

Innovative Trends Through Robotic Process Automation. A Case Study

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Abstract

The workplace and our daily lives are being transformed by the next generation of digital technology, which includes artificial intelligence and robotic process automation (RPA). And for many businesses and their leadership, digital transformation has emerged as a crucial strategy. Innovation is the key to organizational success in the fast-paced, constantly evolving commercial world of today. Businesses must be adaptable to both internal and external influences because the business environment is constantly changing and developing. The benefits and necessity of employee creativity are increased by the organizational environment's instability.

With new strategies across several important departments, including finance, human resources, and internal audit, the authors tracked the development of a service technology solutions organization that has established an intelligent IT operation ecosystem. They then presented their leadership perspective and thought process for the case study's next steps for the business.

Keywords

RPA, digital transformation, employee survey, leadership, artificial intelligence.

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Introduction

The paper's main purpose is to examine the Artificial intelligence and robotic process automation, as two examples of the next generation of digital technologies, that are becoming increasingly important in the workplace and in our day-to-day activities. Additionally, many businesses and their executives now view digital transformation as their primary strategy. Leadership is essential in defining and creating the environment in which people may come together and work toward a common objective. By choosing individuals who are focused on novelty and learning, rather than just generating cash, leaders should be in charge of establishing an innovative culture. According to Xie et al. (2018), trust is a factor that encourages creativity within an organizational setting. The readiness of leaders to accept responsibility for incorrectly evaluating the credibility and leadership of subordinates is referred to as trust in employees.

Nowadays, a large number of services offered by businesses are digital services due to the recent advancements in technology and the widespread adoption of data systems in society. The fourth industrial revolution, known as Industry 4.0, is one in which automation and technologies are making significant changes.

Robotic Process Automation promotes increased efficiency, just like other cutting-edge technologies. RPA should be viewed as one of the technologies enabling businesses to automate recurring processes during the digital transformation process. It combines software, artificial intelligence (AI), and machine learning skills to automate manual operations that are typically carried out by people by programming autonomous software robots to repeat basic tasks (Kudlak, 2019).

Predicting the future of potentially disruptive technologies becomes a crucial issue for business leaders worried about the survival and profitability of their firms as digital technologies shape competitiveness in various industries (Krotov, 2019).

When it comes to automating organizational and business procedures, RPA offers a number of benefits. In addition to these benefits, the complementing use of Artificial Intelligence (AI) methods and methodologies enables RPA procedures to be executed more accurately and efficiently in terms of information extraction, recognition, forecasting, and process optimization. This research seeks to give an overview of the RPA tools related to AI that can help to enhance organizational processes in this area.

1. Literature review

Artificial intelligence used to be a concept with several main application areas. Some of such fields included robotics, computer vision, automatic theorem proving, natural language processing, automatic programming, intelligent data retrieval, etc. These application fields are now so diverse that each may be regarded as a separate field. Today, AI is best understood as a collection of fundamental concepts that support several of these kinds of applications (Nilsson, 2014).

Robotic Process Automation has gradually included implementations of algorithms or AI approaches used in certain contexts, like HR or accounting, in order to classify, recognize, and arranged according to its automated features, given the breadth of the applicability of AI. Some academic studies have been recently published as advantages and challenges of RPA, as well as case studies of the application of RPA and AI (Fluss, 2018; Leno et al., 2020).

Additional research on the intelligent automation of methods using RPA have been released, like that of the consulting Deloitte, which presents the potentialities of the application of AI algorithms and techniques, but they should be applied in well-defined and stabilized processes, like in strategic domains focused on customers tasks, increasing worker productivity, improving accuracy in processes, and improving the experience with customers (Watson et al., 2020).

The fundamental idea behind intelligent manufacturing and industry 4.0 is the use of AI by robots to fulfill complex jobs, lower prices, and increase the quality of products and services. With the aid of cyber-physical systems, AI technologies are penetrating the manufacturing sector and fusing the real and virtual worlds. By utilizing AI, the manufacturing sector becomes smarter and more equipped to handle contemporary issues like configurable specifications, shortened time to market, and an increase in the number of sensors utilized in equipment. According to Ustundag and Cevikcan (2018), AI techniques (such data mining) are able to analyze vast amounts of real-time data gathered from numerous sensors.

