

## APPLICATION OF INDUSTRY 5.0 IN FINANCIAL SECTOR

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### Abstract

Technology, along with politics and economics, is a major element shaping banking. Technological trends are crucial for banking management make smart decisions, properly anticipate the future, and seize opportunities. The pandemic's aftereffects are available to everyone, and the global economy is currently experiencing a recession. All organizations are susceptible to their unprecedented effects, and the banking sector is no exception. Given the numerous significant shifts and crises in the banking industry, it is crucial to implement creative approaches. The level of management and control of finances, which are the foundation of any country's economy and economic activity. Customers must receive timely, appropriate goods and services from banks and other financial institutions. For banking, a new perspective is needed. Fostering advanced technologies and the digital economy is the next area that needs to be given top priority. Banking 5.0 refers to these changes in light of digital transformation. Edge computing, digital twins, COBOTS, IoT, big data analytics, 6G, and more can help banks cut costs. Products and services costs, retain customers, protect security and privacy, improve risk management, provide error-free financial services and data-driven decision making. Industry 5.0 might focus on hyper-personalization, using AI and data analytics to provide customized financial products and services to individual customers. In an Industry 5.0 scenario, there could be a strong focus on using technology to reach underserved populations and improve financial inclusion, such as providing digital banking services to remote and marginalized communities. It is anticipated that this exploratory study will lay the foundation for later research that will empirically examine the adoption of I5.0 technologies within banks.

### Keywords

Industry 5.0, Financial sector, Banking industry

### Introduction

In the past few years, the appearance of technological advances has played a significant role in increasing organizational efficiency. Technological advances since Business development have changed significantly since industrialization. As a result, these effects are industrial revolutions. Organizations want to use the advantages of innovation to satisfy customers while also gathering useful information from them. Five key industry shifts are considered during industrial revolutions. In contrast to Industry 4.0, the purpose of Industry 5.0 is to combine the creativity of human specialists with efficient, intelligent, and precise machines to build industrial solutions with user-friendly resources (Abdirad et al, 2021). The paper analyses

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strategic drivers and constraints to I5.0 technology adoption by banks. Thus, our study makes three contributions. This research adds to existing research on I5.0 by offering functional definitions and knowledge of I5.0 and necessary technologies. Second, it suggests a theoretical framework to revolutionize the financial system via a technology paradigm change, helping policymakers plan for growth and productivity. Third, it provides matrices to bank managers assessing choices to meet digitalization demand and accomplish growth and productivity objectives. The primary objective of this paper is to reviewed the applications of Industry 5.0 in financial sector. In this study, we reviewed many things like industrial revolution phases, innovative applications of industry 5.0, and obstacle faced in adoption in industry 5.0 which are described as given below.

### **Industrial Revolution phases**

1. The first industrial revolution is defined by steam engine (1760–1840) innovation.
2. The 2nd Industrial Revolution (1870–1969) was characterized by electricity and cutting-edge industry.
3. Automation of Computers and programmed controls till 20th centuries is known for digital revolution (Industry 3.0) the usage of circuits chips digital logics, mass production, etc.
4. Germany's public-private effort, Industry 4.0 seeks to create intelligent factories by integrating physical and digital technologies. The substantial change in production system connections generated by ICT integration is its main component describes Industry 4.0 stages.
5. The idea of industry 5.0 emerged when the companies relied more on digitization and lost the human touch. Technology and industry without jeopardizing social, economic, or environmental performance.

Industry 5.0 may acknowledge industry's capacity to achieve social goals beyond jobs and growth and become a resilient practitioner of prosperity. respecting our planet's limits and putting workers' well-being first (Adel, 2022). Industry 5.0 is now envisioned as a collaboration between influential, intelligent, and precise machines and the distinctive originality of human experts. High-speed, high-precision machines are expected to be integrated in Industry 5.0, with critical and human cognitive reasoning. Industry 5.0 improves output by enabling human-machine interaction, flexibility, interaction, and continuous monitoring (Breque et al, 2021). Human-machine collaboration aims to boost output quickly. By designating repetitive and uniform tasks to robots/machines and tasks requiring critical thinking to humans, Industry 5.0 can enhance production quality. The active banking industry must build an integrated system to provide banking and mobile banking solutions. processes in order to capitalize on the existing conditions. Banking should be integrated into all organization's and individuals' business activities and tasks. Typically, this transaction should be prepared and processed by an external entity that, if required, holds a bank license to assure the client of the transaction's dependability and credibility.

