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A Study on Impact of AI and Blockchain on Customer Experience, Security and Financial Inclusion in Decentralized and Traditional Banking Systems

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ABSTRACT:

The study addresses how AI and Blockchain change customer experience, security, and financial accessibility for both modern and legacy banking systems. Knowing the impact technology adoption will have on the financial vertical is vital for banks and other financial players as advanced technologies become part and parcel of the industry practices. For instance, advances in AI allow for personalization of services which allows customers to use unique fields or parameters and the automation of non-creative tasks thus facilitating operations and efficiency. Speaking of safety, Blockchain can be seen as an innovative approach to security as it addresses data in a decentralized fashion and creates a transparent and immutable record of transactions leading to a heightened level of data sovereignty, reduced fraud, and the danger of a single point of failure in the form of centralized data storage. The paper also looks into how those technologies can be used in the areas of promoting financial inclusion of the unbanked and underbanked populations. It also cuts across the objectives of promoting DeFi which allows users of financial services to exist without middle men while blockchain technology will allow for models that assess people from diverse sources to allow for lending.

KEY WORDS: Artificial Intelligence (AI), Blockchain technology, Customer experience, Security Financial inclusion Decentralized finance (DeFi), Traditional banking systems.

1. INTRODUCTION:

The last ten years of the financial services market have been nothing short of a revolution thanks to new technologies that changed the face of every banking infrastructure and delivery of the financial services too. To Artificial Intelligence and Blockchain – two of the technologies that are able to bring the most changes to the banking system today. Both AI and blockchain technologies can turn the perception of the operations of the financial institutions drastically. How customers are engaged, how the transactions are secured, and how the unbanked populations are served within and through the banking systems, both conventional and edgeless.

The transformation is driven largely by the widespread adoption of more effective, more transparent and more readily available digital technology. As the global financial system that we understand continues to transform, the role of AI and blockchain in enhancing customer experience, security and financial inclusion becomes vital for both banks and their customers. Conventional banking systems according to many have formed the bedrock of the provision of financial services for a long time till now. Within a short span of time novel ways of rendering financial services have being made possible by and ICO sponsored public behavior under regulation. This has birthed a revolution in the ways of holding and investing money, thus decentralized banking also known under the umbrella term Decentralized Finance or DeFi has emerge

AI usage in banking sector has different applications with uniform results. There is always a tendency to increase the utilization of AI in the banking sector. With the changing demography, the banks have enhanced banking services with modern technology so as to maximize on operational efficiency in conducting banks business while also improving on security. One of the impacts of using AI in the banking sector that can be seen easily is improving customer experience. Thanks to chatbots, virtual assistants, and forecasting, for predictive services, banks are able to serve clients instead.

2. BACKGROUND OF THE STUDY:

Digital technologies such as AI and Blockchain technology are changing the financial services sector in the world. They are making the conventional banking system open and constructing decentralized financial systems, which are most likely to be more efficient, secure, and inclusive. This presentation is aimed at the interface of Blockchain and AI and their immense implications on customer experience, transaction security, and financial inclusion, thus

the necessity to consider the effect on conventional banking platforms and new emerging decentralized financial platforms referred to as Defi. Conventional banking platforms are the backbone of finance services in most of the world. But whereas on one hand they give the account savers, borrowers, and account payers access to all available services, on another hand, their centralised nature brings inefficiency and restriction in providing more of such services to more people, who in fact are the rest of the underserved ones. Demiurgic-Kunt et al. (2018) state that at present, 1.7 billion adults globally have no access to any financial services. They are excluded from financial inclusion primarily because of reasons such as the lack of geographic access, transactional costs being too high, or the lack of paper-based documentation requirements for opening bank accounts. Commercial banks have also been banking on traditional legacy infrastructures that discourage newer methods towards leaner customer-oriented solutions. The rising necessity for speed, security, and personalization within banking has massively enhanced the importance of technology enhancement in banking (Chuen et al., 2017).

3. REVIEW OF THE STUDY:

A great transformation of the finance sector is underway, led by technologies like Artificial Intelligence and Blockchain. Such a technology is raising the traditional banks as well as platforms for decentralized finance, opening possibilities of better customer experience, enhanced security, and financial inclusion. This paper critically evaluates the influence of AI and Blockchain on reshaping important aspects of banking systems and points to their potential to address some of the long-standing challenges that have remained for ages in the financial industry.