We emphasize the significance of Robotic Process Automation, which is defined as a technique that results in the automatic execution of administrative, scientific, or industrial tasks. It uses robotics as a set of techniques relating to the operation and use of automata (robots) in carrying from a variety of tasks in place of humans for how to do a thing. In this sense, RPA tools are a collection of methods intended to increase productivity by eliminating or automating repetitive operations. Along with the usage of RPA, the incorporation of AI - algorithms and methodologies - enables the execution of automated processes to be more precisely controlled (Aguirre and Rodriguez, 2017).

Robotic Process Automation is the automation of service processes that mimic human labor. Artificially intelligent robots or AI employees who can accurately complete repetitive jobs are used to automate processes. The developer establishes task instructions using some type of screen capturing and creating variables. Among other things, these duties involve logging onto programs, copying data, pasting it, opening emails, and filling out forms. RPA is a catch-all phrase for tools that interact with other computer systems' user interfaces (Van Der Aalst, Bichler and Heinzl, 2018).

Information is collected from smart devices using RPA techniques (Madakam, Holmukhe and Jaiswal, 2019). RPA is the robotic expansion of a human worker's repetitive tasks for business processes. RPA is not a component of the information infrastructure, as is the case with traditional approaches, but rather rests on top of it, suggesting a low level of intrusiveness that could result in cost savings. According to some reports, the usage of RPA technology can reduce operating expenses for transactional tasks inside shared services by 30% to 50% (Williams and Allen, 2017).

Additionally, RPA now includes intelligent approaches and algorithms (AI) in many systems, allowing for the automation of operations inside an organization to achieve high levels of intelligence. RPA is utilized to automate repetitive and data-intensive processes in order to increase process efficiency. Robotic process automation might actually imply the presence of actual robots working in offices, carrying out human

duties, and taking part in company operations. On the other hand, RPA is mostly a computer-based solution, and the software "robot" is expected to do duties that were before carried out by people.

RPA is defined by Santos, Pereira and Vasconcelos (2019) as a form of automation based on computer programs that might mimic human activities for routine, low-value operations including copying, pasting, extracting, combining, and transferring data between systems. RPA is a technological employee impersonation created to automate structured tasks swiftly and inexpensively.

RPA, or robotic process automation, is a growing subset of business process automation that is built on the concept of software robots or artificial intelligence (AI) employees. To automate an operation and connect to the back-end system, a software developer implements inventory actions in common workflow automation systems using internal programming interfaces for applications or specialized scripting languages.

Take into consideration the following illustration to better understand the idea of robotic process automation: Two of the 500 high-risk customer accounts were given to a team of bank workers to manually examine each day in order to decide whether payments should be handled.

Quinn and Strauss (2018) define RPA as a rapidly growing method to process automation that uses software robots to imitate human jobs. A virtual robot mimics human behavior in the graphical user interface of the application after capturing a process workflow and automates their execution. RPA is typically viewed as an efficiency and productivity solution, as it reduces errors, improves security, and helps lessen human mistake (Dialani, 2019).

Robotic Process Automation needs to develop into something "smarter" in order to be adopted more widely. The application of machine learning and artificial intelligence (AI) techniques is expected to support more challenging and poorly defined tasks. Humans learn abilities via practice and instruction. The goal is for RPA tools to acquire comparable knowledge. RPA technologies can adapt to and manage non-standard scenarios, for instance, by observing human problem-solving abilities.

RPA is a catch-all name for tools that interact with other computer systems' user interfaces in a manner similar to how a human would. RPA seeks to replace workers through automation carried out in an "outside-in" fashion. This is distinct from the traditional "inside-out" method of information system improvement. Contrary to traditional workflow technologies, the information system does not change. (Tornbohm and Dunie, 2017).

Robotic Process Automation systems frequently integrate user interface interactions or link to APIs to power client servers, mainframes, or HTML code in order to execute statements on structured data. An RPA tool works by writing a script in the RPA tool language that the software robot will follow, and a control dashboard allots runtime to carry out the script. RPA solutions therefore strive to lessen the load of repeated, fundamental tasks for people. (Aguirre and Rodriguez 2017).

Additionally, how the RPA system interacts with humans is very interesting. A human may be given a case by the RPA system if it turns out to be unusual. The RPA system can learn by imitating how humans handle difficult problems (van der Aalst, 2016). Additionally, there is a clear connection to process mining. (Kerremans, 2018).