Banking 5.0 developed from an industrial revolution powered by artificial intelligence, in the same way that the preceding four industrial revolutions were powered by other powerful technology. In an age of urgency, rapid change, and overwhelming choices, where loyalty is

no longer assured, it must grow outside its core products and services to keep customers. and grow customers. Financial institutions, particularly banks, have evolved over time. The changes are classified as micro and macro to explain parallel industrial evolution revolutions and banking revolutions. The five innovative waves are identified and linked to banking sector innovation.

**Table 1: Evolution in Industry and banking at every revolution stage (Mehdiabadi et al, 2020)**

Stages	Industrial Innovations	Banking Innovation
Industrial Revolution First	Steam Engines, Industrial Production, Transportation	Central Banks, Clearing Houses
Industrial Revolution Second	Electricity, Telegraph, Labour Division	Network Of Bank Branches
Industrial Revolution Third	Computers, Telecommunication Network, ERP, Telex, Minitel	Banking Applications, MICR, Dematerialization
Industrial Revolution Fourth	Cloud, Internet of Everything, ICT	Mobile Banking, Cryptocurrency, High Frequency Trading
Industrial Revolution Fifth	Artificial Intelligence, Robotic Process Automation, Humanization, Sustainability	Cognitive Thinking, Robo Advisor, Responsible Banking, Embedded Banking

After analyzing all After analyzing all the things following questions have been found out and this research paper has answered these questions.

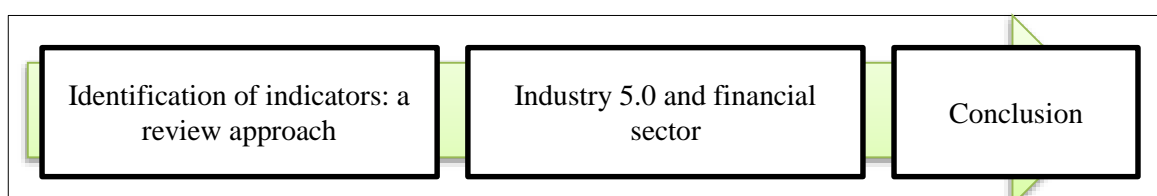
1. Define the sector 5.0 bank entry indicators?
2. Possible links between identified indicators?
3. Which Word Banking 5.0 metrics are most important?

Industry 5.0 emphasizes human-machine collaboration to put humans back in charge of decision-making. Industry 5.0 will also evolve global civilization, reduce waste, and prevent it. Bioengineering and biotechnology impact society and business. The following are the most significant advantages of Industry 5.0:

1. Increased productivity,
2. Flexibility, profitability, or adaptability
3. An adaptable workplace
4. Reduced overall costs

**Material and methods**

This study is applied and quantitative-qualitative because the goal is to build a model for defining and levelling Revolution 5.0 criteria in the banking sector. Complex issues and processes often challenge people and organisations. The existence of many components and their interplay make themes or systems complicated. A clear-styled system with ambiguity is complicated by connected aspects. Undefined structure makes system resolution challenging. Thus, a system structure identification approach is needed.



**Figure: Research structure**

**Innovative Application of Industry 5.0**

Employees and workers, as well as society, benefit from Industry 5.0. This sector deploys sustainable, ethical resource-use technology (Demir et al, 2019). Human decision-making and enabling technologies benefit it, which aids in the transformation of many different sectors (Doyle-Kent et al, 2019). Among the most important applications are (Maddikunta et al, 2021):

**Smart Hospitals**

One of the key applications of "Industry 5.0" is a real-time, smart hospital. It is crucial for improving the quality of life for medical workers. In the COVID-19 pandemic, doctors may remotely inspect infected patients to improve medicine (Sung et al, 2021). Medical imaging, genetic data, and NLP are all used in machine learning. Disease detection noted that I5.0 enables the production of customized smart implants in accordance with changing client demands (Motienko, 2020). AI is used in medicine to assess glucose levels and other factors.

**Manufacturing Industries**

The groundbreaking "Industry 5.0" manufacturing approach emphasizes human-machine connection. To optimize human invention and precision machinery collaboration, "Industry 5.0" Resource recycling and reuse improve production sustainability. Manufacturing must also have fewer negative environmental effects. Manufacturing is managed via a virtualized, cost-effective platform. Networked production resources power cloud production (Parmar et al, 2022).

