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Investigating the Simultaneous Performance of AI and Blockchain on E-banking Transaction

Amir Sokhandan*

Department of Computer Science, Faculty of Information Technology, Negin Jiroft Higher Education University, Kerman, Iran.

*Correspondence: Amir.sokhandan@outlook.com (Amir Sokhandan, Department of Computer Science, Faculty of Information Technology, Negin Jiroft Higher Education University, Kerman, Iran).

ABSTRACT

Although electronic banking networks are new to communities, it can be argued that there are good reasons for their expansion. The banking industry is aware of the power and ability of social networks and enables banks to reach customers more than traditional channels, but currently, banking in social networks is limited to product marketing, customer interaction and support. As the channels and service delivery mechanisms in banks develop, bank managers have the right to worry about the monitoring of transactions in such networks and it becomes their main concern. Although electronic banking networks are new to communities, it can be argued that there are good reasons for their expansion. Banking is aware of the power and capability of social networks and allows banks to reach customers more than traditional channels, but currently banking on social networks is limited to product marketing, customer interaction and support. It is As the channels of banks and service delivery mechanisms evolve, bank managers have the right to control transactions in such networks, and this becomes their main concern.

Keywords: Artificial intelligence, Blockchain, E-banking, Simultaneous performance and Transaction.

INTRODUCTION:

One of the best ways to understand blockchain (blockchain) is to be aware of its potential, and the best way to find out if blockchain can be used for business is to explore potential applications. However, approximately 50 percent of these companies do not have the opportunity to obtain contractual loans from banks due to the invisibility of financial credit. The benefits of this solution include: new revenue streams for the SME community in the operating system, initiation of new business relationships to add value to the community, business forecasts and overall economic growth. They need Institutions (customs, competent authorities, transport and rail transport

companies, etc.) for the cross-border movement of goods. Multiple legal entities can use the blockchain to sign all approvals and notify all parties of approval status by approving products from the importer and paying the exporter. The advantages of this solution are: complex processes become a simple process and everyone in the office has access to a night capital increase, because it is not solved by time, mistakes or long discussions. Building trust and accountability between businesses, regulators and consumers, payments and compensation after currency exchange are fundamental to ensuring liquidity in international trade. Participants can register their transactions to

settle 140 currencies and connect them directly to the bank through an authorized or highly secure SWIFT mechanism. These accounts are used to facilitate and simplify foreign trade and transactions through consolidation. Nostro/Woster accounts can be converted to transactions recorded on the blockchain, greatly improving transparency and efficiency through automatic account integration.

Blockchain

Blockchain is a revolutionary technology that has had a major impact on several industries, especially finance, supply chain management, healthcare and others. It is essentially a decentralized and distributed ledger system that records transactions on a computer network. Each record or "block", and the chain contains a list of events, and when these blocks are added, they are linked together to form a chronological and immutable chain of data. The blockchain mechanism has created the next generation of privacy to help Canadian customers easily and privately identify their identity through a trusted provider such as banks, telecommunications companies and governments. As a result, these customers can connect to important online services with the digital credentials they have already earned, with the assurance that information will only

be shared with their express consent. In response, blockchain has helped transform major multinational and locally controlled policies into blockchain "smart contracts" that provide a shared view of real-time policy data and documents across insurers, insurers, intermediaries and network partners he does. The benefits for participants include: A new level of trust and transparency in the multinational network Creating conditions for the insurer and its partners to provide more efficient multinational insurance Increased confidence in the contract, regulatory coordination and country-specific alignment of the government A major part of the government works In recording transactions and tracking the ownership of assets, all this may become more efficient and transparent with the use of Blockchain. Millions of people around the world may have created fake identity documents and it may be possible to find out exactly what their identity is. People who live in impoverished areas may not have enough ID and need these documents for a certain provider, for example, banks usually require proof of residence or a house bill to identify themselves, neither of which They do not exist in developing countries.

