The RPA and AI Automation

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Abstract

This research seeks to explain Robotic Process Automation (RPA) and Artificial Intelligence Automation (AI). The impact of these automation processes on the modern and evolving world. The article describes the approaches undertaken by different scholars in economics and management literature. This article explains the effects of AL and RPA on wages, labor, and employment. It emphasizes the impact that the automation machines have brought about in the labor taskforce and the decrease in wages. The recent technological developments resulting from automation have had a greater impact on the workforces, which has led to the robots 'development (Burgess, 2017). This has resulted in job losses as well as a decrease in wages. Therefore, this paper seeks to employ different research methods to determine the extent to which the introduction of automation has caused. We examine the latest developments and the findings on previous research and its implications in the modern world. We find the research gaps that exist and how the research gaps are to be addressed.

Keywords: *Artificial Intelligence, Automation, RPA*

Introduction

Scholars and analysts have forecasted mass loss of jobs due to automation of a wide variety of jobs (Makridakis, 2017). According to Makridakis, it is clear that 60% of the available jobs could be automated by the year 2020. In contrast, others argue that by 2033 in the United States, 47% of jobs will be eliminated due to automation. Researchers argue that Artificial Intelligence and RPA automation are most likely to outperform labor in ten years hence replacing human labor (Makridakis, 2017). AI automation is divided into a wide range of technologies such as knowledge seasoning, natural language processing, computer vision, robotics, and machine learning. The development of algorithms has led to the automation of cognitive and manual tasks hence replacing human labor.

Manual and cognitive tasks are usually found in service and knowledge work. Knowledge work refers to intellectual, non-routine, and creative work resulting from the creation and utilization of knowledge. Knowledge work is used in various professional disciplines such as information, pharmacology, education, and consulting. On the other hand, service work refers to the process of utilizing one's knowledge for the benefit of an individual or others (Barret et al., 2015). Service work includes jobs in security, retail, and office cleaning and consulting. In the literature review, we will expound more on the two types of automation and their advantages and disadvantages.

Literature review

The literature review in this section expands three most important contributions of automation. The first is to review technologies that enable Intelligent Automation as well as Robotic Process Automation. This review on conceptualization is important since researchers and media articles inconsistently use different terminologies regarding knowledge and service work automation (Siegel, 2016). Secondly, the introduction of a value-based model for knowledge and service work and evaluate the twelve research gaps that prevent a complete understanding of the process of business value. Thirdly is the formulation of the research plan to address the issue of research gaps.

Evolution of Robotic Process Automation

Robots are most likely going to perform 45% of manufacturing jobs by the end of 2025. The development of customer interface and machine learning will bring a huge impact in the financial and banking industries (Siegel, 2016). Financial institutions such as banks are coming up with ways of ensuring competitiveness in the market and maximizing profits. Therefore, the concept of the Robotic process involves the two combinations of intelligence and automation. RPA can produce data and analyze the data and workflows; thus, banks and its customers with tangible benefits. Financial institutions majorly invest in RPA and AI automation to keep up with the ever-changing and competitive industries.

Robotic automation is cost-effective and provides a tangible return on investment for financial institutions, creating reliability in terms of customer experience on mobile devices. The business intelligence tools analyze customer feedback and bank activities, thus helping in the strategic decision-making process (Hyacinth,2017). RPA as well allows financial institutions to monitor customer behavior, work efficiency, and the duration taken for various tasks to be completed. The most important objective of RPA is to overcome the challenge of human intelligence scalability (Siegel, 2016). The duration taken by a human to complete a task is high, and that's why RPA seeks to close such a gap. Robots can perform repetitive tasks with a higher speed leading to a faster turnover. With the latest developments in the banking sector, top-performing banks embrace this technology to reduce the costs associated with the operations of the companies. On the other hand, business customers embrace the new technology, which is a major milestone in the success of RPA. Adopting the latest development in technologies helps businesses understand the customer's attitude towards new inventions.

The retail banking industry and automation.

The retail banking industry focuses on service towards customers and the management of the customer's money. Due to competition in the banking industry and technology development, banks should innovate their service industry to meet the challenging environment (makkonen,2017). Banks' need to cut on costs and increase their performance led the banks to adopt technological innovations such as automation. Innovations such as mobile banking have enabled customers to monitor their account's activities and perform various activities wherever they are. The cost-saving innovation came as a result of back-office automation.

Consumer expectations in respect to automation.