To automatically visualize and choose the processes with the greatest automation potential, for example, RPA vendor UiPath and process mining vendor Celonis collaborate. They then create, test, and implement RPA systems based on the discovered process models. Other manufacturers have cited similar use cases. Finding process fragments that are suitable for RPA may be done after using process identification to educate processes "by example".

At the beginning of the digital transformation period, all efforts were concentrated largely on providing the highest level of customer service. There is presently a growing amount of focus on operational and business process digitization.

Modern digital technologies are changing how organizations function and how their goods and services are produced. Such changes—described as "digital transformation"—have an influence on both particular companies and whole industries. The concept of digital transformation has mostly been used in manufacturing settings where actual robots helped people with their job up until this point.

2. Understanding RPA and AI: Complementary Applications in Modern Enterprises

Due to its potential to change production, improve efficiency, and raise customer satisfaction levels, robotic process automation (RPA) and artificial intelligence (AI) have attracted substantial interest in the modern corporate scene. The estimated market values of these technologies, with RPA forecast to reach \$25.56 billion by 2027 and AI slated to reach an astounding \$390.9 billion by 2025 (GVR, 2023), demonstrate their fast expansion and acceptance. The differences, unique capabilities, and possible synergies of these cutting-edge technologies have been extensively discussed, but many people still struggle to grasp them.

A wide variety of processes exist in the context of contemporary organizations, covering both simple activities and those requiring complex decision-making. As a result, companies need a complementary set of technologies that can handle this diverse range of operations. While AI may help and improve human decision-making in more complicated processes, RPA shines in environments with well-defined, sequential operations. RPA and AI working together may have a significant and disruptive influence on operational efficiency, ultimately changing the way businesses operate.

Recent developments in artificial intelligence (AI) force us to constantly examine the roles of people and automation in different activities as we discuss the changing landscape of automation. Robotic Process Automation (RPA) is a fast-developing technology that uses software robots to mimic and repeat the execution of extremely repetitive operations, which are traditionally carried out by people through a user interface (UI), according to Agostinelli, Marrella, and Mecella (2019). Automating office chores in areas like accounting, billing, and customer support is the main use of these software robots. Extraction of semi-structured data from documents, reading and writing data to databases, pasting data into spreadsheet cells, processing emails and attachments, filling out forms, and conducting computations are a few examples of such jobs. This ground-breaking method of automation emphasizes the rising synergy between RPA and AI in reshaping the nature of labor.

In their seminal research, Kai et al. (2022) underscores the imperative of converging Robotic Process Automation (RPA) and Artificial Intelligence (AI) technologies within the realm of an intelligent financial management platform. The authors elucidate the employment of RPA in facilitating the automation of a multitude of workflows, encompassing business automatic queries and intelligent filling, while capitalizing on AI technologies such as voice recognition, text semantic analysis, and intelligent question answering to foster humanized business interactions, intelligent semantic comprehension, and streamlined business operations.

The incorporation of RPA with AI and ML approaches, as observed by van der Aalst, Bichler, and Heinzl (2018), promises to improve the capabilities of RPA tools, enabling them to support more complicated and less specified activities. RPA technologies would therefore be able to adapt to non-standard circumstances and better manage unforeseen situations by learning through observation and coaching, just like people do. RPA agents might transmit uncommon instances to human operators, guaranteeing the best handling of a variety of scenarios. This partnership between RPA agents and people also has the potential to be more efficient. The combination of RPA, AI, and ML has the potential to revolutionize corporate procedures and increase output.

The study of robotic process automation (RPA) and artificial intelligence (AI) technologies has shown their transformational potential in the modern corporate landscape by highlighting their distinct and complimentary capabilities. Integration of RPA and AI is essential for preserving a competitive edge, simplifying processes, and promoting innovation as firms navigate an environment that is more complicated and dynamic.

3. Implementing RPA in Organizations: Approaches and Strategies for Successful Robotic Process Automation Adoption and Execution

This chapter examines the use of robotic process automation (RPA) in businesses, concentrating on the methods and tactics for effective adoption and use. Due to its promise to increase production, lower costs, and improve efficiency, RPA has quickly gained acceptance in recent years. However, careful preparation and execution are necessary for a successful RPA implementation. These steps include choosing the right RPA technologies, choosing relevant use cases, and creating a thorough deployment strategy. This chapter explores the important factors that businesses should consider while using RPA, offering suggestions and best practices to guarantee a successful adoption and implementation.