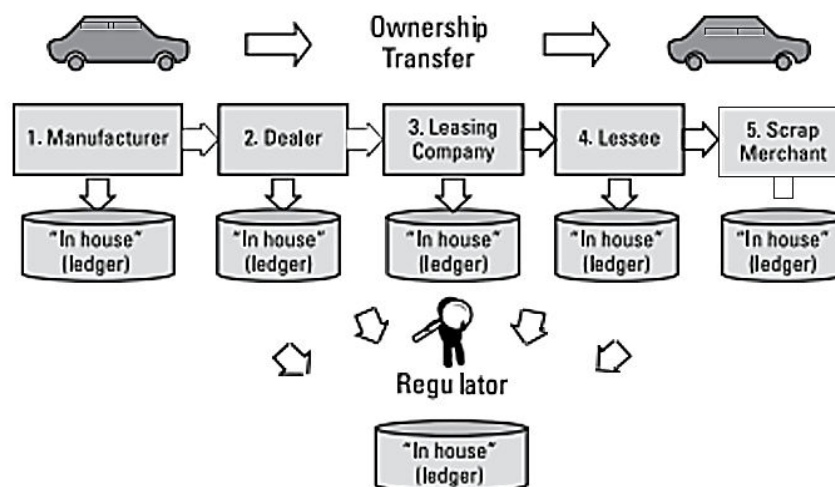


Fig. 1: Vehicle Ownership Tracking Without Blockchain.

E-banking

Electronic banking Banks are institutions that accept deposits and extends credit to institutions and plays an important role in maintaining the economic status of a country. Electronic banking is one of the most important

sectors of electronic finance. Internet banking refers to the provision of retail and wholesale banking services over the Internet. The Central Bank of Iran is the country's largest banking institution that regulates monetary policy. Internet banking is a safe, fast,

simple and efficient electronic service that allows you to access your bank account 24 hours a day and 7 days a week and check the benefits, challenges and various services of an online banker. You have compared to developed countries, developing countries face many barriers that affect the successful implementation of online banking initiatives. The electronic banking service is a safe, fast, simple and efficient electronic service that allows you to access your bank account and offer online banking services 24 hours a day and 7 days a week. The introduction of the latest technologies and the deregulation of the banking sector have attracted new players to attack the sector quickly and competently. Considering the modern era of banking, online banking has become much easier and has saved the time of many bank employees and the general public. ICICI Bank was the first bank to introduce internet banking to its customers in 1996. E-banking refers to basic banking transactions that customers do electronically on a computer or laptop. Customers can view their account information and complete account transactions according to their needs through the bank and website. Each financial institution can determine the types of financial transactions a customer can make through Internet banking, but they usually include account balances, a list of recent transactions, electronic bill payments, financial loans and money transfers between customer accounts or banks.

Relative review

Artificial intelligence (AI) and Blockchains are two of the most trending technologies used in various areas of software (Zhu *et al.*, 2023). While AI is undeniably an area that can be used in almost every sector today, blockchains spread their use through many applications that require increased security, such as enterprise applications (Bandara *et al.*, 2021), finance (Jain *et al.*, 2021), Internet of Things (IoT) (Shammar *et al.*, 2021), safety of automated vehicles (Alladi *et al.*, 2020), (Narbayeva *et al.*, 2020), home security (Ratkovic, 2022), medical systems (Abd-Alrazaq *et al.*, 2021), metaverse (Huynh-The *et al.*, 2023), supply chain management (Dutta *et al.*, 2020), and many other areas as mentioned in the literature. A blockchain (Shrimali and Patel, 2022) is at its core, an immutable ledger that stores transactions. The main advantage of this technology is that the ledger is not stored in a

centralized node, but is replicated across a group of peers and kept in sync at all times. Transactions between users are recorded and grouped into a linked list of blocks. The distributed and replicated ledger can store and exchange data in a cryptographically secure manner. The validity and security of data operations is ensured by so-called mining nodes. It has been proven both theoretically and empirically (Guo and Yu, 2022) that the data stored in the blockchain ledger has a high level of integrity and robustness and is almost impossible to manipulate. Due to features such as immutability, decentralization, cryptographic security, verifiability, etc., it has been used by various sectors. It started with applications for crypto currencies and financial applications in general, and then was adopted by sectors such as healthcare, Internet of Things (IoT), supply chain management, agriculture, etc. Smart contracts are pieces of software that can perform secure, programmed, and well-controlled actions on the blockchain. There are three main classes of blockchains:

- 1) Permissioned or Private Blockchain (Vukolic, 2017): the platform can define and select participants and their roles. Generally used by industries and for private personal use
- 2) Permission less or Public (Bozic *et al.*, 2016) blockchain: typically open source environments where any user can participate, e.g. Bitcoin,
- 3) Consortium blockchain (Li *et al.*, 2017): a combination of the previous ones, usually used by a group of organizations that collaborate together on common projects or solutions. Each organization has its own access and rights attributes.