Banks and other financial institutions are more likely to benefit from implementing RPA tools such as retail banking, wealth management, corporate banking, and other bank services regarding customer interaction. The implementation of RPA enables financial institutions to meet customer demands and satisfaction since automation costs are low compared to human labor (Siegel, 2016). The availability of RPA reduces the processing time while yielding customer service efficiency with higher accuracy. Financial institutions will be positioned to large volumes and repetitive jobs with the same resources without incurring an extra cost. The RPAs improve performance, accuracy, and efficiency with little human effort.

Evolution of Automation Intelligence

The evolution of AI depends on Automation Intelligence's three dimensions, such as level of intelligence, task type associated with automation, and whether AI depends on the robot.

Level of intelligence.

Two levels of intelligence are task automation and context awareness. The difference between the two is that one uses narrow AI, where the other uses general AI. The narrow AI focuses on a specific domain without expanding into a new domain, whereas general AI focuses on both new and old domains (Hyacinth, 2017). Customers have embraced AI since it is more reliable compared to humans and much more effective than humans.

Automation Task

Customers tend to uphold AI to higher standards as it is appropriate and leads to fewer accidents than humans. Task characteristics influence AI adoption since a task can be subjective, so that customers will feel less comfortable with AI. Research confirms that customers might be less willing to adopt AI because AL lacks solving subjective tasks, affect, and intuition.

Customer characteristics

Customer characteristics as well will impact the adoption of AI. Customer characteristics rely on consequential outcomes and customer involvement. Consequential outcomes lead to an increase in risk perception preventing customers from adopting AI. On the other hand, women are found to be more risk-averse (Harrison, 1994). Therefore, the probability of a woman choosing AI is low since women tend to take on less risk than men. A customer is less likely to adopt AI if a task is central to a customer's identity.

Automation Intelligence usage

AI considers the communication between AI applications and the customers. Customers focus on how an AI application performs rather than why it performs. From research, it is evident that a message is perceived as effective when the source's characteristics and the message match. Effective communication from AI should address the how perspective rather than why (Harrison, 1994). Messages from AI will be more persuasive when the AI addresses how to use a product rather than why you should use a product.

Task type

The task type depends on the AI application that analyzes numeric and non-numeric information such as facial expressions, voice, text, and images. AI applications translate information from non-numerical to numerical though the information translated might be limited. Due to this, computer scientists are working on improving the AL capabilities to provide unlimited information.

Types of Robotic Process Automation.

The important thing with robots is that they can take over complex and repetitive human activities and perform them faster and better. Robots allow humans to shine at tasks where they excel, such as creating a good customer experience, driving innovations, and mitigating risks (Burgess, 2017). Robotic Process Automation is classified into four types that is, data entry robots, verification, and validation robots, system integration robots, and scheduled or trigger robots.

Data entry robots

Data entry is the major frontier in the automation process. It involves copying and pasting data from one point to another. The process involved is more prone to error, slow, and expensive when it involves human labor. Data entry robots do not require complex integration since they automatically feed information from one system to the other. Data entry robots are used to copy inventory load documents to a repository. It also gathers information from inventory loan documents. It also cleans and transforms information according to different pre-established business rules. Finally, data entry robots transfer data into an electronic system. Data entry robots ease information movement from one system to another since it avails all information in one system.

Verification and validation robots

There is a huge consumption of time in validating and verifying data provided by employees, vendors, suppliers, and customers. This is where the verification and validation robots come in to authenticate financial transactions in less time. Verification and validation robots can make calls to a third party and internal systems to verify information effectively. Since the verification and validation process is unreliable, these robots can turn the reactive and unreliable processes into unreactive and reliable processes (Morrow, 2016). If there is a verification or validation error, these robots tend to pass the human co-worker's issue to handle it the best way possible. This is because human workers have experience compared to robots. Robots verify a customer's identity before any transaction is carried out to determine any bank's risk.

System Integration Robots

Most businesses are built on legacy systems that have been customized over some time. When companies merge, core systems operate separately, leading to a lot of manual work and unsatisfied customer experience. Systems integration robots are used to bring together systems such as core systems of different companies when they merge. System integration helps an organization to integrate difficult invoices regardless of the location. Software robots help to interface systems perfectly without special coding.

