
**AUTOMATION IN BANKING INDUSTRY: A STUDY ON ITS IMPACT ON
BUSINESSES OF BANK AND THEIR CUSTOMERS' RESPONSE**

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Abstract:

RPA is the use of software with artificial intelligence (AI) and machine learning capabilities to conduct high-volume, repeated operations that were previously performed solely by humans. In brief, typical Business Process Management (BPM) systems have at least one flaw: they cannot recommend the ideal mix of activities, people, and timings, which can maximise the benefits of operating them while lowering costs and risk concerns. Nonetheless, it is an undeniable reality that the contemporary corporate climate is quite dynamic. On the one hand, we must be more efficient in carrying out what is operational and evident, so freeing up precious resources for more vital areas. When it comes to business process management and automation, a typical stated advantage is performance enhancement. In addition to these and other possible benefits, we identify several potential operational hazards associated with the use of AI-based technologies such as RPA. The business context's acceleration makes it more difficult to foresee what changes will occur and how they will effect the technical solutions utilised in more automated business operations. We emphasise that immature or poorly trained models might eventually reduce productivity and increase mistakes due to unsupported or even incorrect judgements. The article focuses on its influence on the performance of the banking industry. As growing consumer expectations shift the concept of banking from traditional to convenient operation, an online survey was conducted on chatbot efficiency and effectiveness. 300 respondents who frequently interface with chatbots were invited to contribute their opinion in the survey. The survey reveals inadequacies of chatbots in effective execution of customer's queries.

Keywords - Business Process Management (BPM); Business Process Automatiom (BPA); Business Process (BP); Robotic Process Automatiom (RPA); Artificial Intelligence (AI).

INTRODUCTION:

The changing business climate is putting pressure on organisations to become more competitive. A process-based approach to organisational management gained prominent in this environment. Business Processes (BP) are a collection of coordinated actions or activities carried out by people and/or artefacts to fulfil organisational goals and associated objectives. Furthermore, BP is subject to organisational governance rules and regulations that strive to align or balance the integration of business, information technology systems, and working practises. BP must be created in accordance with the business and alignment needs. Given the increasing volatility of business environments, BP are rebuilt and/or reengineered over time as a response to those external transformations or simply because firms desire to operate more agilely.

Business Process Management (BPM) is a timely subject that focuses on handling organisational procedures by analysing, controlling, and oversight of tasks and organisational operations employing resources such as individuals, competencies, apps, paperwork, and additional associated data and information. Modern BPM systems have a recognised difficulty in that they do not use the quantity of data to produce insights to address the key difficult components of a BPM System, such as which assignment to carry out, when the assignment should be finished (SLA), and by whom the assignment shall be accomplished. These 3Ws are often specified by Process Managers, with little or no input from a training system that might raise the likelihood of the optimal conclusion.

As a result, they cannot recommend the ideal mix of activities, personnel, and timings to maximise the advantages of operating them while minimising transaction costs and related hazards. Currently, both researchers and practitioners argue that BP should be increasingly optimised and automated. Some significant concerns arise when the breadth and sophistication of automation are expanded, such as:

- (1) What are the major benefits and hazards connected with new solutions that deepen BP automation with increased "intelligence" in BPM?
- (2) Is it more appropriate to use an automated and intelligent method to define and decide who should undertake a task, lowering the risk and expense of execution while enhancing the intended result?
- (3) Is it possible to employ an artificially intelligent system to designate who is responsible for finishing a job at an initial phase of a BPA / RPA while no implementing consequences are on hand?

This paper is divided into multiple sections on previous studies in the domains by exploring topics such as business process management and business process automation. While just on the surface, we see the use of robotics in this situation. One section describes principles concerning robotic process automation (RPA) including its use in various situations; and the other discusses essentially the problems of achieving advantages while minimising hazards associated with business process management, business process automation, and robotic process automation. The paper presents a small example from banking and finance. business. This scenario enables us to identify potential benefits and dangers associated with RPA installations, offering partial answers

to the study objectives posed above. It also covers and discusses banking customers' responses. In the end, the findings are presented.

