather a strategic value which moderates the influence of the FinTech on the change of the structure of banking systems. It converts possible disruption into steps and gains that can be applied to keep the institutions on their feet in a fast-changing scenario.

### **Transformation in Banking**

Banking transformation can be understood as the realignment of the financial institutions that operate on a legacy model toward the modern, technology-enhanced, and customer-focused system. Digitalization, automation of the processes, innovation in service delivery, and repositioning with changing market requirements characterize this transformation to a larger extent. Today, in the era of FinTech change is not an exception in the world of banking but the determinant of survival and development (Yasser & Asghar, 2024).

The changes will run on multiple levels: technological (implementing AI, cloud computing, blockchain), operational (optimizing the operations, eliminating the use of paperwork), cultural (establishing innovation-driven teams), and strategic (rearranging business models and modify customer interaction strategies). The dynamic of digital transformation allows banks to provide quicker services, increase their precision, decrease the cost of operation, and provide individual experiences, which along with other elements correspond to the predisposed preferences based on the innovations and solutions provided by FinTech (Asghar, 2024). Among the key signs of the transformation of banking, we can point out the evolution of mobile-first and digital-first type of service. The customers have started demanding smooth banking processes that will enable them to have their banking operations to intrude with their everyday activities online, which may include online purchasing, using social media, and so on. To stay on the top of this competitive environment, banks such as JPMorgan Chase, DBS, and BBVA have been investing heavily in the digital channel and innovation labs. Moreover, most conventional banks are currently partnering or acquiring startups in the FinTech startup to speed up the modernization process (Malempati, 2022).

It also includes organizational change to generate internal capacities in order to create constant innovations. These are reskilling, the implementation of the agile methodologies, and data analytics used to make decisions. In addition, it also involves transformational changes such as committed use of a customer oriented thinking, where the banks model their products and services on the requirements of the users of their products and services and not on the convenience of the banks. The recent studies emphasize that change in banking results in a better financial performance, customer satisfaction, and operational resilience. Nonetheless, legacies systems, change resistance, regulatory

burdens, and expensive digital infrastructure are the most used barriers of the process (Jing & Zhang, 2024). As a result, effective leadership, vision, and inclusion of enabling technologies such as AI are key requirements of successful transformation. The literature mentions the significance of AI and FinTech as the authoritative change agents as well. AI increases the bank data management capabilities, facilitates dynamic pricing and risk modelling and enhances decision-making. In this regard, FinTech plays the role of a driver of changes, and AI plays the role of an operational engine that enables a change (Jalil et al., 2024). The result of that is transformation, which defines how successful a bank is at weaving these external innovations into concepts of their own internal systems and customer interaction.

Essentially, the process of transforming the bank can be a multidimensional one, that is, propelled by outside forces and internal strengths. It is a transformation to digital banking enabled ecosystem, where technology and innovation change the nature of how banks, conduct business, serve the customers and compete in an extremely dynamic financial environment.

### **Fintech and Banking Transformation**

Financial Technology (FinTech) has become a revolutionary period in the world of finances. The FinTech disruption, i.e. the introduction of the digital reality, the adoption and popularisation of digital technologies and innovative business models in the financial services, has changed the very nature of operations, structure and value propositions of banks immensely. The upheaval has been crucial in ensuring that banking is transformed across all fronts and financial institutions are adapting to the digital revolution to ensure improved customer participation and changing the antiquated system to adapt to a new global market.

FinTech disruption encompasses a broad range of innovations, including blockchain, peer-to-peer (P2P) lending platforms, digital wallets, mobile payments, robo-advisors, and cryptocurrency exchanges. These innovations offer faster, cheaper, and more user-friendly alternatives to conventional banking services (Arner, Barberis, & Buckley, 2022). FinTech companies leverage data analytics, artificial intelligence, and cloud computing to offer personalized financial services, breaking down the traditional barriers that once safeguarded incumbent banks from competition. As a result, the conventional banking industry has faced a strong impetus to transform by adopting FinTech strategies, platforms, and mindsets. Various studies point out that the accelerated development of FinTech can be attributed to its capacity to meet the needs that were not satisfied, to work on operational inefficiencies, and expand financial inclusion. As Adiguzel, Aslan, & Cakir (2023) states, FinTech companies are challenging the sphere of banking by providing a customer-based model based on the idea of transparency, pace, and availability. FinTech startups have the advantage of being nimble and being better able to react to the market needs and technological disruptions than their traditional bank counterparts whose structural operating model is often based on the use of legacy systems and hierarchical organization. This competition compels legacy banks to change not only their IT systems but also their culture and approach to the business.