Scheduled or trigger robots

Scheduled robots are used to take simple tasks that cannot be executed unless a specific event occurs. Scheduled robots are programmed to perform tasks when they are to be performed, unlike humans, who are likely to forget. These robots remind humans of a certain event that is supposed to happen and the specific date. Therefore, it is evident that all these robots can do repetitive human activities in a single process. For example, a robot team in insurance claims automation extracts information from multiple claim forms and puts them in a single document (Hintze, 2016). The robot team verifies information related to the claim from a third party and validates the amount that is to be paid. It enters the information into a contact management system for integration and allows the claim to be on payment status that is a triggered task.

Advantages of Robotic Process Automation

Cost-saving

The main advantage of robotic process automation is cost-effectiveness. That is to say; it significantly reduces the expenditure that comes with the process of automation. Work is completed faster compared to human labor (Makkonen, 2017). It is performed at a lower rate that results in greater outputs, unlike humans.

Quality and accurate work

The quality of work produced is error-free and better quality than humans at a higher exposure to risk. Outstanding quality work leads to higher customer satisfaction, thus increase in the profitability of a company.

Enhanced cycle time

The duration used by robotic process automation is less compared to human labor. A robot will take up several tasks and perform them at a go but yield the same result, unlike humans, who will take a long duration to complete a single task.

Employee empowerment

Robots do not require professional skills to perform a task. Robots' ability to perform tasks without any help empowers employees to perform their tasks effectively and efficiently (Makkonen, 2017). This is because employees get the chance to concentrate on other tasks that need their expertise.

Simplicity and flexibility

Robotic process automation does not require special coding to perform a task. This means complex processes can be easily transferred to machines with little effort. The faster the tasks and automation of

workflows, the higher its benefits (Morrow, 2016). Therefore, robotic process automation offers quick returns in seconds.

Better control

Many are times when companies outsource external parties from other companies to come and perform a certain task. This exposes the company to inherent risk. This is where robotic process automation provides a better solution by maintaining visibility and control against the company.

Insights and analytics

Learning from past experiences helps managers and business leaders to come up with better decisions in the future. Robotic process automation can gather, organize, analyze and store valuable information for future reference (Morrow, 2016). Therefore, the stored information can be used to make a company's decision based on the accurately stored data without fear of any alteration.

Disadvantages of robotic process automation

Monetary expense- The monetary expense for implementation and maintenance of robotic process automation is high.

Lack of technical ability- researchers believe that for robotic systems to flourish, the end-user must possess significant technical skills (Adami, 2015). Therefore, the robotic process lacks the technical skills to perform various complex tasks.

Major change- the adoption of new technology needs change, and change is inevitable. The impact of a major change cannot be felt when the right tool is used.

Redundancy- the most common fear among humans-is that robotic process automation might replace human labor, yet robots' main aim is to give a supporting hand to humans at the workplace (Adami, 2015).

High installation and maintenance costs- small organizations with limited financial resources cannot purchase, install and maintain robots because of the high costs.

Risk of the data breach- replacing human labor with software applications can lead to data breaches since this system's information is prone to cybersecurity issues. Businesses that automate applications without security concerns are addressed are more prone to the risk of the data breach.

Reduced flexibility- automated robots are often limited in changing and new developments (Hyacinth, 2017). While humans are flexible to new developments, automated applications become unreliable when it comes to new developments.

Types of artificial intelligence in machine development

There are four steps of artificial intelligence machine development. They include reactive machines, limited memory, a theory of mind, and self-awareness.

Reactive machines

Refers to the type of Artificial Intelligent that cannot use past experiences or memories to make the current decision. An example of this type of system is IBM's chess-playing supercomputer and Deep Blue (Noah, 2016). This intelligence type acts on what it sees and instantly perceives the world rather than on the past. It relies on the external concept of the world. These systems are unable to function beyond the specified task.

Limited memory

This type of intelligence includes reactive machines that use past information. These machines require monitoring over some time and require identification of specific objects (Adami, 2015). They learn from past data and uses the data to make future decisions. Examples of such intelligence automation include virtual assistants and chatbots.

Theory of mind

This kind of machine represents both the world and the surrounding agents in the world. These machines understand that all the things in the world, such as people, all creatures, and other objects, have emotions that affect their behavior, and that is why it is referred to as "theory of mind" (Adami, 2015). AL machines are developed so that they need to understand the minds of individual beings depending on multiple factors, especially understanding humans.

Self-awareness

This is the final step of machine development. Machines are built with self-awareness and consciousness. When machines are built with consciousness, they can understand and predict others' feelings and are aware of themselves. Whereas we are far from creating self-aware machines, the focus should be on the understanding ability and base their decision on past experiences. This is the most crucial step in human intelligence understanding.