CONTEXT FOR RPA: Management of Business Processes As a result of IT advancement, the necessity of revamping company procedures has grown even more. In this setting, various academics emphasised the rising relevance of organisations focusing on process optimisation. Several organisations arose and developed in this setting as well. One of these organisations defines Business Process Management (BPM) as "any combos of modeling, automation, execution, control, measurement, and optimisation of company operations sequence in accordance with businesses goals, encompassing mechanisms, personnel, consumers, and collaborators inside as well as outside corporate boundary lines." BPM is a management technique that sees company processes as resources, based on the Process Management Universal Field of Principles.

It assumes that organisational goals may be met by defining, mechanism, controlling, and committing to continual enhancement of business processes. Business Process Automation (BPA) Business process automation (BPA) is described as the use of modern technology to automate complicated business processes and operations that go beyond traditional data processing and record-keeping activities. It frequently works with event-driven, mission-critical core operations with an emphasis on "run the business" rather than "count the business" sorts of computerization operations.

BPA often assists the business's staff with expertise in meeting the demands of its diverse stakeholders. Artificial Intelligence (AI) The concept of an intelligent artificial entity is not new. It appears in Greek mythology (Pygmalion), Muslim Jewish tradition (such as Takwin or Golem), and English and Czech literature (Frankenstein or R.U.R. - Rossum's Universal Robots). However, the Dartmouth Colloquium in 1956 marked a watershed moment in the history of artificial intelligence as a scientific area. Marvin Minsky, John McCarthy, and two senior scientists from IBM, Claude Shannon and Nathan Rochester, organised it.

ROBOTIC PROCESS AUTOMATION

Robotic process automation (RPA) is the use of software with AI and machine learning skills for handling high-volume, repeated operations that were traditionally performed by people [7]. BPM tools have grown to resemble business process management solutions. However, they become increasingly complex and begin to incorporate artificial intelligence traits. These duties may involve inquiries, computations, and document and transactional handling. RPA refers to automated software programmes that largely or substantially automate manual, rule-based, and recurring tasks performed by people. RPA functions by simulating the activities of a real person engaging through one or more digital programmes.

Data input, regular handling of payments, and easy customer care inquiries are examples of operations that may be done. In reality, the virtual assistant that has begun to proliferate on internet pages is frequently a robotic process automation instrument. It is capable of handling basic inquiries such as "Where is X on the website?" and "How do I change my password?" RPA solutions are not intended to substitute core business applications; rather, they streamline formerly conventional tasks performed by human professionals. These technologies examine the display

panels that employees now view and fill out, and then modify the identical components in the user interface by including pertinent data from the right place.

RPA serves numerous objectives: it releases employees from repetitive jobs, assists in to assure higher standard outcomes, and it enhances efficiency. RPA releases employees from time-consuming, low-value-added activities such as data input. It frees them up for higher-value jobs requiring human inventiveness, intelligence, and decision-making. RPA assists in ensuring that outputs are complete, correct, and consistent across jobs and human employees. RPA enables activities to be done more quickly since the robotic process automation application can discover and obtain any relevant data in the meantime.

Arguably the most important advantage of robotic process automation is that the equipment does not require any changes to current information systems or software architecture. APIs are used by a variety of other process automation technologies to interface with enterprises. To summarise, there are serious restrictions to what a robotic process automation tool can achieve in practise. It must be programmed to carry out a routine task. To do so, a subject matter expert (SME) who is familiar with how the task is done manually must be hired to map out those stages. Furthermore, the data sources and destinations must be well organised and consistent.

Robotic process automation solutions do not cope well with failures, exceptions, or the normal ambiguity of human interactions. Despite this, firms are finding actual, quantifiable benefits from robotic process automation. This helps them to become even more efficient, and might eventually lead to the technology analysing the sentiment inside a client inquiry or conversation and recommending a discount. RPA allows the organisation to swiftly and cost-effectively automate regular processes. To increase the value of the automation programme, RPA bots may readily interface with other bigger automation projects, such as process and decision automation or data collection initiatives.