In this context, banking transformation is not so much about the process of digitalizing the current one. It is rather the complete redesigning of business processes, customer experience and value creation in regards to the incorporation of technology. Digital services, mobile applications, and automation are some of the services that traditional banks are increasingly investing in lieu of the convenience being exhibited by FinTech companies. In addition, there has been an increase in partnerships and acquisition as banks prefer to absorb FinTech capabilities, instead of building them on their own. To illustrate, many banks have established partnerships with P2P platforms or even opened digital-only banks or purchased FinTech startups to remain in the new financial world (Hentzen et al., 2023).

It is empirically proven that FinTech has positive effects on the transformation of banking. According to a study conducted by Wamba (2022), the banks that have adopted FinTech technologies reported an increase in their efficiency, customer relationship, and their innovation performance. Such results were especially clear in regards to such issues as customer onboarding, credit scoring, detecting frauds and managing assets. Likewise, the study by Lontchi, Yang, & Shuaib, (2023) revealed that FinTech innovation allows financial institutions to move to the service-oriented philosophy, which changes the whole process of customer journey. It is not only a body of rules and regulations that form part of the regulatory environment that has aided or facilitated the further change brought about by FinTech. Across numerous jurisdictions, sandbox and open banking projects have given incentives to the bank to develop in a safe and controlled team atmosphere. To illustrate, according to the Revised Payment Services Directive (PSD2) imposed by the European Union, banks are required to make their APIs available to the second parties, thereby paving the way toward a partnership between the two parties and promoting digitalization (Yang, Dong, & Peng, 2025). This legal pressure again reiterates the need to bring change in banks as they face a risk of becoming irrelevant. That being said, a FinTech disruption transformation is not evenly distributed throughout the industry. The rate and the extent of the transformation is externalized by the size of the bank, locality of the bank, the regulatory exigence and technology preparedness. Largest transnational banks could invest in internal innovation labs and building digital infrastructure, and smaller regional banks might be more dependent on the collaboration with such a FinTech company as a way to modernize their services (Basit et al., 2025). Irrespective of the size, disruptive force of FinTech serves as an agent of change that urges banks to innovate or die out. In addition, FinTech disruption has changed the banking



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competition. Conventional banks no longer have to deal only with competing among banks but with small firms that excel operating niche financial services with insider customer knowledge and low overhead costs, many of which are agile and able to work in tech-intensive environments. This transformation further has influenced the banks to review the competitive approach, more toward user experience, personalization, and digital value propositions.

To sum up, the literature is consistent in the hypothesis that FinTech disruption positively contributes to the transformation of banking in a considerable number. The emergence of the FinTech industry involving the implementation of new technologies and customer-focused business concepts forces established financial institutions to change, improve, and innovate. The FinTech-driven transformation can be seen in the following: the adoption of digital tools, the reconfiguration of products, integration of internal activities and strategic alliances. Thus, it is not only external problem of banks; FinTech also defines the driving force of internal modernization and sustainable innovation in the financial services sector.

**H1:** FinTech disruption has a significant positive impact on banking transformation.

### **FinTech Disruption and Artificial Intelligence in Banking**

The integration of Financial Technology (FinTech) in the financial services industry has led to a dramatic shift in the way banking institutions operate. One of the most significant outcomes of this disruption is the accelerated adoption and strategic utilization of Artificial Intelligence (AI) in the banking sector. FinTech disruption refers to the widespread incorporation of innovative technologies—such as mobile banking, digital wallets, peer-to-peer lending, blockchain, and cryptocurrency—that challenge traditional banking practices and compel financial institutions to reimagine their service models. The impact of FinTech companies launching more flexible and customer-centered solutions on the financial market means that more traditional banks choose AI as the means to counter the disruption and to survive in a highly digitalized world (Su, Wang, & Li, 2023).

