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A Review of IoT in Banking Industry

Manasvi Rizvi

PIIMTT College, India

ABSTRACT

The Internet of Things (IoT) involves connecting physical objects -- devices, vehicles, buildings and many more -- with electronic components, software, sensors and other means of communication, allowing the exchange of data.This data can then be used to automate tasks, optimize operations and improve the performance of connected devices, enabling users such as businesses and consumers to interact with their environment in completely new ways. IoT represents the next phase in the digital revolution, transforming the lives of consumers and businesses through connections that allow data to be exchanged between objects and machines, leading to automated information and behaviour-based decisions which can create an incredible amount of value.

Keywords: IoT, Banking, Security, AI, Trust.

INTRODUCTION

With the help of this technology, financial services such as banks are increasingly introducing automation and artificial intelligence (AI) into their operations, thus providing better customer service. IoT and digital trends allow banks to streamlined their operations and increase efficiency while providing a better customer experience.

For example, banks are now able to use sensors and RFID (radio frequency identification) tags to monitor customers' activity, allowing them to accurately track customer behaviour. IoT technology also allows banks to collect and analyze data in real-time, helping them identify potential areas of improvement and delivering informed decisions based on the data they receive. Banks are also maximizing their use of data by leveraging AI-driven technologies to predict customer needs and anticipate requirements [1].

In addition, IoT and digital technology have revolutionized the way banks perform the traditional tasks of issuing short-term credit and savings deposits. By using automation, banks can detect fraudulent activities and automate the processing of loan applications and payments. This helps reduce the time and complexity associated with these processes and make them more secure. IoT is also being used to manage customer accounts and payments, including the ability to automate transfers, provide analytics, and detect fraud [2].

Overall, with the help of IoT and digital trends, banks are able to offer better customer service and manage their operations more efficiently. The technology allows them to collect data in real-time and use AI-driven technologies to better understand customer needs and anticipate their requirements. This, in turn, can help banks improve their profitability and optimize their operations. Having an effective performance model in place within the banking system is absolutely necessary for effective decision making and a clear vision for the future. Performance models enable banks to have an accurate picture of the financial health of their clients, more control over their operations, and better insights into long term strategies. Performance models may include evaluating financial performance over a specific period, understanding customer value and retention rates, analyzing customer service satisfaction, or tracking the effectiveness of pricing strategies. Additionally, performance models help the bank to identify weaknesses in internal processes, spot potential opportunities, and create a roadmap to sustainable growth in the long term. Different tools have been proposed for assessing employee performance systems for banking sectors. These include things like surveys, job evaluations, work sampling, 360-degree feedback, peer reviews, and performance appraisals. All of these tools help banks accurately and objectively measure employee performance, track the progress of the workforce, and identify areas where coaching and training may be beneficial. Additionally, these tools can encourage growth and development within the workforce, identify areas in which management should take a more active role in employee development, and help the bank to effectively align employee goals with organizational goals [3-4].

There is no single strong and intelligent way to assess and improve employee performance after receiving training while keeping scores and reducing evaluation time. However, there are things that can be done to achieve these goals. Managers need to set expectations that are clear and achievable and give employees a timeline and guidelines to help them stay on track. They should also incorporate regular check-ins so that employees stay informed about their progress and receive immediate feedback. Additionally, managers should create meaningful and consistent

performance reviews that focus on growth opportunities. Finally, offering recognition of a job well done and setting up incentives for employees are important steps to ensure that employees stay motivated and continue to perform well [5].
Modern companies are interested in advanced tools and innovative solutions based on information technology that helps to integrate their operations, mechanisms, and employees as one network. This technology allows companies to collaborate, share resources, track operations, and maintain critical management information efficiently. Additionally, it allows companies to automate complicated processes and provide real-time insights into performance, enabling improved decision-making and faster responses to changes and unexpected situations. Additionally, automating processes helps to improve accuracy and reliability while eliminating unnecessary human errors. Finally, this technology provides security and scalability, which is important for businesses to maintain up-to-date operations with rapidly changing market conditions [6].