RPA helps to shorten the time to their worth, decrease mistakes made by humans, and boost productivity. Accelerating time to emphasise is conceivable as long as new automation techniques can be created, tested, and deployed in hours rather than weeks or even months. RPA effectively removes all copying and pasting errors caused by swivel-chair insertion, making it feasible to minimise human error. Accomplish automated activities in seconds or minutes throughout the clock to provide more value to your clients, allowing you to increase the volume of material or objects going through a system or process. Several instances are being researched in terms of RPA utilisation. Xchanging is one such example. It was also effectively employed in Telefonica. Banco Popular is another instance. For the automation of repetitive, laborious procedures and operations, Banco Popular used the IBM Robotic Process Automation with Automation Anywhere technology. The solution is hosted in the cloud, enabling Banco Popular to rapidly grow it as appropriate.

BENEFÍTS AND RISKS: As previously said, artificial intelligence (AI) is currently a very vast field of study. As a result, each sound's description is not simple. There have been several names for AI-related artefacts, such as the archaic term "agent." An agent is something that sees and acts

in its surroundings. Given the sequence of percepts it has seen thus far, an ideal agent will always choose the action that is predicted to maximise the results it can measure. When it comes to business process management, one of the most prevalent immediate benefits is improved productivity. In reality, if we use an automated learning intermediary, that progress is dependent on its views of the surroundings.

In the above example, an autonomous system can discover sequences, which are functionalities that connect inputs to outcomes and go undetected by individuals. The efficacy of a learning algorithm may then be connected to measurements of reliability, exactness, and memory, which are accepted as quality criteria. Still examining corporate processes, diverging behaviours might be detected using patterns. In the banking business, for example, it becomes simpler to detect credit card fraud or target clients for marketing efforts. Another advantage of machine learning over business procedures is its higher flexibility; for example, it is simpler to adapt the evaluation of a specific instance to changing outside influences as the environment improves.

In the framework of AI, decision and utility theories are also being researched thoroughly. These theories enable us to compute values and identify the behaviours that a person must do in order to maximise its particular utility function. Using decision-theoretic models, every choice made in a business process, such as buying or selling stocks or providing a suggestion to a customer, may be substantiated. The value in these circumstances comes from better dealing with unclear data and determining which inquiries need to be addressed so that decision-making models enhance their understanding of the business environment.

This method has now enabled business applications like as personal digital assistants (e.g., Siri from Apple) and cognitive computing. The field of operational research has long studied and researched algorithms to optimise schedule and plan solutions. A famous example comes from production management, where responsibilities must be distributed by a group of machines in order to reduce manufacturing processes, production runs, and expenses for a particular item. This mathematical legacy was later adopted by AI, which has been creating many search algorithms that may be employed alone or in conjunction with sophisticated optimisation and problem-solving tools.

In perspective, the importance of search algorithms in solving and optimising planning, scheduling, and other difficulties in business process management is undeniable, and there are numerous successful implementations in logistics, manufacturing, and other areas today. In the banking sector, and in light of the prevailing regulatory environment, there is a strong emphasis on operational uncertainty, which may end up in substantial losses due to unsuccessful attempts in operations and unforeseeable human behaviour, weaknesses in technological frameworks, and a lack of regulates on software systems. Unanticipated external occurrences may also raise the danger of insufficient reactions to new market circumstances.

