Executive Summary

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1.1 The term "Industry 4.0" refers to the concept that technology has permeated all areas of society: production, finance, services, transportation, and communications. Such developments are driven by digital integration (with devices and processes capable of transmitting and processing huge masses of data) and automation (the availability of machines capable of carrying out tasks of medium-high complexity). The pervasiveness of the Internet and smart mobile phones, along with the emergence of technologies such as the Internet of Things, biometrics, big data, advanced analytics, artificial intelligence, blockchain, etc., has created an organizational focus on designing and developing pre-designed products and services and personalized and customized services are provided for each customer. One of the industries that have changed a lot as a result of the advancement of technology is the banking industry, but it seems that these changes continue. "The development of technology has revolutionized all industries in the world, and the banking industry is no exception," Banker (2019) wrote in a recent report.

Industry 4.0 needs its banking system. The use of Industry 4.0 technologies for digitizing assets, creating a digital identity, providing special offers to customers, offering customization, etc., is one of the most central strategies of Banking 4.0. For example, South Korea currently has the third-largest crypto-currency market after Japan and the United States, and Shinhan Bank, South Korea's second-largest bank, has recently joined KT Corp, the second largest provider of services, and the country's telecommunications has cooperated. The subject of this collaboration has been the development of a blockchain-based platform. For a long time, it was the banking industry that decided how to interact and provide customer service. In Generation Banking, the optimal combination of interactions is determined by the customer. As a result, banks need to fundamentally reconsider their business model.

1.2 Research Design

Our research aims to identify and subsequently analyze the impact of Industry 4.0 on the banking sector. The research was carried through across a sectional survey design that asked respondents about Industry 4.0 banking technologies. The design of the questionnaire was based on a multiple-item measurement scale. It looked into the relationship between technology and service quality in cooperative banks. This study is suitable when dealing with many members in a population where it is not possible to study all of them and hence calling for sampling to come up with generalizations and inferences about the whole population.

The study used the Mixed methods research. The sampling of cooperative banks is done at multistage using a random sampling method. Both primary and secondary data was collected. The primary data is collected from Members, Chairman, CEO and officials of cooperative banks of the district under study. Questionnaires, personal interviews and observation are used to collect primary data. The questionnaires consist of both closed and open-ended questions. Suitable statistical tools are applied for analyzing the data. The researcher applied a simple

random technique, tested Cronbach's Alpha, and had the exploratory factor analysis (EFA) used for the regression technique.

1.3 Objectives:

1. To understand the extent of digitalization through Industry 4.0 in Cooperative banks.

2. To explore the adoption practices and impact of industry 4.0 on the transformation of the banking sector.

3. To analyze the issues and challenges in the Adoption of Technology in the Cooperative banks.

4. To suggest the ways and means of areas in the developments that are needed to boost the performance of Cooperative banks.

1.4 Data Analysis

Descriptive research design is used to describe the scenario of access and usage of the Industry 4.0 technology and adoption in the study area and the reasons thereof. To establish the relationship between technology and its adoption in the cooperative banks, frequency and percentage proportions of the statement describing the relationship were used. From the same scores, means were calculated to determine the perceived relationship.

The study used the Mixed methods research. Thirty experts who understood the Industrial Revolution 4.0 and the banking service of cooperative banks were surveyed. The researcher applied a simple random technique, tested Cronbach's Alpha, and had the exploratory factor analysis (EFA) used for the regression technique. Regression analysis is a powerful statistical method that allows you to examine the relationship between two or more variables of interest. While there are many types of regression analysis, they all discuss the influence of one or more independent variables on a dependent variable

1.5 Findings and Conclusions

Indian people from the habit of using cash has gradually shifted to cashless payment, receiving more opportunities and challenges since the industrial revolution 4.0. Customers are demanding access to sophisticated products and services through multiple channels like the telephone, Internet, cellular phones and the ATM. Today, the top management of several Indian banks are viewing IT as a business enabler and a vital part of their strategy. Banks are revisiting their technology architecture.

Due to this, research was carried out to establish a relationship between technology and its adoption in cooperative banks. The study’s findings have three factors affecting the banking services of the cooperative banks with a significance level of 0.05. The elements of adoption of industry 4.0 include the Perceived ease of use, Perceived usefulness and attitude of employees. It was established that there is a direct relationship between technology and

adoption in the banking industry taking into view its usefulness, ease of use and attitude of employees towards using it. This was made possible through the use of regression analysis, percentages and means.