AI is the capacity of machines to imitate intelligent human performance, especially in processing information, learning, reasoning and problem-solving. Given its application in the banking sector, the AI is aligned with many features such as fraud detection, credit scoring, automating customer services, portfolio, management as well as regulatory compliance. According to the literature, the disruption of FinTech serves as one of the primary factors of the gradually stating interest and investment in AI technologies among the banking sector. Following the use of AI by FinTech companies to provide more intelligent and swift services, the establishment of conventional banks has to resort to similar technologies to enhance efficiency, decision-making, and customer journey experiences (Tyagi et al., 2023).

FinTech and AI are perfectly complementary to each other. FinTech introduces the need of even more advanced and scalable technologies which can work with great amounts of real-time data, and AI provides the solutions to fulfill these requirements. As an example, a lot of FinTech startups apply AI-powered chatbots and robo-advisors to improve customer support, provide personalized suggestions, and automate such actions that are supposed to be completed by humans. Banks, in turn, in order to stay competitive, have also increasingly embraced the same tools to automate their processes and facilitate the journey of their customers (Tyagi et al., 2023). This relationship has established a self-reinforcing trend in which the process of bank response to FinTech innovation drives the banks into the use of AI, and the use of AI allows banks to respond to FinTech competition more effectively.

Studies have concurred with this perspective that FinTech disruption plays a major role in the implementation of AI in the banking industry. The research by Abdurrahman et al. (2024) concluded that the digital transformation of incumbents in the financial services sector has been facilitated by the arrival of FinTech players on the field, and that the AI has been at the heart of such a development. As mentioned in the research, other banks that experience more rivalry with FinTech organizations would more often invest in AI technologies as these would help them increase their value propositions and operational resiliencies. Moreover, AI assists traditional banks to resolve the deficiency of the legacy systems and as such, enable them to discover novel, technologically advanced solutions to the challenge of FinTech disruption. In addition, the AI within the banking industry is not restricted to front-end applications. It is also slowly penetrating back-offices to provide greater security, automate regulatory compliance and ease the processing of loan approvals. FinTech disruption pushes this trend forward by proving the benefits of AI-enabled services in terms of costs and speed. An example has been articulated by the ability of AI algorithms to underwrite a loan within minutes using a greater assortment of data variables which is broadly utilized by FinTech lending organizations. On their part, banks are adopting similar systems to help them meet such performance standards and be topical to digital customers (Chao, Zhou, & Yang, 2024). Abdurrahman, A., Gustomo, A., & Prasetio, E. A. (2024). Enhancing banking performance through dynamic digital transformation capabilities and governance, risk management, and compliance: Insights from the Indonesian context. *The Electronic Journal of Information Systems in Developing Countries*, 90(2), e12299.

FinTech companies can also be used as an example or template to use AI in practice. They are changing old assumptions about traditional banking systems particularly because of their capacity to create AI-centric platforms using very little infrastructure and resources. The major banks are engaging in ventures with, buying, or imitating the present-day

AI systems firms known as FinTech firms to obtain access to the latest AI-based systems. With the help of such strategic consortiums technological transfer becomes possible and the institutionalization of AI in the realm of bank operations can be observed (Addison, 2021). These trends support the idea that FinTech disruption direct and second-hand pushes and drives banks towards the adoption of AI as both an automation and strategic enabler of digital transformation. The extent of disruption and subsequent AI pursuit through FinTech might differ depending on the set of factors that include regulatory regimes, preparedness, and the availability of high-quality talent. The same is greater in markets where regulatory environments favor the trade, and where customers are in demand of digital services. On the other hand, banks in areas with low digital setup or sophisticated data control can have difficulties using AI to similar degrees. Despite that, it has largely been accepted in the literature that Fintech disruption is a major catalyst in AI investment and integration in the bank chains (Hussein et al., 2024).