The study conducted by Bavaresco et al. (2023) sheds light on the importance of considering users' expectations and perceptions when implementing Robotic Process Automation (RPA) and Natural

Language Processing (NLP)-enabled interfaces in organizations. The report emphasizes that while the introduction of RPA and NLP-enabled interfaces can greatly increase productivity and expedite interactions with clients, it can also cause staff anxieties. The authors stress the need of comprehending consumers' expectations and worries in order to minimize negative effects and promote adoption. The study focuses on customers' perceptions of a proof-of-concept chatbot-based automation service with machine learning capabilities created to automate the statutory reconciliation activity, a manual operation with great automation potential. The results show that business customers are interested in using innovative automation services to increase their productivity and cut down on time-consuming duties. However, they also demand a service that won't disrupt their daily activities and won't interfere with their employment.

As a developing trend to boost efficiency and simplify customer engagement, the use of robotic process automation (RPA) and natural language processing (NLP) technology has been noted. Although the incorporation of these technologies might increase employee uncertainty and disrupt regular operations. Understanding their expectations and worries about automated services is essential to minimizing negative effects and fostering effective adoption. In this situation, it is crucial for businesses to make sure that new technologies are seamlessly incorporated into workers' daily tasks and that they are not burdened in any way. Therefore, in order to facilitate the effective adoption and use of new technologies, companies must prioritize the provision of proper training and support. These findings highlight the significance of thorough machine learning technique design and use, accompanied by explanations that are understandable to personnel.

Artificial intelligence (AI) and machine learning (ML) are being used more and more in business, which offers enormous potential for cost reductions and efficiency gains. The use of these technologies is not without danger, though, and if those risks are not properly handled, they might result in the loss of corporate value. Canhoto and Clear (2020) offer a methodology for mapping the elements of an AI solution and detecting and controlling the possible value-destruction risks in order to handle this problem. This methodology can assist managers in identifying and reducing the risks related to AI and ML, enabling them to fully utilize these technologies. The inputs, processes, and results of the AI system are seriously at risk because to the distinctive features of AI and ML. For instance, biased data might produce biased AI results, which can destroy value. The ideas of value-creating content and value-creating process may be applied to reduce the likelihood of value destruction in light of these threats. Value-creation content specifically refers to the components that provide value to an AI solution, such as high-quality data, algorithmic openness, and moral concerns. On the other hand, the term "value-creation process" refers to the procedures involved in developing and putting into practice an AI solution, including data governance, testing, and monitoring. Businesses may successfully manage the risks associated with AI and ML and guarantee that these technologies lead to value creation rather than value destruction by paying close attention to both the value-creation content and value-creation process.

When putting RPA into practice, it's vital to take the corporate culture and change management into account in addition to the technical issues covered in the chapter. Any organizational change initiative, including the deployment of RPA, frequently runs into issues with resistance to change. Employees can worry about losing their employment or struggling to learn the new technologies. As a result, it's critical to include staff in the process, explain the advantages and expectations clearly, and offer sufficient training and support. Additionally, the use of RPA presents a chance to review and improve business procedures. Prior to automating a process, it's critical to evaluate its efficacy and efficiency and pinpoint opportunities for development. Organizations may benefit from improved outcomes, lower expenses, and a more effective and streamlined workflow with the aid of this process improvement. The RPA's capacity to scale is another factor to consider RPA may be used to automate certain processes at first, but businesses should consider how to apply it to other aspects of their operations. To guarantee that RPA is in line with the overarching company strategy and goals, this calls for a long-term vision and strategic planning.

Overall, a comprehensive plan that considers organizational culture, process optimization, scalability, and alignment with the overall company strategy is needed to use RPA successfully.

4. Research Methodology

The review of the literature revealed that process automation is a continuing requirement for businesses. The writers also mentioned the significant degree of interest in digitization and robotic process automation that is now on the global agenda. Given the circumstances, the use of automation takes on a new dimension and has a direct, immediate impact on the profitability and success of the company. The authors will look at how digital transformation may greatly improve repetitive activities by speeding and improving the automation understanding.

The case study approach will be employed. Researchers must undertake an empirical investigation into a specific, current phenomenon while performing a case study. The study is carried out in a real-world situation using a range of information sources (interviews, questionnaires, testimonies, papers, and proof). As was said in the introduction, the writers have picked a Romanian firm that works in the automation industry. These make it possible for the firms to effectively push their agenda for process automation and productivity, which makes them the ideal example of a fruitful automation leadership strategy.