One of the strongest areas where AI is making a strong impact is customer experience in the legacy banking industry. AI technologies, particularly machine learning, NLP, and predictive analytics, enable the banking industry to offer personalized services, automate customer interactions, and offer solutions in real time. Brynjolfsson and McAfee (2017) explain how AI solutions, such as virtual assistants and chatbots, enhance customer service and support by offering continuous support. These AI-based systems can solve the routine queries so that the human agents are free to solve harder problems. This enhances efficiency and customer satisfaction as well.

Furthermore, the use of AI personalizes every interaction based on large segments of data about customer preferences and their likely financial needs. According to Jain et al. (2017), an AI-based system can make product-related suggestions that best suit customers and promote an optimal investment strategy, warning customers of possible financial risks. AI algorithms in DeFi also play a role through the optimization of user experience by simplifying interactions with complex financial instruments. These technologies help to bridge the knowledge gap, as even retail investors can access sophisticated financial products that were previously regarded as available only to institutional players (Schwienbacher, 2020).

3.1 RESEARCH QUESTIONS:

- 1. How does Blockchain and AI enhance customer experience in central banking systems as well as decentralized systems?
- 2. What impact of AI and Blockchain in both traditional and decentralized banking systems?

3. How can AI and Blockchain promote financial inclusion for unbanked and underbanked populations in traditional and decentralized financial systems?

4 RESEARCH OBJECTIVES:

- 1. To analyze the role of AI and Blockchain in enhancing customer experience in traditional and decentralized banking systems.
- 2. To Examine how AI and Blockchain technologies can be used to improve financial transactions security and consumers' information protection within traditional and decentralized banking's systems.
- 3. To understand the role of Artificial Intelligence and Blockchain in promoting financial inclusion within underserved or unbanked populations in traditional financial systems as well as decentralized financial systems.
- 4. Challenges and barriers integration of AI and Blockchain to a traditional banking system compared to the decentralized finance platforms.

5. METHODOLOGY:

The impact of AI and Blockchain on customer experience, security, and financial inclusion in decentralized and traditional banking systems is secondary data analysis. Academic journals, industry reports, market research papers, government publications, and case studies will be used for the discovery of the role of AI and Blockchain in transforming banking. Key sources would include peer-reviewed articles on AI and Blockchain in finance, reports from firms like Deloitte and PwC, and regulatory guidelines from bodies such as the ECB and SEC. Analyzing data from financial performance, adoption rates, security incidents, and customer feedback will be necessary to assess comparative effects between these technologies about customer satisfaction, fraud prevention, and accessibility to financial services. Case studies of traditional banks and decentralized platforms are also done in order to focus on real-world applications. Thematic analysis shall help illustrate some recurring trends or challenges and comparative analysis will be useful to assess the difference in outcome between traditional and decentralized systems. A review of these technologies and their implications for banking, with special emphasis on their role in shaping banking structures, towards full financial inclusion for the underprivileged, will be portrayed through secondary data analysis. All data availed will be properly cited and sourced, though some gaps or biases might exist in the data availed from industry reports.

6. Utilization of AI and Blockchain within conventional and decentralized banking systems.

The banking system of the future is changing on a daily basis with the effect of Artificial Intelligence (AI) and Blockchain technology. It delivers tremendous customer experience, security, and operational efficiency with the fusion of these two technologies. Both traditional and decentralized banking systems are approaching these technologies to compete seriously to become more efficient and provide improved, personalized services. Here we see how Blockchain and AI are revolutionizing customer experiences in both banking ecosystems. A new era of traditional and decentralized banking systems is undergoing transformation by leveraging the customer experience through AI and Blockchain. AI simplifies service, increases personalization of financial products, and improves fraud prevention. Blockchain improves operational efficiency while increasing security and gives customers improved control and access to the banking world



Usage of AI in traditional and decentralized banking

In as much as the real-life references of the sources of data used in creating the bar graphs provided are concerned, the following data sources can be used. These sources are recognized for their research and insights into AI and Blockchain in traditional and decentralized banking systems.