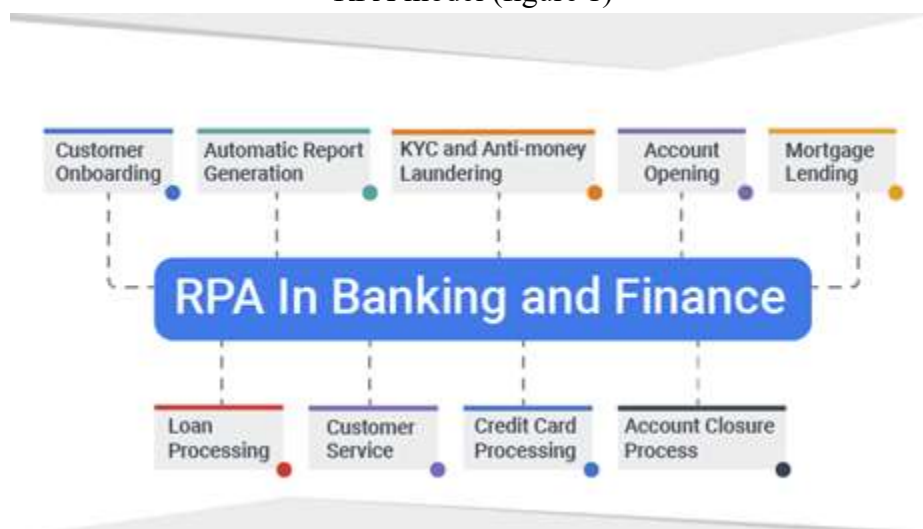
The risks are numerous; for example, selecting information may be biased, or data may be erroneous or significantly divergent from what was intended. Making choices, on the other hand, have the intrinsic danger of becoming antiquated since the preliminary projections and consequently their source data have altered in the circumstances. Furthermore, by automating

operations in a computer-based uses, we speed up decision making and, as a result, the non-observance of potential modifications in circumstances and operations preconceptions, which might be readily apparent in the organization's surroundings but aren't yet captured in the predictive models and computerised rules for decision-making.

To summarise this concise overview of the possible pros and functional dangers of AI-based mechanisms, we can state that the dynamic of today's company can result in considerably shorter decision-making timeframes. Rapid change has an impact on the information upon which operations are founded, thus rendering it more challenging to foresee which modifications are going to take place and the manner in which they will effect the technical solutions included in more automated business processes. It appears that the complexity we may achieve in BPA through AI-related technologies should constantly consider a suitable balance between the expected gains for companies and unpredictable hazards impacting them.

WORKFLOW IN CHATBOT: The development of Business Process Management Systems (BPMS) currently relies heavily on a workflow simulation (typically in a Business Process Management Notation - BPMN) in which participants or actors (typically humans and application systems) collaborate to coordinate an outcome they want according to a set of established data. This circumstance is easily comprehensible in the RPA framework (figure 1), where a distinct BPMS supervised an applicant and an executioner and where we may have certain application components to assist and carry out specialized duties.