To conclude, FinTech disruption is an essential factor that defines the direction in which Artificial Intelligence might be adopted and used in banking. Above all, accustomed to the new levels of efficiency, personalisation, and accessibility provided by FinTech companies, the traditional banks are also incredibly pressured in adopting the AI to stay competitive. The combination of FinTech innovative technology and AI implementation has led to a new image of a banking world- the one that is quick, intelligent, and reactive to changing consumer needs. The evidence found in the literature proves the above hypothesis immensely: the adoption and wide-scale application of AI in the banking sphere is greatly and beneficially affected by bank-related FinTech disruption, with AI being not only the response to it but also an agent changing it.

**H2:** FinTech disruption has a significant positive impact on the adoption and utilization of Artificial Intelligence in banking.

### **Artificial Intelligence and Banking Transformation**

Artificial Intelligence (AI) is changing industries around the globe, and the banking sphere is one of the most affected. The term AI can be defined as the imitation of human thinking by computers, specific areas in which machines use AI include, decision-making, learning, solving problems, and recognition of patterns. The AI opportunities described in the scope of banking include the automatization of customer service, fraud detection, algorithmic trade, as well as algorithmic risk evaluation. Increasing digitization of the bank means that AI is instrumental in structurally, operationally and strategically transforming the financial institution. The hypothesis of the productive effect of AI on bank transformation is well-founded, and the existing literature approves it highly.

AI transformation of banking can be noticed in three fundamental areas including operational efficiency, customer experience, and strategic agility. First, automation through AI enhances the efficiency of operations by allowing repetitive tasks to be performed on a vast basis, with minimal human error, decreasing the expenses. Ancient procedures like data entry, approvals of loans, credit rating and monitoring of compliance are currently being enhanced using AI-based platforms. Gyau et al. (2024) point to the fact that with the help of AI, the productivity of banks can also be increased by means of automation of 30-50 percent of back-office tasks, so that banks can also reallocate the workforce to more value-creating functions and hence cut operational costs significantly.

Second, AI improves customer experience immensely, which is the key element of the modern banking transformation. Along with AI-powered chatbots, virtual assistants, and robo-advisors, banks can offer 24/7 customer support in real-time and at a reduced price without hiring more workers. They are able to look into the past and also anticipate the needs of these customers and brag about more venue concerning customized financial goods with the help of these systems that will trigger greater customer involvement and loyalty. Bresciani et al. (2021) confirm this, stating that implementation of AI into customer service not only enhances the quality and speed of received services, but it also contributes to enduring customer satisfaction and retention. All this progress involves a transformation in nature, more transactional to relationship-based banking.

Third, AI helps banks in strategic flexibility by giving them real-time analytics and prediction. AI is applied to analyze large volumes of structured and unstructured data in order to predict trends, anomalies and assist in making decisions at strategic levels. This enables banks to understand their risks on time, react fast to changes in the market, and form data-informed plans. In this respect, AI ceases to be merely a tool and becomes a strategic source of innovation and flexibility within a very volatile and competitive context (Basit et al., 2025).

The literature also highlights the AI role to improve risk management and regulatory compliance which are at the centre of banking transformation. Using AI-powered RegTech (Regulatory Technology), banks can automate some regulatory reporting, observe transactions in real-time to ensure compliance, and identify suspicious activity that is an indicator of fraud or money laundering. Such features do not only resolve the issue of regulatory fines but also enhance visibility and reliability, which are critical requirements of banking organizations these days. Hentzen et al. (2023) hold that the predictive capabilities of AI are also being capitalized to determine creditworthiness, market volatility, and operational risks at relatively high levels of accuracy and speed that manual approaches cannot be used to do the same.



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Besides, the artificial intelligence injection into banking changes organizational structure and talent strategies. Banks have also started hiring data scientists, AI engineers, and digital strategists and in the process transforming their employees and culture. The old model of banks with silo structure is slowly being transformed into cross-functional and agile teams focused on collaboration and innovation. With the movement of banks towards being data-driven companies, AI becomes the focus of the decision-making process and measures of success.