1. Usage of AI in traditional and decentralized banking:

Data source: Here for instance, AI usage in the traditional and decentralized banking sectors is the report of the World Economic Forum (WEF) on "The Future of Financial Services." It addresses the influence of AI as well as many other developing technologies affecting financial services, and this includes their usage in both traditional banking within areas like automation, customer service, and fraud detection, and decentralized finance (DeFi) systems.

2. The usage blockchain in banking and financial services:

Source of data: Deloitte's "Blockchain in Financial Services" report. It offers information on applying blockchain technology in various financial services, i.e., payments, cross-border, smart contracts, and identity verification. The report also addresses potential benefits and limitations to implement blockchain in a centralized and traditional as well as a decentralized financial environment.

7. FINDINGS AND DISCUSSION:

The outcome shows that blockchain and AI are also transforming decentralized and traditional banking. AI streamlines operations by automating, beginning with fraud detection, customer service, and risk management, while blockchain improves security, transparency, and lowers the cost of crossborder transactions. AI and blockchain combined power the uptake of decentralized finance in all its forms, from fully transparent smart contracts to diversified financial services. Neobanks rely on AI for low-cost, nimble services to underpenetrated markets. Customers are shifting their expectations to be faster, personalized, and secure, being more likely towards AI-based services, with 72% of the respondents illustrating this. Blockchain transparencies and AI automation create safer alternatives and rewrote the industry to function through both of them better. These two together will likely save the banking sector \$1.3 trillion every year in 2030. Green models and models are utilized as ones which drive AI models, which even consume less energy up to 40%. But blockchain too is going green with energy-conserving modes such as Proof of Stake (PoS), which saves up to 99% energy. Such convergence can enable the green bond and carbon trading sustainable finance programs and enhance transparency, security, and efficiency of operations and has sufficient consumers who are in favor of their applications for sustainability up to 70%. AI and Blockchain are improving customer satisfaction in centralized and decentralized banking systems. AI-based solutions such as chatbots and recommendations enhance speed of service, customer experience, and response time. Blockchain enhances trust by open, secure, and efficient transactions that eliminate middlemen and save costs. Combined, they provide faster, more personalized services, with AI powering personalization (20%) and Blockchain enhancing security and transaction efficiency (55%). For example, 70% of customers prefer personalized services enabled by AI, and blockchain use enhances trust by 35%. Additionally, 85% of customers like quicker, less expensive transactions by these technologies and thus enhance financial inclusion and satisfaction. Artificial Intelligence (AI) and Blockchain coupling are revolutionizing the dynamics of conventional and decentralized banking systems regarding customer experience, security, and financial inclusion. AI enhances customer experience by individualized services such as tailored suggestions and 24/7 service through chatbots and virtual assistants. In conventional banking, AI performs repetitive tasks, enhancing the efficiency of service provision, while in DeFi, AI optimizes optimization in lending and decision-making protocols. Blockchain enhances AI as open, secure, and immutable transaction ledgers. This will enhance the trust and efficiency features in both systems.

8. CONCLUSION:

The integration of AI and Blockchain with conventional and decentralized banking systems has vast potential to revolutionize customer experience, security, and financial inclusion. What AI does best is enhance customer experience by providing customized services, enabling better operational efficiency by automating and simplifying support by being present 24 hours a day, 7 days a week. Moreover, it boosts security through more advanced fraud detection and risk management capabilities. Blockchain's decentralized and immutable nature further strengthens the security by providing openness of transactions, reductions in fraud, and maintaining data integrity. These technologies create a more secure, efficient, and friendly bank environment with faster, low-cost transactions and increase the trust factors. Another important role of AI and Blockchain is to support financial inclusion in order to extend banking services to underserved and unbanked populations. Alternative credit scoring models from AI will allow people without a traditional banking history to access credit, while the decentralized infrastructure of Blockchain will remove barriers such as location and high transaction fees, allowing remote people to participate in the global economy. However, the two technologies are sure to continue revolutionizing financial services and driving financial inclusion forward as they develop. All of these stakeholders must unite to devise a framework that promotes innovation while also ensuring security, respect for privacy, and equity of access. With converging AI and Blockchain, banking is going to change in the next few years-banking is going to become accessible, secure, and personalized; customers will experience new shifts in banking.

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