In addition, the writers used a research methodology they selected for its suitability for attempting to formulate a hypothesis to categorize the data acquired from the 28 publications discussed. The articles emphasize the effects of the digital revolution that will keep organizations working efficiently by discussing the idea of RPA and the automation world in general. The writers will next summarize their own findings and recommendations with relation to the contextualization of automation for long-term company viability.

5. Case study

By implementing additional RPA processes with the help of its Center of Excellence, corporate developers, expanding a team of citizen developers, and developing new KPIs to show ROI, the Romanian firm has discovered new methods to embrace innovation.

Innovation has always been the cornerstone of the Romanian company's success. The corporation has been utilizing technology to enhance the customer experience ever since it debuted its international audio streaming and media services, from playlist curation to suggesting new books or podcasts. The same dedication is used when using technology to make corporate processes simpler, including using robotic process automation (RPA) to make procedures run more smoothly.

RPA was initially tested by the Romanian corporation for treasury procedures. The Romanian corporation established an RPA Center of Excellence (Center of Excellence) during the first year of RPA development, with a purpose to concentrate on RPA code, IT governance, development, security, and developing a service center.

The Romanian firm decided they wanted to go from a code-based solution to a platform that would allow accounting and other departments to create their own automations after seeing some initial success with another RPA platform. Their automated solution has to help them achieve their goals while supporting their vision. The Center of Excellence thus held a cross-functional workshop in April 2021 with participation from the departments affected by RPA, including Finance, Customer Service, Legal, Technology, and Procurement. Everyone agreed that the Romanian firm required a more scalable platform that could be easily deployed throughout the whole organization, was flexible, secure, and compliant.

The main objectives of the digitalization transformation were to increase scalability and improve usability. To assist with deployment and development, they hired a delivery team of consultants. The IT team at the organization, however, set objectives, chose a course of action, and kept oversight of the creation process.

The Romanian company successfully established the foundational layers for its successful Robotic Process Automation (RPA) program, including the operating model and citizen developer program, and migrated 11 existing processes to be automated. The accounting team became the pilot group of citizen developers, and the global business unit is looking at ways to scale RPA with unattended robots. The company has two approaches to automation: enterprise-led automation using unattended bots, and citizen-led development using attended bots. The company's decision to expand the program to scale citizen-led automation was an important strategic choice.

The Romanian company's change management and lifecycle protocols have been crucial to the program's success. The team is focused on increasing the velocity of the development process by embracing quality initiatives, including design and development guidelines, quality assurance, user acceptance testing, and test automation. The team had to find a solution to manage robot identity and access management to effectively run unattended bots, and they ultimately treated the bots as employees, using group structures.

Also, the Romanian company is focusing on the business value that automations create rather than the number of new automated processes. The team plans to keep improving best practices, creating better code review processes, and ultimately enhancing optimization and velocity.

Conclusions

RPA will develop and broaden with the aid of contemporary technology. AI and robots will collaborate to create new techniques for enhancing commercial procedures. Robots and other intelligent technology enhance the rate of learning. Software that combines machine learning, artificial intelligence, natural language processing, and data analytics enables real-time data processing and analysis.

Furthermore, while the process is still running or even earlier, robotic process automation can accurately predict how long it will take to complete a job or an objective. Additionally, it will assist the sectors in continually streamlining administrative procedures and enhancing operational efficiency.

RPA is a relatively new technology innovation that automates corporate processes and may be employed in a digital transformation plan (Lacity, Willcocks, and Craig, 2015). Based on these characteristics and criteria, RPA should be viewed as a cutting-edge, emerging technology that may be used in the process of digital transformation (Siderska, 2020). It may be used to accomplish a number of goals, including process performance, efficiency, flexibility, safety, and compliance, according to Hofmann, Samp, and Urbach (2020).

Starting the digital revolution will maintain the efficiency of corporate operations. A crucial element of the digital transition is technology. The emergence of different digital technologies creates possibilities for embarking on the digital transformation journey.

Modern digital technology adoption transforms how organizations run. For CEOs who are concerned about the company's profitability, predicting the future of potentially disruptive technology becomes a key problem. One of such cutting-edge technologies is robotic process automation.

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