

# Artificial Intelligence and Robotics (A Future of Banking)

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**Abstract – The present business scenario is partly automated. Many companies use ERP, core banking, and other such systems to cater their businesses. It is obvious that when there is human intervention, chances of errors are comparatively high. Hence, to serve the customers in a faster and consistent way and to help increase the potential of the personnel in the key areas of the business, a new technology called Robotic Process Automation (RPA) is on its way. Data is not an end in itself, but a means of gaining more insight into science, business, humanity and the world around us. It has evolved over time and is available in various forms today, in fact it has become large and complex such that there are equal efforts required to handle them, store them and maintain them. Data analytics has undergone a step further in Robotics and Automation. This research paper is exploring the fact that today humans have many needs on Internet i.e. Internet of Things have produced an immense demand for something like Big Data. It has produced a massive volume and variety of data at unprecedented velocity.**

**This paper further explores the application of Robotics and Artificial Intelligence into the Banking Industry, the Age of AI, its benefits and types. We have found as to how the RPA powered digital workforce looks to disrupt the manual effort intensive regulatory compliance landscape in Banking and financial services, what edge it has over its human counterpart, the roadmap towards RPA driven compliance, challenges in this digitization journey and success mantras, and innovations that are underway towards building intelligent RPA to replicate human decision-making.**

**Keywords: Robotics, Automation, Artificial Intelligence (AI), BOT, RPA (Robotics Process Automation), Machine Learning, Data Science, Big Data, Emotional Intelligence (EI), FinTech (Finance + Technology) firms, etc.**

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## INTRODUCTION

We are in the pre-industrial age of data technology and science is used to process and understand data. Yet the early evidence provides hope that we can manage and extract knowledge and wisdom from this data to improve life, business and public services at many levels.

Artificial Intelligence and Robotics have a common root and a (relatively) long history of interaction and scientific discussion. The birth of Artificial Intelligence and Robotics takes place in the same period ('50), and initially there was no clear distinction between the two disciplines. The reason is that the notion of "intelligent machine" naturally leads to robots and Robotics. One might argue that not every machine is a robot, and certainly Artificial Intelligence is concerned also with virtual agents (i.e. agents that are not embodied in a physical machine). On the other hand, many of the technical problems and solutions that are needed in

order to design robots are not dealt with by Artificial Intelligence research.

A clear separation between the fields can be seen in the '70, when Robotics becomes more focused on industrial automation, while Artificial Intelligence uses robots to demonstrate that machines can act also in everyday environments.

Later, the difficulties encountered in the design of robotic systems capable to act in unconstrained environments led AI researchers to dismiss Robotics as a preferred testbed for Artificial Intelligence. Conversely, the research in Robotics led to the development of more and more sophisticated industrial robots. Digital transformation has become a necessity for firms to survive in this era of disruptive business models and rapidly changing markets. Undoubtedly, Service Delivery Automation (SDA) solutions such as Robotic Process Automation (RPA) and Artificial

Intelligence (AI) can play a significant role to enable this transformation and create value for enterprises.

Following the title of the paper I shall refer to this body of research as RPA and AI.

I conclude this brief introduction with a disclaimer: the views presented in the paper are those of AI research, that use robots as a preferred model of intelligent agent and there is no attempt to provide a comprehensive survey. In the recent years, Robotics researchers have also tackled some of the issues that are dealt with in the present paper, but the view of Robotics research towards Artificial Intelligence may not be properly reflected in the paper.

### Robots and AI in Banking

Digitization is becoming a need and with these technologies humans have the potential of attaining new levels of process efficiency, such as improved accuracy, speed, operational cost and throughput capacity. The opportunity for cost savings is the first and foremost stand where AI and process automation have impacted the banking industry. According to a study carried out by Cognizant, 26% of banking respondents specified that they have enjoyed 15%-plus surged savings from automation in their front office and customer-facing functions in a span of one year, and 55% expect those similar figures of savings (15% or more savings) within the next three to five years. [1].

All the statistics grounds to a point that banking industry is more inclined than other industries to automate their processes due to their need to focus better on customers. Although the banking and financial services sector is showing interest in AI, our research found that it is clearly not very mature in its journey to adoption, coming in at the 8th position. This is surprising considering that financial services are a data intensive business. Our research, which covered respondents from 10 vertical groups, tried to assess their respective progress in the AI journey with the help of a maturity index, that is depicted in the graph below. On an average, most banks are explorers, with AI related skills on the increase and more initiatives planned in the coming 12 months. Although the banking and financial services sector is showing interest in AI, a survey research found that it is at the 8<sup>th</sup> position.