IOT IN BANKING

M-Banking

Mobile banking is a type of online banking service that allows customers to access their financial accounts from their mobile device. This can be done by either downloading an app that enables a user to view their accounts and initiate transactions, or by visiting the bank's website from the web browser on the device. Mobile banking services typically allow users to view balances, transfer funds, pay bills, check statements, and access other banking services. It also provides customers with greater convenience, as it allows them to make financial transactions whenever and wherever they want.most digital devices are now designed with biometric characteristics. Biometric characteristics are specialized features, such as fingerprints and facial recognition, that are used to identify and authenticate individuals. Biometric characteristics are commonly used for security and identification purposes, such as in mobile banking and in gaining access to certain restricted areas or networks. Additionally, biometric characteristics can be used to verify personal information and create a unique profile for each user. They are also used for access control, preventing unauthorized access to confidential information, and ensuring secure transactions. E-wallet is an increasingly popular way to securely make payments online. E-wallet stores a person's payment information, such as debit and credit card details, in an encrypted database. This encryption helps prevent unauthorized access to confidential information and reduces the risk of fraud. As a result, e-wallet users can feel more secure in making payments as their sensitive data is protected. Additionally, some e-wallet services may also offer additional features, such as one-time passwords (OTPs) and multi-factor authentication (MFA), to further enhance security and reduce fraud [7].

Virtual Money

Virtual money, also known as digital money, is a type of currency that exists only in digital form, with no physical representation or backing. Virtual money can be sent over the internet and is not tied to any government or central bank. In recent years, virtual money has become increasingly popular for its convenience, anonymity, and low transaction costs. It can be used to purchase goods and services from retailers, transfer money to people, or even pay for services like online streaming. Additionally, virtual money has enabled new business models, allowing users to pay micropayments (i. e. small amounts of money) to a service provider.

Blockchain is a distributed ledger technology, which allows transactions to be stored and recorded in a secure, transparent and immutable manner, without a third-party intermediary such as a bank. Blockchain technology also eliminates the need for numerous intermediates, thereby reducing the cost of transactions. Additionally, it allows for transferring assets with near-instantaneous speed and security and enables the permanent and immutable recording of financial records. These features make blockchain ideal for recording events, storing data, and keeping track of assets.
A data repository containing all user exchanges is a database that stores records of all interactions between users in a system. This could include transactions, online messages, emails, and other interactions. This type of repository is often used by companies to track customer interactions and to analyze user behaviors. It can also help identify patterns in activities that could point to potential fraud or security breaches [8].

Cyber Crimes

Cybercriminality is a type of criminal activity that involves the use of technology or the internet to perform unlawful activities such as stealing information, money, or using technology to commit fraud or other crimes. Cybercriminals rely on advanced techniques to exploit the vulnerabilities of computer networks and systems to achieve their goals, ranging from stealing personal data to launching cyber-attacks. Cybercriminals often use malicious software (malware) to bypass security measures, gain access to sensitive data, or damage systems. As technology advances, cybercriminals are becoming more sophisticated and their activities are becoming more frequent and widespread [9-10].

Individual Finances

Finance tools use IoT (Internet of Things) generated data to help banks deliver services that are tailored to the customer's needs. The data collected from IoT devices gives a more accurate picture of the customer's spending habits, budget constraints, and financial goals. With this information, banks can provide more targeted and personalized

products and services that are tailored to the customer's preferences. Additionally, finance tools can analyze customer data more accurately and suggest services that are specific to their situation. This allows banks to better serve their customers and provide them with more personalized and tailored services.IoT technology can help banks better monitor customer usage by producing notifications. These notifications can alert banks to any activities that may be out of the ordinary, such as purchases that are significantly higher than usual or spending habits that seem unusual. This proactive monitoring helps banks identify potential fraud and take preventive measures to protect the customer's assets. Additionally, these notifications can be used to remind customers about upcoming payments and alert them about any fees or changes to their accounts that may apply. Overall, notifications enable banks to better monitor customer usage, identify potential fraudulent activities, as well as alert customers of important account information [11-13].