Artificial Narrow Intelligence (ANI)

They are artificial intelligence that represents both capable and the most complicated AIs. They are AI systems that perform a specified task using human-like capabilities. These machines are limited such that they are programmed to do specified tasks and nothing more than that (Noah, 2016). These machines easily correspond with both reactive and limited Artificial Intelligence.

Artificial General Intelligence (AGI)

These machines can function more like human beings. Artificial General Intelligence can independently build and form multiple connections across different domains, thus cutting down training duration. AGI seems to acquire the multi-functional capabilities of humans, making them work as much as humans.

Artificial Superintelligence (ASI)

Artificial Superintelligence is made exceedingly better than AGI; they possess a greater memory, a high-speed data processing and analyzing ability, as well as effective decision-making capabilities. Though these machines' development is appealing, they threaten the existence of human labor (Hintze, 2016). Therefore, it isn't easy to figure out when new and advanced AL are being developed day in day out.

Advantages of Artificial Intelligence

Reduction in Human Error- artificial intelligence was born to amend human-made mistakes. With the right programming, computers are unable to make such mistakes. Therefore, in AI, human error is reduced, and there are higher chances of accuracy. For example, in Weather Forecasting, AI is used to reduce human error before developing AI (Adami, 2015).

Ability to take risks- this is the main advantage of AI since AI robots' introduction minimizes the risks associated with human error. The AI robots are used to take risks, whether human-made or natural effect.

AI is available throughout day and night- averagely, humans work for approximately 4-6 hours within a day. It is natural for humans to get some time to refresh themselves and get ready for the next day. This is unlike AI systems, where they are available 24 times a day without any break or getting bored unless, in situations where the system has broken down, that's when it can be unavailable (Noah, 2016).

AI helps in repetitive jobs- In most cases, we perform many repetitive tasks as humans, including verifying certain documents or information for available errors and sending emails daily. For humans, this can

be time-consuming and boring at times. Therefore, using AI, we can automate such tasks to them for effective products and reduce the amount of time used to carry out such tasks.

AL helps in digital assistance- Many organizations are using digital assistance like AI robots to interact with their users, saving human labor (Noah, 2016). Digital assistants are embraced in most websites to provide users with the information they require at all times. Some digital assistants are designed to be unable to distinguish whether they are talking to a human or chatbots.

Faster and efficient decision-making- AI is operating alongside other technologies leads to faster decision-making than human labor. In humans' case, decisions are influenced by both emotions and practical factors, while in AI, decisions rely on the programs in that system.

Powering of new inventions- there is powering of new invention in each domain that AI works with, leading to users' ability to solve complex tasks with ease (Adami, 2015).

Disadvantages of Artificial Intelligence Automation

High costs associated with the creation process- Machines need to be updated to the latest requirement over a certain period (Harrison, 1994). Speaking of this, AI updates daily, resulting in hardware and software updates and creating a huge cost in the process.

AI machines make humans lazy- It is automatic that most of the work is carried out by this application. Therefore, humans get addicted to such devices, creating a population of lazy people.

AI machines make unemployment- AI is replacing many repetitive tasks leading to less human interference, which might cause job losses at any given time (Adami, 2015). Most organizations are ready to let go of less qualified employees and instead hire robots to take up their tasks.

There are no emotions in AI machines- AI machines cannot replace human connection, which is an essential attribute in team management. These machines cannot interact or bond with humans since they can't understand what people go through.

Lacks out-of-the-box thinking- AI machines cannot think outside the box, unlike humans who have the mentality to think outside the box (Noah, 2016). Machines perform programs scheduled to do and given anything outside programmed task might lead to a system crash.

How This Research Is Going to Help America

RPA and AI are increasingly used as a priority in many organizations, especially financial institutions. This research paper has outlined the adoption process of both RPA and AI and the impact the adoption process has on customer satisfaction and profitability of the business. Some authors argue that robotics is a social revolution in the modern business world. Digital transformations such as the use of digital assistants create a gap for unemployment in the 21st century.

Conclusion

The revolution of robots and automation would be impossible in the modern business environment. The existence of RPA and AI leads to faster processing of information over a short period. The literature analysis conducted identified various empirical and theoretical research gaps that are yet to be addressed. The first research to be addressed is RPA and AI's impact on businesses' organizational structure and performance. Secondly, the effects of strategic approaches towards adopting RPA and AI and during the implementation process. It is advisable to combine RPA and artificial intelligence to generate refined process models.

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