In financial systems like the banking sector, customers are valuable and losing them has many consequences and costs, as the AI environment is a big challenge that banks are facing. (Hadadi *et al.*, 2022) presented a time-series deep neural network-based approach to customer retention in which a dataset of bank retail customers in the Islamic Republic of Iran was collected. The dataset contains real daily transaction data of about 50,000 customers at Pasargad Bank in November and December 2021. Contrary to most existing forecasts, their strategy is that customer churn forecasting with a time series algorithm approach can be appropriate, a method to predict customers who tend to leave the bank. The reason for this is that the daily

trading behavior of the customers is taught and it is possible to predict the exiting customers in a certain period in the future. (Ehsani, 2022) Customers are the most valuable assets of any company. Therefore, suppliers should establish a strong relationship with their customers by providing the most suitable products and services based on their demands and trying to satisfy customers to prevent them from leaving. Predicting how to execute a transaction in artificial intelligence is one of the customer relationship management strategies to estimate the probability of their abandonment. Marketers use CCP to attract visitors, engage them in website activities, convert them into customers and retain them for a long time. It puts a lot of pressure on suppliers to keep their customers happy and build a lasting relationship with them. (Bharati *et al.*, 2022) The perspective of the retail banking industry towards its customers has witnessed continuous transformation since the financial crisis of 2008. Marketing strategies of the pre-crisis era were mainly focused on attracting more and more customers rather than creating new bank accounts at a rapid pace. Customer retention is one of the top priorities of any organization because it brings tremendous value to a bank. There is a huge competition in the banking sector to attract and retain customers. Young people are old customers of banks and hence, this study was conducted to predict their performance. It helps banks to understand relevant services, service quality, and deficiencies in current processes and modify them to retain customers.

Artificial Intelligence and Blockchain

In the paper, the authors (Muheidat and Tawalbeh, 2021) define an architecture that combines the functions of artificial intelligence and blockchain and the contributions and roles of stakeholders. The proposed architecture consists of three floors. At the participant level, stakeholders can collaborate and share data and AI models and provide validation, analysis and forecasting tools. A concrete example from the medical field could be that the interest groups are a consortium of different hospitals. Different institutions can then add their own data and data about patient and treatment correlations, which can then be used in predictive models to find similarities and patterns for better decisions, research and recommendations in the future.

The second layer, the blockchain layer, is a service-based layer that deals with data storage, ledger management and transaction management, communication, connections between miners, role management, data encryption, etc. These functions are typically related to e.g. the blockchain is encapsulated (hidden) in this layer to ensure separation of concerns from other stakeholders. The third layer, the user layer, contains the users who can interact with the system. Following the example of the medical field, the stakeholders in this case could be doctors, patients and others who can use the data sets, models and AI-based tools provided by the system.

Integrating artificial intelligence (AI) with blockchain

Technology can provide effective solutions that combine the strengths of both technologies. Here are several ways to integrate AI and blockchain: 1. Advanced Protection: AI-powered threat detection: AI algorithms can analyze network traffic and event patterns to detect and respond to security threats, improving the security of blockchain networks. 2. Smart contracts and artificial intelligence: Smart contract execution: Artificial intelligence can be integrated into smart contracts, enabling more advanced and dynamic contract execution based on real-time data and events. Artificial intelligence can trigger, for example, contractual actions based on external circumstances. 3. Protection and encryption of data: Private and secure data sharing: AI can be used to encrypt and securely share data on the blockchain while allowing selective access to authorized parties. 4. Supply chain management: Artificial intelligence for supply chain optimization: AI algorithms can analyze supply chain data stored on the blockchain to optimize logistics, predict demand and increase supply chain transparency. 5. Confirmation of the person: AI-based identity verification: Combining blockchain and immutability with AI-based identity verification can provide a secure and efficient way to verify individuals and entities in various applications, including KYC processes.

Digital revolution and challenges

Digital adaptation started as an option, but has become an imperative on the agenda of every bank around the world, as end-user customers, businesses and govern-

ments quickly adapt to evolving trends in IT capabilities, business operations and models in the technology sector. Companies themselves fail, adopt. With the rise of the digital generations, the manifestations of rapidly evolving changes in all areas of our lives are creating exciting challenges and opportunities for the end-user digital ecosystem. Alternative non-banking players, better known as Fintechs, have felt a rapid change in the growing demand of customers in the new digital environment. Some cause constant disruption, while others allow customers to do less. In these times of rapid change, it is imperative that banks understand and act on the growing digital needs of end customers and have the opportunity to position themselves as early adopters by leveraging their current advantage in this space.

Introducing financial services

There is great potential in the transaction banking space and we expect this space to evolve rapidly, leading to an increase in digitized products and offerings across the board. While banks may be comfortable with their current advantage, technology-based non-bank competitors are improving their capabilities much faster and are now significantly stronger, and the preferential access and relationships of traditional transaction banks are now challenging their institutional clients. In this study, we explore the emerging digital phenomenon in the world of transaction banking, identifying key global technology trends and changes in end-user ecosystems, as well as differences in trend prevalence and maturity across key industries. Next we look at the current state of established operators and alternative service providers in the field, and finally provide an overview of the future direction.