Digital Money/E-money

Digital money, also known as electronic money, or e-money, refers to financial currency that only exists electronically and does not have a physical form. Digital money is created and authenticated using cryptography, making it difficult to counterfeit or tamper with. It is used for a variety of online transactions, such as transferring funds to different accounts, making online purchases, and paying for services. It is becoming increasingly popular as an alternative to traditional measures of value, such as cash and credit cards. Digital money is accepted by many online merchants and used in various digital payment systems [14-15].

Customer Identification Program

CIP, or Customer Identification Program, is a process that allows banks and other financial institutions to verify the identity of their customers. The purpose of CIP is to ensure compliance with anti-money laundering and other regulatory requirements, as well as to ensure accurate and efficient record keeping. This typically involves verifying customer information such as their legal name, date of birth, address, and other forms of identification. In some cases, CIP may also include additional verification or authentication procedures such as background checks and providing documentation.

CIP stands for Customer Identification Program and is used by financial institutions to identify customers and identify relevant customer information. Financial institutions use CIP to meet KYC (Know Your Customer) requirements and other regulatory measures to prevent fraud, money laundering, and other illegal activities. CIP includes a set of procedures to collect and verify customer information, such as name, address, date of birth, and other identifying information. By verifying this information, financial institutions are provided with assurance that the customer is who they claim to be. The CIP process can help to ensure a secure customer relationship and mitigate potential risks [16-17].

CHALLENGES

International Cooperation

International cooperation among banks is a challenge due to different regulations, financial infrastructures, and business practices in different countries. Despite the existence of international banking networks, banks from different countries often have difficulty working together, sharing information, and establishing effective communication channels. This challenge is magnified by legal and political differences, as well as language and cultural differences. Without effective global cooperation, it can be difficult and costly for banks to expand their reach across markets. Financial institutions need to build strong relationships, facilitate data sharing, and ensure compliance with local laws and regulations in order to achieve across the globe cooperation [18-19].

IoT & Trust

The introduction of new currencies in the Internet of Things (IoT) introduces the need for trust. New currencies created through blockchain technology or digital tokens must be accepted by users who may not have complete confidence in the security of the technology or the trustworthiness of the token issuer. Companies must therefore establish trust relationships with their customers to ensure safety and security, as well as ensure that their tokens are accepted. This includes building trust through transparency, communicating risks and advantages, and taking measures to prevent interference. Additionally, companies must provide customer service and build strong relationships with other market stakeholders, including developers, banks, and regulators [20-21].

Technical Challenges

There are several technical challenges that financial institutions and banks face in order to stay competitive. These include keeping up with the rapid developments in technology and continually increasing customer expectations, such as offering a seamless digital user experience. Banking systems must also be able to securely store and access large amounts of customer data, while also addressing data privacy laws. The need to maintain their current legacy systems while still incorporating new technologies and meeting ever-changing regulatory requirements is also a challenge. Banks must also address cyber security issues, as they need to ensure that customer data is kept safe from hackers and

data breaches. Finally, banks must address the increasing use of digital and mobile payments, which requires them to quickly accommodate the latest changes in the payments landscape [22-23].

CONCLUSION

The Internet of Things (IoT) presents significant challenges for financial institutions and banks that require policy tools and research programs to manage them. IoT devices generate large amounts of data, which often requires specialized data storage protocols. Moreover, these devices are often distributed across multiple locations and networks which can complicate privacy and security challenges. Additionally, organizations must find a way to effectively integrate IoT with their existing finance systems and other infrastructure. These challenges require organizations to develop new policies, develop research programs to better understand the security and privacy implications, and develop new ways to process, store and analyze this specialized data.

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