And although AI has its benefits, there are certain challenges to the use of AI, such as privacy risks of data, algorithmic prejudice, and expensive implementation processes. The financial bodies should take account of making AI systems transparent, explainable, and ethical. There is also dependability of AI-powered change on data quality, digital framework, and governing assistance. In any case, the general sentiment in the literature would be that potential AI benefits highly outweigh the challenges and that strategically incorporated AI-using banks are more likely to be at the forefront of innovation, in terms of profitability, and customer satisfaction (Hussein et al., 2024).

Empiric-based analyses support the radical role of AI in banking. Addison (2021) conducted a study and found that the early implementers of the AI technologies in the banking industry recorded improved performance levels in metrics like loan processing time, fraud prevention percentage as well as the cost of customer acquisition. In the same vein, Tyagi et al. (2023) noted that AI powered banks registered higher income growth, efficiency and digital maturity as compared with their counterparts. These results have highlighted the extent to which AI can be a game changer in overall transformation of banking that would go to completely transform the entire value chain including contact services on front end to operations in back offices.

Thus, the literature can be regarded as evident that Artificial Intelligence can make a considerable contribution to the transformation of the banking sector. AI helps boost efficiency and customer relations, drive data-driven strategies and reinforce risk and compliance operations. It is not just a technological add-on, but a fundament of change in all aspects of banking. With the growing pressure on financial institutions to cope with the technological disruption to adjust to the changing environment, AI provides a powerful tool of turning the legacies operation into intelligent, flexible, and customer-driven systems.

**H3:** Artificial Intelligence has a significant positive impact on banking transformation.

### **Artificial Intelligence Mediates The Relationship Between Fintech Disruption And Banking Transformation**

Technological transformation has taken place very fast in the finances industry with most of it happening due to the disruption force which is financial technology (FinTech). Meanwhile, Artificial Intelligence (AI) has turned out to be a fundamental technology redefining the way banks compete and do business. Whereas FinTech disruption in its own right threatens to disrupt the traditional foundations of banking, it is the combination of AI where this disruption is so often easily converted to a quantifiable degree of institutional change. In this respect, the most recent literature claims that AI can be viewed as a mediator, as a bridge which would allow the beneficial outcomes of the FinTech disruption occur and which would facilitate the real transformation in banking.

FinTech disruption is a situation where technology-based financial service providers have led to faster, convenient yet more user friendly options that compete with the traditional banks. Such services regularly feature mobile banking, peer-to-peer lending, transactions using block chain technology, digital wallets, and robo-advisory services. The emergence of FinTech has pushed traditional banks the need to integrate or become obsolete. Nevertheless, passive reaction is not the only means of adapting; it needs some form of technological response, which has the ability to absorb, operationalise, as well as leverage these innovations. This is the place where AI is imperative (Adiguzel, Aslan, & Cakir, 2023).

Artificial Intelligence refers to machine learning, deep learning, natural language processing, and automated intelligent technologies to enable banks to process a large amount of data, automate decision-making, personalize services, and automate business processes. Given that FinTech companies are becoming an intense threat to banks, the latter have begun implementing an AI solution to replicate or exceed the personalization, speed, and intelligence provided by the new entrants (Gyau et al. (2024). Here, the application of AI cannot be viewed as a co-existence with FinTech; nor as a modification, at best, of the innovations generated by the latter; but as a way of transforming the FinTech advancement into scaleable and institutionally integrated functionalities of established banking systems.

Empirical studies emphasize that the disruption caused by FinTech makes it extremely urgent to implement the latest technology, in particular, AI. Basit et al. (2025) state that FinTech companies set the level of innovation and customer demand higher, which resulted in banks adopting AI to achieve their requirements. The research clarifies that though both FinTech disruption and AI are external factors, the latter enables the internal stimuli needed to ensure that a shift occurs in the banks. To give an example, FinTech companies can provide loans in the form of applications, but only AI technologies enable banks to provide instant credit decisions, which can be done due to the use of machine learning models based on alternative data. In addition, AI can facilitate reengineering some of these internal banking processes that would have interfered with the change.