Processing

One way to predict performance is to use a classification technique that produces a machine learning model. Also, by comparing the sampling data, the support vector machine is the best method for predicting the artificial intelligence environment in a bank and has been more successful than the other methods. The results of this modeling can be used by the company that applies strategic measures to prevent the way the transaction is executed in artificial intelligence. The proposed methods fully reflect the global and parametric distribution of the data and can show

the inherent characteristics of the relevant data. According to the conducted research, the need for a predictive analysis method based on descriptive analysis is felt, which examines the results of its analysis from a developmental point of view, thereby creating a prediction of future data. It gives the final decision maker a reminder at the data level. Predictive analysis mainly refers to prediction based on classification or based on statistical regression problems. At the same time, the main factors of descriptive analysis are methods of analysis of association rules and cluster analysis.

Improvements

The development of advanced information and communication technology supports the rapid computerization of banking. The beginning of the internet banking industry is a new paradigm revolution from paper payment transactions to electronic shopping. Generally speaking, the level of banking services offered via the Internet can be divided into three types: Basic level services are banking websites that provide information about various products and services offered to customers and the general public. They publish widely. It can receive and respond to customer inquiries via email. At the next level are simple transaction sites that allow customers to post instructions, request various services, inquire about their account balance, etc., but do not allow fund-based transactions. Third-tier Internet banking services are provided through fully transactional websites in their accounts that allow customers to transfer funds to their account, pay various bills, order other banking products and make purchases and purchases. work Sale of securities, etc. Electronic banking enables the following services in the country

- 1) Accurate statement of all items in our bank account.
- 2) Our checking, credit, overdraft and deposit accounts.
- 3) Making domestic and international bank transfers in different currencies using NEFT.
- 4) RTGS mechanism to implement all kinds of utilities (electricity, water, telephone bills, etc.).
- 5) Electronic confirmation of all transactions made through the internet bank.

- 6) Management of credit cards, debit cards and smart cards.

Electronic banking security Authentication

Banks use a personal PIN code and a unique customer ID that customers use to access their account transactions. Data protection: Online banking must ensure that only the right person has access to data, that standard online data protection and encryption techniques are used when contacting and interacting with the bank. Integrity: Integrity refers to online banking where the security of data and messages includes legal and procedural transactions in electronic matters. Transaction form: One aspect of online banking security is the transaction form, which displays a list of instructions sent by the bank prior to the transaction. Identification and Password: Setting the correct password only ensures authorization to access the data. Other cross-checks can be implemented to increase security. Authorization: Authorization ensures that only a user has access to the data they are allowed to read or modify that data.

CONCLUSION:

It is each event is assumed to have an adjustment factor and that adjustment factor has parameters, the method for evaluating the event must score points based on the sum of the weights or items (known as their scores and clusters) for each factor. . At the same time, archives and archival evaluation identify characteristics that have important implications for explaining the use of quality control programs. A comparison of statistical methods and DNN methods to evaluate predictor optimization shows that DNN techniques are more efficient than statistical methods. A comparison of the performance of models using the binary classification technique shows that using large-scale data is better than using models built with detailed data. In the next step, evaluating these results, the customer's predicted performance is used as input to the classification algorithm. At the same time, customer transaction reports and demographic data are also used. Based on the results, decision guidelines are drawn up to determine the granting of a loan to the applicant, the range of limits, the annual interest rate and other levels of bank products are determined. Based on these results, the researchers concluded that the owner of the record and the transaction report explain most of the

credit score, and demographic factors are less important because they are not as effective in credit score. In the proposed method, the weighted scoring of event performance parameters according to the AI control method for each factor is used as the prediction target. The process of implementing events depends on several factors, including:

- Collection
- Analysis of event execution and final decision
- Event type
- Desired resources
- Access to artificial intelligence
- Sharing of information between banks
- General ledger information
- The most important data from the bank file

An attitude to the future

The electronic banking revolution has fundamentally changed banking, pushing boundaries and creating new opportunities. Also in the country, the significant reduction of delivery and transaction costs strongly influenced the strategic business aspects of banks. Compared to developed countries, developing countries face many barriers that affect the successful implementation of online banking initiatives. In this article, we have identified some of these barriers in a country context. Therefore, all banking channels work in parallel with electronic banking services. Currently, due to the lack of proper security, infrastructure and internet penetration, it is very important to take the necessary measures to strengthen e-banking.

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CONFLICTS OF INTEREST:

The author have declared no conflict of interest

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