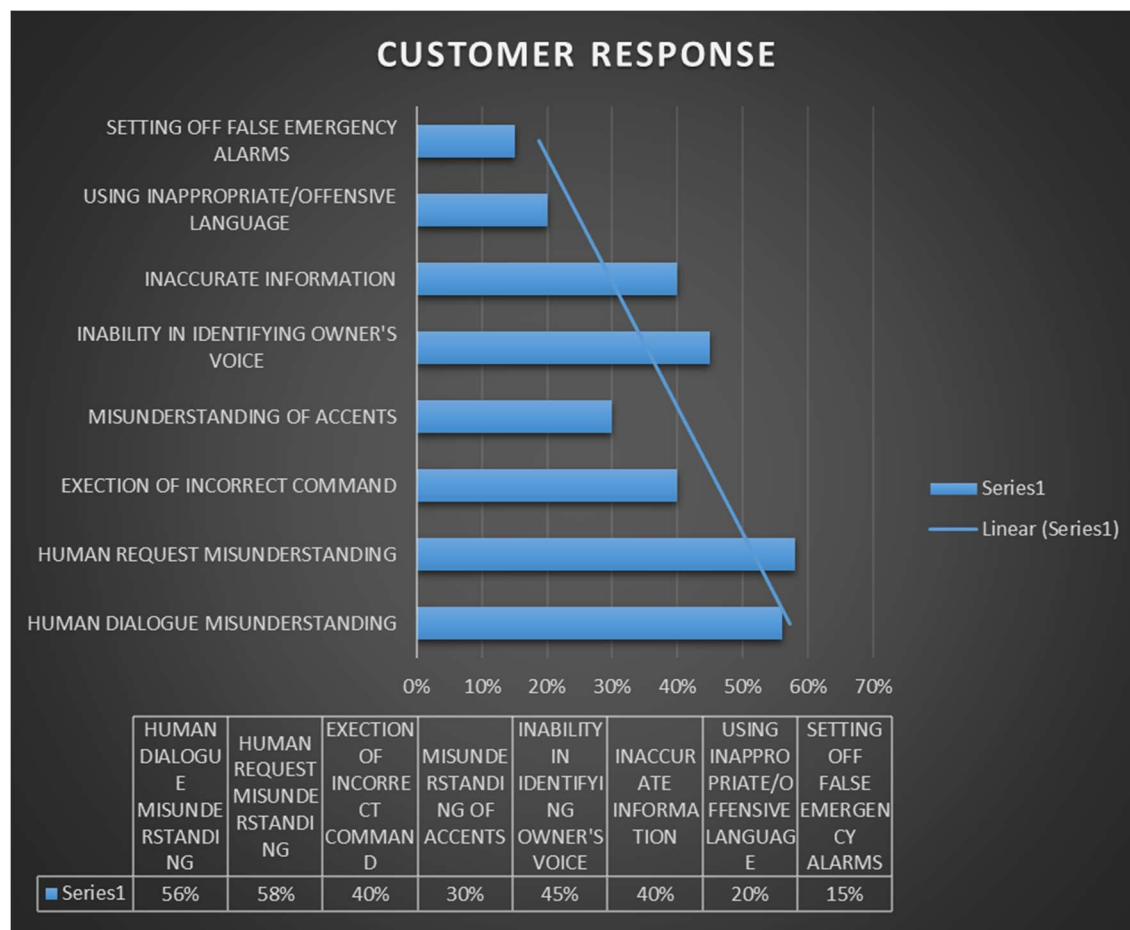
RPA model (figure 1)



Source:tachyontech.com

The difficulty today is not just how these solutions could aid Business Process Managers in comprehending how activities operate, but additionally how we can assist BPMs in achieving an improvement in productivity, improved compliance, and general risk management. The ability of current BPM solutions to take advantage of the volume of data to generate perspectives that resolve the most difficult facets of a BPM System, such as which assignment to carry out, when the assignment should be completed (SLA), and by whom the job should be made, has been previously mentioned as at least an impediment.

CHATBOT INADEQUACIES: An online poll on chatbot efficacy and efficiency was undertaken as rising customer expectations transform the idea of banking from conventional to easy operation. The poll asked 300 individuals who commonly interact with chatbots for their thoughts. Online research on banking clients highlights the shortcomings of chatbots. The answers provided independently by AI-based chatbots to client enquiries were more "creepy" than "cool" (59% alone). The current state of chatbot technology is far from perfect. Businesses who utilise chatbots now perceive a lot of room for development. According to the poll, 60% of participants said that chatbots regularly failed to understand the subtleties of human communication, 40% saw chatbots carry out commands incorrectly, and 30% had trouble understanding accents. Additionally, smart assistants' inability to understand the "owner's" voice is discovered by 45% of the studied organisations, which may be problematic in hectic settings. As can be seen in Fig. 2, there are still a lot of misconceptions that happen in chatbots, whether they are voice-based or text-based, and they still need a lot more information. This means that further research and development is needed to eliminate these errors.