The use of technology in banking enhances the service offered to the customer. It is useful to appreciate at the outset, that a considerable number of cooperative banks have increased their computerization base by adding Any Branch Banking, Telebanking and ATM interface wherever required and also adopting new technologies like Blockchain, automated robots, and Big Data. This has facilitated the banks to provide efficient and effective customer services and has resulted in economizing on the costs per transaction. Indeed, the staffs of the cooperative banks at the operational, middle and top levels are not very keen on making use of the information technology to its fullest extent in their day-to-day activities which is also one of the main reasons for the gap in the implementation of Industry 4.0 technologies.

Deployment of new technology in cooperative banks is not an easy task for the management mainly because of the non-availability of required qualified professionals, the non-competency of the existing staff to make use of IT to cover various activities of the banking. No doubt that the new technology brings process improvements and positive results but it needs proper identification of the benefits and its utilization. The major risks associated with innovative technology are;

- Increased cash flow is not sufficient to cover the implementation cost
- Integration of existing IT setup with new technology
- Emergence of new risks related to operations, security and maintenance due to the adoption of new technology
- Control of cost

With the adaptation of improvements in technology and automation, the scope and size of services of the banking sector have further widened and it has become very competitive. The banks are forced to adopt these latest technologies to survive and grow in the current day highly competitive market scenario. The latest innovations in the banking sector are e-cheques, an app-based user interface on smartphones, EFTs through NEFT & RTGS, Core Banking Solutions, PoS terminals at retail locations, internet banking & mobile banking.

1.6 Recommendations

Cooperative banks need to strengthen their use of technology in an environment where lenders are adopting digitalization to cater to tech-savvy customers. Despite these problems, cooperative banks are adopting new technology to get the benefit of speed, efficiency, customized product development and increased volume of activity

These banks know they do not have the capability to develop cloud-based solutions in-house or own such solutions themselves. The way forward, then, could be through hosting — helped by technology companies, big and small. State cooperative banks and district cooperative

banks, which are typically located in smaller towns such as Latur, Ahmednagar, Adilabad or Chittoor, are slow to change. They rely more on relationships to get customers, while their urban counterparts transform faster as they compete for head-on with larger private sector banks for customers.

Smaller cooperative banks also face budgetary restrictions and a limited talent pool. Cooperative banks should improve to invest deeply in technology and information technology (IT) systems. A bank with the right technology, good management, and security systems for both customers and employees will always operate smoothly and promptly to meet customers' changing needs. Along with that, a good design will help the bank minimize the risks that may be encountered.

Cooperative banks should improve the level of banking technology modernization. The service quality depends on this most crucial factor: the level of technology. There is qualified and qualified staff, but the machinery and equipment system are not modern. The technological level is not advanced. It is impossible to make a system of high-quality and prestigious banking services to provide to customers.

Cooperative banks need to be refreshed to meet the needs of integration through diversification of products and quality services, and application of modern technology. To meet the demands of competition in the new era, cooperative banks need to diversify the products and services in the direction of combining the promotion of traditional products and services while exploiting the development of new products such as products.

The following table shows the list of technologies that cooperative banks can adopt to provide efficient and effective customer services.

Table 5.1: Technologies to be adopted in Cooperative Banks

What Technology They Should Adopt to	How a Technology Would Help the Banks
Quick Funds Transfer via IMPS, NEFT, RTGS	With technological advancements like UPI based payments or IMPS, funds transfer is instantaneous and could be accessed from anywhere anytime.
Block-chain	Banks can increasingly using blockchain technology which makes it difficult for hackers to extract confidential information such as customer bank details. It helps in improving efficiency, enhancing security, and making quicker transactions with decreased costs.
Biometrics	Biometric payments are shaping the way consumers make payments through their mobile devices. Payments are made within seconds of scanning their finger or facial recognition technology. Biometrics would help in reducing fraud and identifying potential security threats.
Cloud banking	The cloud allows banks to synchronize the enterprise; break down operational and data silos across customer support, finance, risk, and more