**Supply chain management**

Supply-chain 5.0 emphasizes of human-robot collaboration and other intelligent robotics. Industry 5.0 requires a combination of human creativity and machine proficiency to meet the hyper customization demands of customers. Human interaction is not always required when customizing and personalizing products.

**I5.0 Technological Innovation and their application in the financial sector**

**Digital twins**

Digital Twins are "digital reproductions of physical systems or objects." Digital Twins offer

digital representations of factories, wind farms, buildings, jet engines, and smart cities (Lu, 2020). Despite the fact that the concept of a Digital Twin, created in 2002, has gained popularity with the Internet of Things Through IoT devices, tangible objects are simulated digitally. Performance-based component improvements, more accurate projections, error prevention, and avoiding major financial losses.

### **COBOTS (Collaborative Robots)**

As these robots are designed using smart technologies and AI, which are undergoing tremendous fluctuations, emerging trends in automation and robotics have essentialized human interaction with robots. Cobots are robotic devices, particularly those with computational capabilities, that perform better with human interaction. As a result, I5.0 proposes collaborating humans and robots to produce customized products at a faster and more accurate rate.

### **Internet Of Things (IOT)**

As these robots are designed using smart technologies and AI, which are undergoing tremendous fluctuations, emerging trends in automation and robotics have essentialized human interaction with robots. Customers today want accurate and quick personal banking, so leveraging cobots will allow banks to provide error-free and quick personalized banking services to a large customer base (Aslam et al, 2020).

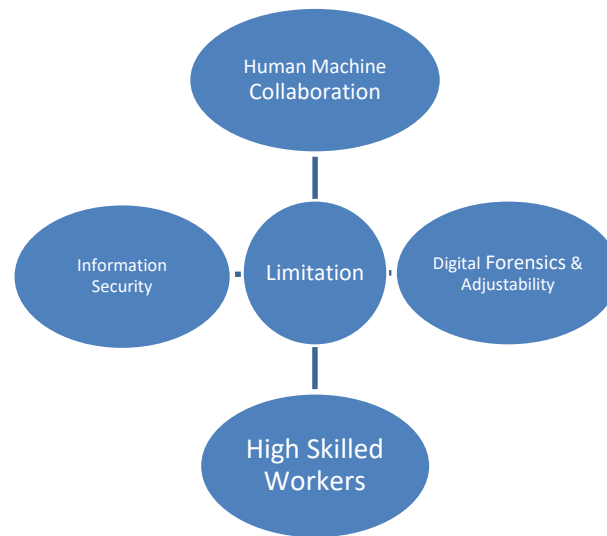
### **Big Data Analysis (BDA)**

BDA has played an important role in the transition to I5.0 because it can be used to design pricing strategies, improve production efficiency, and lower overhead costs by understanding consumer behavior. BDA has also been used in decision-making to gain a competitive advantage over competitors, allowing for mass customization of operations (Ali et al, 2021). The I5.0 BDA technology can also be used as a strategic decision-making tool to promote a data-driven culture for accurate decision making and to help banks maintain a highly competitive environment (Cheng et al, 2018).

### **Obstacles faced in adoption of the financial sector's industry 5.0**

It's simpler to disregard issues as industry 5.0 approaches. Business industry 5.0 issues are being discovered and solved.

1. Advanced technology adoption requires more human workers' time and effort. Industry requires software-connected, customized factories, collaborative robots, AI, real-time data, and the Internet of Things. 5.0
2. Industry has security challenges. 5.0 because trust in ecosystems is critical. The scale to interact with various devices is used in the industry to stand against future quantum computing IoT node deployments. AI and automation in business 5.0 pose risks to the business, necessitating the use of trusted security. Industry 5.0 applications concentrate on ICT systems, hence rigorous security standards are needed to avoid security issues.



### Conclusion and discussion

This conceptual study investigates financial organization’s adoption of industry 5.0. The research links I5.0 to the earlier industrial revolution (I4.0), which is still young. However, automation malfunctions and productivity loss necessitated human product production management. Expert creativity and innovation may help design specialized and value-added services. This research links banking ups and downs to simultaneous technological advances at each industrial revolution stage. I5.0 technologies like digital twins, COBOTS, IoT, big data analytics, and more help banks lower prices, retain customers, attract new ones, protect customer privacy and confidentiality, improve risk management, provide error-free financial services, and integrate digitalization. I5.0 technologies are expected to help banks shift, but empirical research is required to provide a theoretical framework for assessing their capabilities and resources.

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