Comparison with other industries



Percentages indicate average maturity score by industry

Source: <https://www.edgeverve.com/wp.../Artificial-Intelligence-Powered-Banking-PoV.pdf>

### Effectiveness of Automation have gone and to What Extent?

Consumers are now welcoming the use of robot-advisors instead of in-person advisors for conducting complex tasks, such as managing their investments. They prefer autonomy. [3]

The expediency of “anytime, anywhere” banking for customers has fortified the need for self-service offerings. ATMs, self-service kiosks, IVRs, and online and mobile banking apps have played a chief role in promoting this self-service culture. Low cost process automation technologies can form the adhesive between the digital front-end and the legacy systems, empowering a more seamless and digitized customer experience.

### Meaning of Artificial Intelligence

Artificial intelligence is the blend of three advanced technologies – machine learning, natural language processing and cognitive computing. The concept of Artificial Intelligence is to simulate the intelligence of humans into artificial machines with the help of sophisticated machine learning and natural language processing algorithms. The prime motive for the idea of transferring the intelligence from humans to machines is to overcome the very barrier of human intelligence: scalability.

### The Age of AI

These highly skilled workers can command high rates because of three capabilities. AI and machine learning have quickly surpassed our abilities on the first two capabilities—and this has seen a shift on the skillset required for any worker wishing to stay in these careers as they are transformed by artificial intelligence. [2] A.I. Could Liberate 50% of Managers' Time. It's easy to see the role of automated systems in data gathering and analysis. We've accepted that machines can do these types of tasks efficiently. However, their potential goes much further. Human beings are limited, and often biased. [2]

### AI for Personal Finance

Customers are looking for ease of banking in the digital world and look for more ways to bank and in less time. Mobile technology has evolved faster and with changing means of communication banks are adding many features using a mobile app. This is becoming possible with the BOTS (Robots), customers no longer need ‘educating’ with advanced mobile technology, it claims, it has provided ‘highly personalized services, all delivered in the context of what different customers want next, their location, and they type of service they appreciate.’

## **AI for Investing and Wealth Management**

Algorithms do all the work today, advisors / wealth managers required to do a deep study of one customer whereas BOTs can build such quality research based on diverse type of customers, their investing behavior of a client and as to where the young tech-savvy or women customers would want to invest.

## **Other Applications for AI in Banking**

### **Security & Fraud Prevention**

Some FS providers and card issuers are beginning to use AI to identify unusual spending patterns and detect fraudulent account activity.

### **Product Pricing**

As Econsultancy comments, 'Dynamic price optimization using machine learning can help [identify the elasticity of pricing] - correlating pricing trends with sales trends by using an algorithm, then aligning with other factors such as category management and inventory levels.'

### **Sentiment Analysis (Semantic Deep Learning)**

Brands across industries are seeing the benefits to their product, sales and marketing efforts by monitoring customer comments – but using AI rather than manpower to assess the feelings behind swathes of customer data could be very powerful.

### **Challenges in the Process**

The current operations are smooth but they still have some flaws, as there are stages where without human interpretation, the work would not move forward. These challenges are summarized below:

- High Volume and FTE Requirement.
- SLA bound process – Internal & External
- Time-consuming activities in long wait of Customers on call requesting support.

## **LITERATURE REVIEW**

RPA is the next wave in technology and its assurance is Increased productivity, less errors & cycle time, and improved scalability. RPA means we have switched from an analog style of "knowledge swap" between humans to a digital world where knowledge is transferred by robots. Another significant change is the deployment across processes that have been tormented for so many decades by manual interventions, such as invoice processing and

collections, in addition to higher knowledge-value areas, such as reporting analytics. We are no longer looking at RPA as a future technology, as it's already taking over physical labor today.