Source: Survey result

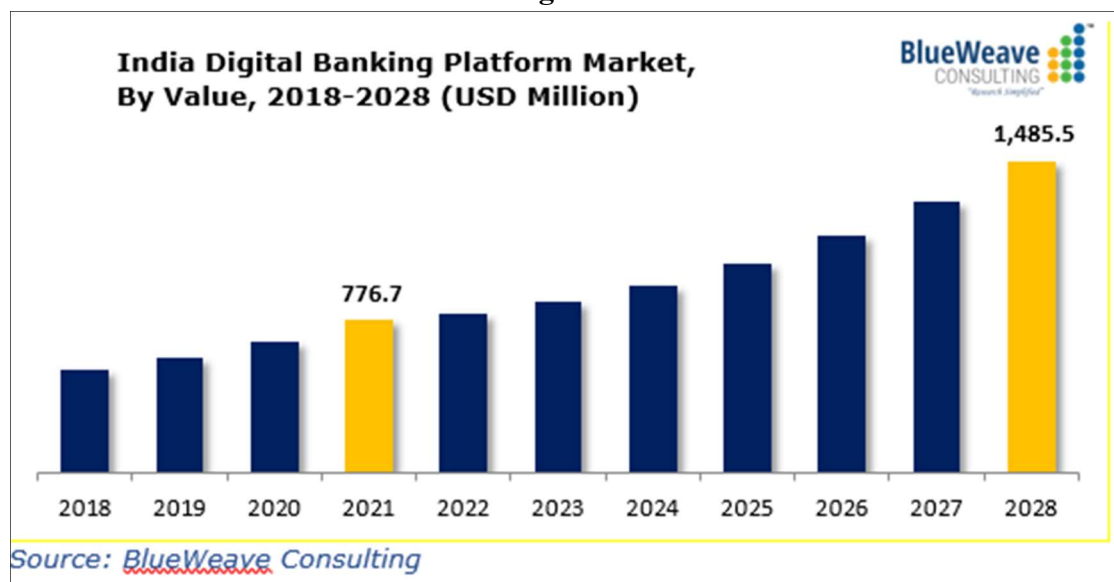
GROWTH OF BANKING INDUSTRY : A banking institution accomplishes its operations largely via the provision of deposits and the lending of money to prospective debtors for organisational growth. In order to create revenue by carrying out numerous business goals and plans, a bank must give consumers with rapid, secure, and ubiquitous goods (as in financial services). Technology innovation allows a bank to access the market on a bigger scale by expanding its footprint. The banking industry is collectively referred to as banks; this distinction is made to distinguish the objectives of the banking sector as a whole—from financial support, savings, and insurance, the banking sector is shifting towards offering people supportive assistance.

The banking sector is continuously expanding, and overall reserves are likewise in good shape as compared to the economic downturn of 2008. Neobanks and innovative technology firms then enter the market, and established banks engage with them or partner with them to expand their business.

INDIA ONLINE BANKING :

The marketplace for digital banking platforms in India had a value of USD 776.7 million in 2021 and is anticipated to increase to USD 1,485.5 million by the year 2028, increasing at a CAGR of 9.8% during the forecast period (2022-2028). The country's booming fintech industry and expanding government measures to promote economic digitalization have significantly increased the market for digital banking platforms in India during the past several years. Additionally, it is projected that the expanding use of cloud-based computing and increased emphasis on bettering the customer engagement would strengthen India's economy.

Figure-3



CONCLUSIONS : The background, ideas, and terminologies related to business process management, specifically BPM and BPA, are briefly covered in the article. We emphasised the extremely dynamic, complicated, and volatile environments in which enterprises are run. As a result, there is a great opportunity to use more "intelligence" when automating business process

management. The goal is simple: to manage the most evident process components more effectively while also differentiating business process management from other approaches by more modelling and technical sophistication in those areas. We stress that the task now extends beyond just determining how effectively procedures are operating.

Now we must relinquish control and let business process administrators to achieve a productive increase in processes, improved compliance, and risk management with appropriate levels of likelihood and impact. Three research questions are presented in the article and are used to analyse a BPM case study at a financial institution. Since the project of modelling these processes, imbued with higher intelligence, remains in the execution period, the results gained are fragmentary and imperfect. It should be mentioned that the integration of AI-related technologies into BPM/BPA requires us to think about both sides of the issue. In reality, benefits maximisation typically results in an increase in the likelihoods vs. consequences of existing risks, with the creation of new risks resulting from more unstable situations or/and from a more complicated integration of diverse technical elements.

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Robotic Process Automation ([RPA](#)) is growing at a rapid pace and transforming every industry. Businesses are realising its potential and integrating it into their daily operations to stay competitive. And, the [banking](#) industry is no exception. Banks are increasingly adopting RPA to become agile, competitive and profitable. Rising customer expectations are transforming the idea of banking from conventional to convenience.