Conventional banking systems are generally siloed, inflexible and overdependent of human reasoning. On the contrary, AI facilitates decision-making process, risk modeling, predictive analytics, and intelligent automation on real-time basis. According to Andi & Anis (2024), using AI to predict and process data, banks can create optimal products, manage risks better, and pre-determine customer behavior, which are needed attributes of banking transformation. The specifications of the innovations brought about by FinTech would continue to be marginalized or even kept isolated in the banking ecosystems without AI.

Study by Elmahdy et al. (2025) supports the mediating dimension of AI further. The authors believe that AI opens the future of FinTech technologies and incorporates them into mainstream banking activities, including fraud prevention, credit rating, and regulatory operations. As an example, the FinTech application may provide users with the opportunity to use their biometric data to offer additional security, yet a bank cannot implement and deploy these innovations successfully without the use of AI-powered platforms that allow connecting the behavior patterns associated with a user and authentication protocols. The transformational role of AI, which mediates the process, is also evident in the sense of strategy. The shift of FinTech disruption has changed customer focus, and the mainstream banks today want to offer a personalized banking experience through AI. AI helps banks shift to service-based models where highly personalized suggestions are generated, and financial consultation is automated and predictive customer support can be offered. According to Tyagi (2023), the banks that use AI as a reaction to the FinTech trend are more strategic flexible, digital agile, and innovative in terms of performance, which are the factors that reflect transformational change.

The theoretical compatibility of FinTech breakthrough, AI assimilation, and bank changeover can be traced in the most of the world redefining banking approaches. Such big organisations as JPMorgan Chase, DBS Bank, and BBVA have used AI as a competitive measure against FinTech companies, a factor that has majorly altered their methods and mode of services delivery, products offering and operational processes. In such cases, AI was not merely a technology that was borrowed, but a tool by means of which the pressures created by FinTech were transformed into real change. Nevertheless, the effectiveness of AI as an intermediary is attributed to a number of catalysts, including the quality of data, the support of leaders, willingness to regulation, and cultural preparation. In the absence of such elements, the implementation of AI can prove vain and incapable of bringing any significant change. Thus, though FinTech disruption is what gets the change process going, and transformation is what we would like to see happen, it is AI that can either allow the change to be realized with efficiency and effectiveness or not.

Finally, the findings of the literature on the hypothesis that Artificial Intelligence positively moderates the relationship between FinTech disruption and the transformation in banking produce a consistent pattern although they are somewhat mixed in nature. The FinTech innovation is operationalized in AI, enabling the banks to become absorbers of the disruption; re-design their processes and become more strategically agile. It enables financial institutions to transform themselves by graduating to be proactive digital leaders. In such a way, AI is a technology enabler as well as a game changer between the external disruption and the internal change in the banking sector.

**H4 :** Artificial Intelligence positively mediates the relationship between FinTech disruption and banking transformation.

### **Methodology**

In this research, the quantitative research design was utilized in studying the mediation effect of Artificial Intelligence in association with the relationship between FinTech disruption and banking transformation. Data were collected using a structured questionnaire, which included previously validated measurement items for all variables and utilized a 5-point Likert scale ranging from “strongly disagree” to “strongly agree.” The study targeted professionals working in the banking sector, including digital banking officers, IT specialists, and FinTech users across both public and private financial institutions in Pakistan. A purposive sampling technique was used to select 350 respondents, ensuring that participants had relevant exposure to digital banking or FinTech systems. Data collection was conducted over six weeks, and ethical considerations such as informed consent and anonymity were strictly maintained.

The collected data were analyzed using SPSS and PROCESS Macro v4.1. Descriptive statistics summarized participant demographics and overall response trends. To assess the reliability of the scales, Cronbach’s alpha was calculated, and all constructs exceeded the acceptable threshold of 0.70. Pearson correlation was used to determine the relationships among FinTech disruption, Artificial Intelligence, and banking transformation. Multiple regression analysis tested the direct effects of FinTech disruption and AI on banking transformation. To test the mediation hypothesis, the study employed Hayes’ PROCESS Macro (Model 4), which provided insight into the indirect effect of FinTech disruption on banking transformation through AI. This methodological approach ensured a robust, data-driven understanding of how AI enables banks to transform in response to FinTech-driven change in less urbanized, emerging financial markets.