Artificial Intelligence and Machine Learning	Banks are extensively implementing AI and ML to offer just-in-time, personalized services to their customers. AI and ML automate the banking processes and facilitate better customer services, credit and loan services. They also combat fraud.
Data Analytics and Business Intelligence	Structuring and organizing the data with intelligent algorithms could help customers in planning their financial portfolios or could get a better picture of their spending.
Robotic process automation (RPA)	RPAs primarily function to generate reports, logging data, automating repeatable processes, and maintaining logs. For example, RPA can manage instant payments, using a programmed rule to automatically approve a payment if all conditions are met. Another RPA would then log this transaction into documentation, move that documentation into a greater file, and update data across all apps and servers using the data.
Chatbots	Banks will start offering an increasingly large number of services on a voice interface. It will also allow banks to receive customer feedback easily and economically.
Wearables	Wearable devices such as smartwatches are expected to transform the digital payments experience for customers. With a wearable device, banks could get information in real-time. Just for example if you went to a car dealer, the banks could help you in choosing the best financing options.

Product diversification is a strength and a key to developing banking services, especially personal banking. In particular, focus on high-tech products that have outstanding features in the marketplace to differentiate in competition, utilize new distribution channels to diversify products, expand and consumer credit development. Cooperative banks need development cooperation with partners that has many advantages in terms of customers, networks and technology, especially the cooperation with foreign banks to develop retail banking services. Besides diversifying products and services, raising the quality of banking services is a vital issue in the competitiveness of cooperative banks. To improve the quality of services, banks should pay attention to measures such as: Improving the professional level, skills of exploiting the service, attitude to serve the staff of his staff and complete the business process.

Cooperative banks should continue speeding up the construction and completion of a comprehensive financial strategy, which emphasizes the role of information technology application, encourages the development of cooperation between banks and technology finance companies; promote the development of the ecosystem and become part of the ecosystem in the modern supply chain of financial and banking products and services. Besides, commercial banks should invest and complete the information technology infrastructure to be modern, automate most banking business processes, and develop banking services through the application of technology. Cooperative banks continue building a current branch model, based on the automation technology platform, multidimensional connectivity, and intelligence of the digital revolution. Focus on network security. Banks need to invest in

and equip security and confidentiality solutions, regularly check and supervise the compliance with regulations on security and confidentiality; detect and promptly handle security gaps; improve financial capacity, bank management, especially risk management. They are ensuring the confidentiality of customer information; commercial banks continue ensuring property safety for customers. Cooperative banks should formulate a strategy for the development of the Banking industry in both the short and long term. The plan was built based on the banking industry's current situation and the Digital Revolution's problems. Banks continued promoting the role of administration, direction, and management of the operation of the entire banking system to ensure the synchronous operation of the banking industry, to operate effectively, following the market mechanism, and to adapt to the scientific and technical advances of the digital revolution

Human resource challenges

Smaller UCBs found it difficult to attract talent, resulting in poorer quality of human resources in relation to their peers in the banking industry. A majority of UCBs tended to recruit staff through a non-standardized process, resulting in lower skill levels.

Boards of UCBs do not fundamentally understand the importance of technology adoption and hiring skilled talent, which leads to poor governance standards and high levels of bad loans. The boards of such banks need to include domain experts and professionals. Some UCBs may have the funds need to adopt the best platforms, but they lack the people to drive the tech – it doesn't serve any purpose. If there is no talent in the organization to drive the technology and understand the banking business.

Governance and competency

Every cooperative bank must identify its core competency and focus primarily on building a strong retail business franchise. This can be done only by adopting the best underwriting practices, backed by emerging technologies, and servicing customers on a real-time basis.

To formalize credit for a large population and small businesses, UCBs can play a larger role. The focus should be on building a sustainable model with strong risk management and governance framework.If the regulators are able to take care of governance and if banks ensure that adequate technology and services are being provided, then prospects appear bright.

A successful economy, in terms of Industry 4.0, has the most assets, activities, and focus on digitizing its assets.

Conclusion

Cooperative banks need to be refreshed to meet the needs of integration through diversification of products and quality services, and application of modern technology. Cooperative banks must adapt their perspectives on the past and keep up with technological advancements. Additionally, in order to best produce the crucial element of customer experience, they must first concentrate on enhancing and offering services from the perspective of the consumer. As a result, the development of customer cooperation serves as the foundation for valuing fourth-generation banks. In order to establish new operational procedures, cooperative banks must

collaborate closely with technology and knowledge-based businesses. The most significant study limits, nevertheless, are those imposed by technology, culture, and customer perceptions about the nature of banking. According to Industry 4.0, a prosperous economy is the one with the greatest resources, activity, and emphasis on digitising its assets. Even globally, using technology is a relatively new experience.