Keywords: Automation, Customer Expectation, Competitiveness

Introduction:

As rightly said by Brett King, Author, Futurist and Co-Founder & CEO of Moven, a New York-based mobile banking startup, "Banking is no longer somewhere you go but something you do". Global spending on [RPA software](#) grew to reach \$680 million in 2018. According to the Gartner's latest research, spending on RPA is on the rise and expected to reach a whopping \$2.4 billion in 2022.

The Government of India (GoI) has rolled out several initiatives to increase the adoption of digital transactions mainly in the Retail Banking space. The bedrock created by these initiatives is likely to usher in various trends in digital banking. Robotic process automation is the most important of them.

ICICI bank, one of India's leading private sector banks, is among the first in the country to adopt RPA on a large scale. It has integrated [robotics](#) to automate manual and repetitive tasks such as IT support, customer email response and portability of accounts. They have deployed 750 robots to facilitate processing of more than 20 lakh transactions per day. In addition, [redressal](#) of ATM cash disbursement grievances has come down to 4 hours as against 12 hours, with a 100 per cent accuracy.

Below are the key banking functions getting transformed by RPA:

Daily operations – The banking industry deals with heavy volume of data. Manual processing of this data is a time-consuming and error-prone process. Further, manual input of data from legacy

software to newer models delays daily operations. RPA facilitates seamless communication and transfer of information from legacy to newer software. It automates menial and repetitive tasks, thereby reducing the turnaround time in processing a request. As per reports, banks have been able to reduce their turnaround time from days to hours and even minutes. In addition, processing cost has been reduced by 30 per cent to 70 per cent. Recently, the largest bank in Japan made headlines for implementing RPA to save labor costs and gain operational efficiency. Leading banks in India such as ICICI Bank, HDFC Bank and Axis Bank have implemented RPA to improve their efficiency and productivity.

Customer Service – Banks deal with multiple queries every day, ranging from general information to account enquiries to complaints, and so on. If a bank aims to be seen as customer centric then it is extremely important to resolve all these queries in real-time. RPA helps in resolving the low priority queries, freeing up the staff to focus on high priority queries that require human intelligence. That is not all, RPA fast-tracks the customer on-boarding process by reducing the time taken to verify customer details from disparate systems. This reduces waiting period, and quick grievance redressal helps banks in improving customer relations.

Risk and Compliance Management – The banking industry deals with a stream of complex and expansive regulations, tighter deadlines, spanning KYC, financial reports, risk assessment reports, periodic disclosures, and so on. With the stringent regulatory guidelines, banks are looking at [RPA solutions](#) to increase efficiency and reduce compliance costs. RPA solutions automate manual and repetitive reporting requirements of upcoming and existing regulations that mandate frequent disclosures. It also enables operational agility to scale up or down as per changing regulatory expectations.

Loan processing – Underwriting is the most crucial step in lending. It means predicting if a potential borrower would be able to pay back. However, often banks get it wrong because they rely on inaccurate information. Manual process of collecting information is tedious, complex and error-prone. RPA powered-software enables compilation of a prospect's record from multiple systems, websites, channels and service providers. Once the data is collected, it is entered into a company's systems for underwriters to analyse it.

Moreover, customers today, expect a lot from their lenders. They want instant responses to enquiries. They expect online portals. When they have questions, they look for a chatbot to help them out. RPA helps in reducing loan processing time by automating processes such as data entry, document routing, task assignments and email notifications. Online portals are being created for customers to submit requests using electronic forms. Since these portals are web-based, customers can view the status of their applications from anywhere, anytime, through a computer or a mobile device.

In conclusion, the banking industry is highly data intensive and operates in a highly regulated environment. It deals with mounting customer expectations and needs to maintain as lean an operation as possible, while also delivering exceptional customer experience at lower costs. Hence, several banks across the world are advocating the use of RPA to minimise errors and human efforts. Several processes within a bank such as credit underwriting and assessment, fraud detection, compliance, security and claims processing can be automated, allowing the teams to focus on engaging with the customers and growing the business

How Does Automation of the Customer Service Function Impact the Customers?