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### Results

#### Descriptive Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
FinTech Disruption	3.89	0.76	2.10	5.00
Artificial Intelligence	4.02	0.69	2.40	5.00
Banking Transformation	3.95	0.72	2.30	5.00

All variables show relatively high mean values (near 4), indicating positive perceptions among respondents regarding FinTech disruption, AI adoption, and banking transformation. The moderate standard deviations suggest some variability in responses but within a reasonable range.

#### Reliability Analysis (Cronbach's Alpha)

Variable	Number of Items	Cronbach's Alpha
FinTech Disruption	8	0.87
Artificial Intelligence	7	0.91
Banking Transformation	9	0.89

All constructs exhibit excellent internal consistency ( $\alpha > 0.80$ ), confirming that the scales are reliable for measuring the intended variables.

#### Validity Analysis (Convergent Validity)

Construct	Average Factor Loading	AVE	CR
FinTech Disruption	0.72	0.55	0.86
Artificial Intelligence	0.76	0.58	0.89
Banking Transformation	0.74	0.56	0.88

All constructs demonstrate acceptable convergent validity with  $AVE > 0.50$  and composite reliability ( $CR > 0.70$ ), confirming that the items sufficiently explain the latent constructs.

#### Correlation Matrix

	FinTech Disruption	Artificial Intelligence	Banking Transformation
FinTech Disruption	1.00	0.62	0.59
Artificial Intelligence	0.62	1.00	0.65
Banking Transformation	0.59	0.65	1.00

There are moderate to strong positive correlations among all variables, particularly between AI and Banking Transformation ( $r = 0.65$ ), suggesting that greater AI adoption is closely associated with greater banking transformation.

#### Regression Analysis (Direct Effects)

Independent Variable	Dependent Variable	Beta	t-Value	p-Value
FinTech Disruption	Banking Transformation	0.31	5.21	0.000
Artificial Intelligence	Banking Transformation	0.45	7.14	0.000

Both FinTech disruption and AI have a significant positive impact on banking transformation ( $p < 0.001$ ). AI shows a stronger direct effect ( $\beta = 0.45$ ) compared to FinTech disruption ( $\beta = 0.31$ ).

### Mediation Analysis (PROCESS Model 4)

Path	Beta	t-Value	p-Value
FinTech Disruption → Artificial Intelligence	0.52	8.62	0.000
Artificial Intelligence → Banking Transformation	0.45	7.14	0.000
FinTech Disruption → Banking Transformation (Direct effect)	0.31	5.21	0.000
FinTech Disruption → Banking Transformation (Indirect effect)	0.23	4.12	0.000

The mediation analysis confirms that Artificial Intelligence significantly mediates the relationship between FinTech disruption and banking transformation. The indirect effect ( $\beta = 0.23$ ,  $p < 0.001$ ) demonstrates that part of FinTech's impact on transformation occurs through increased adoption of AI.

### Discussion

The findings of this study provide strong empirical support for the hypothesis that FinTech disruption positively influences banking transformation, and this effect is significantly mediated by Artificial Intelligence (AI). The results underscore a growing trend in the financial services industry where digital innovation is no longer optional but essential for survival, particularly in geographically less-developed areas. This change is also being instigated by external pressures of FinTech companies and internally empowered by the technologies based on AI.

Descriptive statistics indicates that the respondents have positive opinions towards relevance and importance of FinTech disruption, AI and banking transformation. The large mean values show that the banking professionals start becoming more aware of the threat of FinTech competitors and the possibilities of AI to overcome this threat. The results can be aligned with the study of Arner et al. (2022), which underlines the necessity of banks to innovate to remain relevant to the swift changing expectations of customers and client-service models driven by FinTech.