IJRITCC review on RPA, "Research has showed that RPA is a much better way to carry on day-to-day operations with a quality achievement of almost 99%" Volume\_4\_Issues June\_16\_Volume\_4\_Issue\_6. [6]

White paper published by TCS "RPA represents the next wave of automation that will help address a slew of challenges in the financial services industry" Why Banks must Bank on RPA. [7]

Literature Review Everest group "Seizing-the-Robotic-Process Automation-RPA-Market-Opportunity" [8]

Research can be defined as "an activity that involves finding out, in a more or less systematic way, things you did not know" (Walliman and Walliman, 2011, p.7). [4] (a)

"Methodology is the philosophical framework within which the research is conducted or the foundation upon which the research is based" (Brown, 2006). [4] (b)

### **Objectives:**

Robots are intended to augment the bank's workforce, making employees happier and more efficient. Following are the objectives for doing this research:

- 1) To analyze the intervention of AI, Robotics into Banking
- 2) To measure the significant improvements that Artificial Intelligence can bring into the Banking
- 3) To study the transformation of AI skilled employees
- 4) To review application of AI into Banking

## **RESEARCH METHODOLOGY**

Research Methodology is a term that basically means the science of how research is done scientifically. It is a way to systematically and logically solve a problem, help us understand the process not just the product of research, and analyzes methods in addition to the information obtained by them.

There is a questionnaire or a survey used to study the Robots adoption using a sample of a few large

multinational banks and some of the national banks for India who are adopting the automation in some form or the other. This distribution has helped to understand the implementation, its finding and the conclusion.

## RESEARCH PURPOSE

The purpose of the present research is to explain Robotics and AI into Banking: It's the new technology revolution changing the way to bank or moving into a Fintech (Finance + Technology) world. The researcher has identified its influences to Banking. It's application to Banking and the opportunities, challenges and the types of AI that has replaced the manual jobs. Hence the purpose of this research is illuminating this concept in detail.

## RESEARCH DESIGN

This study has covered the title of the study, significance of the study, aims and objectives of the study, research hypothesis and research design. This research has been designed based upon the descriptive study as it aims to identify and elaborate the Robotics and AI into Banking.

The research design contains the following steps:

- Literature review
- Theoretical and experimental analysis

## Hypothesis

Consequently, the following hypothesis are invented:

**H1:** There is a relationship between Robotics, AI concepts, applications and research directions.

**H2:** A key aspect of the AI and EI for automating the Banking Industry.

**Data Collection :** This study combines both primary and secondary research methods. Thus, gathering and analyzing the data was completed on the basis of the existing research. The time period for the above stages (time for distribution, collection, analysis, and observation) was 95 days each.

**Tools and Techniques:** Survey of data analysis employed to analyze the quantitative data.

Techniques used for this research: (a) An interview with the Robotics lead in a Swiss Bank, (b) Using data findings from the market surveys for RPA and its adoption.

**Scope of the study:** This study has covered the aspects of the Automation via Robotics and Artificial Intelligence. This research has provided the benefits of Robots, Artificial Intelligence in the Banking world and as to how the Banks utilize RPA for most effective and standardized products delivery. However, there is also

a disadvantage of automation that it cannot achieve creativity or innovation on its own and hence, there is still a need for humans to operate such robots and innovate with newer technology.

**Findings:** Findings of this analysis will assist Banks to decide about RPA and that though there is a shift in impact from less to more in managing data, associated tasks, etc. there is also a benefit in building the level of efficiency plus profit. It was proved that RPA and AI can change the way Banks operate today, with a marginal change in the expenditure and save on human efforts by achieving greater results.

**Justification:** It is evident that the world is changing and things are more robotized, banking is not an option anymore. Every Bank is attempting to automate their operations and various other functions that cater to various needs of their clients. In order for them to sustain in this highly competitive market some of the large banks have to adopt the technology revolution or will stay behind of the rest.

**Conclusion:** Robotics, AI, and the transition to RPA can be a quick win, bringing immediate benefit also in Finance functions. It is likely to stay for longer time and become an integral part of Finance processes. It triggers also broader changes in Finance function, its processes and people, that can maximize value of RPA and bring Finance to the next level.

Automation is just part of the story as enterprises look to bring the back office in line with the middle and front – though a very important one, as many enterprises will simply fail if they could not digitize many of their core processes (and decide which ones to focus on, as they cannot digitize everything). RPA is just one tool to help get there – and its now here and ready to use. So let's advance the conversation to driving the circular and neural systems of the enterprise to really make the shift by orienting our talent, creating data access capabilities that are predictive and cognitive which we can use meaningfully to create opportunities, not simply react to them. Banks can benefit tremendously from a virtual workforce that can cost effectively transform the backend without interfering with the underlying infrastructure. This in turn will translate into faster processes, efficiency gains, and quicker time-to-market. These advantages cannot be ignored in the current environment when banks are battling a variety of internal and external challenges. Banks should consider adopting RPA solutions to overcome competitive challenges and retain their market position.

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