Log into any customer service portal and, chances are that you would come across what is known as bot that responds to you and engages you in providing answers and solutions to your questions and problems.

Even when the customer calls the IVR or the Interactive Voice Response System, chances are that he or she would be greeted with an automated voice and help system.

These are instances of how automation is taking over the Customer Service function across industries and verticals and ensuring that the firm providing the same gains from cost reductions due to elimination of the human interfaces.

While this might be beneficial to the businesses in terms of salaries and emoluments saved, but, the effect that it has on their customers, some of whom would like to hear a real human voice at the other end.

Indeed, much like everything else that automation impacts, the moot question is whether it makes customer service better or worse.

Of course, as technology evolved, successive waves of technological change ensured that humans were gradually replaced with automated response systems and bots and hence, some might very well say that this inexorable march is inevitable.

The Benefits of Automating the Customer Service Function

Having said that, there are many benefits of automating the customer service function.

For one, it speeds up the response times as customers no longer need to wait for their turn in everything from the front desk to IVR and Bot enabled portals.

Indeed, with Bots replacing humans, there is a seamless integration of various customer service touch points.

Moreover, **automation helps businesses save costs and scale up and synergise.**

To explain, Bots can be replicated across an infinite number of customer service touch points and integrate various aspects of customer service that is beneficial to them.

Therefore, businesses can reap the efficiencies from the economies of scale and the synergies from the resultant integration.

In addition, customers who do not speak the language of the service reps can be handled easily by Bots that are Multilingual and can also multitask.

Apart from this, customers need not have to deal with surly service reps and instead, chat and interact directly with automated responses that remove the friction that sometimes erupts in human to human interaction.

Thus, it is the case that automation of the customer service function has tangible and intangible benefits to both businesses and their customers.

The Flipside of Automating the Customer Service Function

On the other hand, interacting with Bots can be a frustrating experience. There is no scope for creativity and out of the box solutions and answers to the queries of the customers as Bots can only function in a linear manner.

To explain, supposing a customer is facing a minor problem that can easily be solved with common sense thinking.

If he or she interacts with Bots, there are chances that the interaction would go in a loop as the linearity of responses does not help the customer.

What this tells us is that technology has still some distance to cover before it replaces humans and given that AI or Artificial Intelligence is still evolving, there are downsides to automating the customer service function.

Moreover, elderly customers would still want the human touch in customer service apart from the High Value clients who need personalised and dedicated relationship management.

Of course, already these are being factored into the equation of automation as some banks now provide a Hybrid version of automated customer service touch points along with dedicated human element and relationship management.

Therefore, while one cannot escape the steady progress of technology, one can still retain some elements of the old along with the new.

Automation Should Not Lead to Stratification of Access based on Customer Wealth

Going forward, it is more than likely that the entire customer service function would be automated across industries.

Moreover, it is also likely that relationship management would be retained only for the High Net-worth Individuals and the rest would have to do with automated and Bot driven customer service.

This has several implications for society and business as we would then be witnessing a stratification of customers and creation of hierarchies based on wealth and privilege.

Already, *technology, instead of levelling the gap between classes is widening it.*

With even customer service being automated, it is more than possible that this layering of the customers would lead to privileges of access.

Even now, walk into an office for service and, chances are that if you are a high value customer, you would be met by your relationship manager, while those who are not have to wait for their turn.

With automation, we would be alienating those at the bottom further and chances are that when they face intractable problems that technology cannot solve, they would be running from pillar to post for solutions.

Therefore, it might need some responsible business practices before automating the entire customer service function.

Conclusion

Last, this ties into the overall approach that businesses must take when automating their functions and in case of the customer service function, it is better to go with a hybrid strategy rather than an all out and monochrome Bot driven method.

In addition, businesses have a social responsibility as well and it is better for them to remember this when they automate the customer service function and not act from a purely profit minded objective.

To conclude, *automation makes customer service better at times and worse at times and hence, we recommend a pick and choose method for businesses.*