More to the point, both FinTech disruption and AI have a notable positive direct impact on the bank transformation, which is confirmed after regression analysis. Nevertheless, the higher value of standardized coefficient of AI (0.45) than that of FinTech (0.31) indicates that even though the former provides the moving force of change, the latter is the important driver of transformation. This justifies the theory that FinTech disruption is not enough without internal preparations technologically. That is, the pressure of innovation posed by FinTech companies should be counteracted by technological investments and reorganization of operations among the traditional banks, mainly using AI systems.

This understanding has been further extended by the correlation matrix that tells us that the variables are strongly positively related. Of special interest is the fact that the correspondence between AI and banking transformation is quite high ( $r = 0.65$ ), meaning that the advancement toward AI technologies by banks leads to more transformation being experienced on operations, customer service, and strategic agility scales. It follows the literature, which indicates that AI is not only a tool of automation, but intelligence and flexibility in decisions (Brem et al., 2021).

The mediating role of AI is revealed as the key contribution of the study since it is explained that AI plays a significant mediating role in the relationship between FinTech disruption and banking transformation. The mediating impact (0.23) establishes that the engine behind the absorption, integration, and scaling process of the FinTech innovations in the realm of the traditional banking is AI. To give an example, innovations launched by FinTechs, including biometric authentication, algorithmic lending, or AI-powered investment platforms, could only make sense to conventional banks when they become the reason to use AI to adjust to the innovation and develop it at their own corporations. The banks working without AI can be conversant with the development of FinTech but can be incapable of reacting to it sufficiently.

The mediation augments current structures put forward by other researches including Gomber et al. (2023), who do suggest that digital change within banking involves more than mere adoption of the FinTech toolkit, but rather the operationalization of intelligence and automation. The AI layer changes the external disruption by FinTech into an internal strategic asset, redesigning the processes, predictive analytics, automating its risk evaluation and more personal customer services. Therefore, AI is not merely technologically mediating, but it is strategically mediating in terms of bridging the capacity of technology with those goals of the organizations.

### Recommendations

On the basis of the findings, the strategic approach to AI implementation should become the response of banks to the disruption caused by FinTech. Instead of considering FinTech as an enemy, incumbent banks need to engage directly with FinTech companies or learn to be as nimble as them by investing in AI-based chatbots, credit scoring, and

fraud detection applications. Another strategy that banks need to undertake involves building capacity by training their employees to use AI tools to make the intended adoption successful. Moreover, regulators and policy makers should make sure that the data protection regulations and digital infrastructure are AI innovation friendly, thereby allowing the banks to reform successfully and in an ethical way.

### Limitations

This research although very useful has its shortcomings. To start with, purposive sampling means that the results can be extrapolated only to the general banking industry in Pakistan or other economies. The sampling used these two semi-urban districts and hence the respondents might not be that representative in the cities that are more developed in terms of digitalization. Second, the data is a cross-sectional and due to this caveat, causal inferences across periods are not possible. Furthermore, self-reported information may have certain biases that include social desirability or an overestimation of AI performance. Such limitations can be overcome in the future by employing longitudinal study designs, random sampling to different regions, or mixed-method study designs to get a better understanding.

### Conclusion

This paper empirically proves that FinTech disruption significantly transforms banking, with a strong and positive relationship between FinTech and Artificial Intelligence (AI). AI is not merely a technological upgrade; it represents a revolution that enables banks to adapt swiftly to the challenges posed by FinTech innovations. The findings reveal that AI acts as a catalyst, converting the competitive pressure created by FinTech into enhanced performance, service innovation, operational efficiency, and organizational resilience. In markets where digital transition is still incomplete, AI provides a clear strategic path forward, allowing banks to modernize their systems, develop new products, and meet evolving customer expectations effectively. Moreover, supporting institutions and stakeholders that invest in AI-based banking transformation are likely to gain long-term advantages, such as improved competitiveness and customer loyalty. In contrast, banks that fail to integrate AI strategically risk falling behind in market share and operational relevance. This study concludes that adopting AI is no longer optional but a necessity for banks aiming to thrive amid FinTech disruption. Proactive investment in AI technologies, digital infrastructure, and workforce readiness will determine which banks emerge as leaders in the rapidly evolving digital financial landscape.

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