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Robotic Process Automation (RPA) Implementation Challenges: A Literature Review

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Abstract

Organizations have shown increased interest in implementing Business Process Automation (BPA), particularly through the adoption of Robotic Process Automation (RPA) technologies. While RPA has proven its successful applications in many sectors and cases with delivering many benefits to companies, including reducing process time and costs, some associated challenges have either caused the failure of its implementation or undermined its advantages. This study conducts a literature review to identify common challenges organizations face in implementing RPA initiatives. The results of the thematic analysis reveal ten key challenges, including concerns regarding job displacement, knowledge and experience gaps, process selection difficulties, communication barriers, security and privacy concerns, technical limitations, organizational barriers, supplier and regulatory challenges, resistance to cultural change, and maintenance and continuous improvement. The findings of this study provide valuable insights for practitioners and researchers alike, informing strategies to address challenges and optimize RPA implementation. Future research could extend this analysis longitudinally, explore industry-specific challenges, evaluate the effectiveness of mitigation strategies, and investigate the broader implications of RPA adoption on organizational dynamics and performance.

Keywords

Robotic Process Automation (RPA), Business Process Automation (BPA), Software Bots, and Implementation Challenges

1. Introduction

Businesses have shown increased interest in automating repetitive and time-consuming tasks, particularly aiming to eliminate costly and error-prone manual procedures. Business Process Automation (BPA) seeks to enhance the efficiency of business processes regarding cost, resources, and investment by automating the management of pertinent information and data, and reducing the time expended by team members (Chakraborti et al., 2020). Robotic Process Automation (RPA) is an integral part of BPA. RPA, as defined by the IEEE Corporate Advisory Group (2017), refers to a preconfigured software instance utilizing business rules and predefined activity choreography to autonomously execute various processes, transactions, and tasks across multiple software systems, ultimately delivering a service with human exception management. Despite the benefits of adopting RPA, which include cost reduction, increased productivity, and enhanced accuracy, organizations may encounter challenges during its implementation in their processes and operations (Patri, 2021). In this study, a review of the current literature in this area will be discussed to

summarize commonalities and the main challenges faced by companies across various industries, providing a comprehensive understanding of the obstacles encountered in RPA implementation. The findings will offer a valuable resource for practitioners and researchers in this field, providing insights that can inform their implementation strategies, enhance preparedness, and contribute to the successful integration of RPA into organizational processes.

1.1 Robotic Process Automation

Since RPA emerged around early 2000, many definitions have been evolved. RPA can be defined as an emerging technology, with advanced capabilities, that allows, through software mechanisms, the automation of routine and quite standardized tasks that would previously be performed by humans (Moreira, Mamede, and Santos, 2023). Boulton (2018) introduced a definition of RPA in the service industry as follows: "It is to be understood as the application of technology leading to automating business processes, wherein a company develops and configures software, or a 'software robot,' to capture and follow the same steps in transaction processing, data manipulation, response triggering, and even communicating with other digital systems, as a human worker". According to The Institute for Robotic Process Automation (2019) RPA can be defined as "the use of technology that enables employees in a company to configure computer software or 'robots' to capture and interpret existing applications to process transactions, manipulate data, and communicate with other digital systems."

RPA has been applied in various application areas, as depicted in Table 1, its applications extend to many industries including healthcare, manufacturing, banking, and other manufacturing and service providers sectors (Choi, R'bigui, and Cho, 2021).

Table 1. Application Areas of RPA (Choi, R 'bigui, and Cho, 2021)

Industry	Usage
Healthcare	• Billing • Patient registration
Human Resources	• New employee joining formalities • Payroll process • Hiring shortlisted candidates
Insurance	• Clearance & Claims Processing • Premium Information
Manufacturing & Retail	• Calculation of Sales • Bills of material
Banking and Financial Services	• Discovery • Frauds claims • Cards activation

An illustrative example of RPA involves automating the transferring of information from one system and entering it into another or triggering additional system functions. Unlike traditional IT implementations and business reengineering techniques that entail modifying existing systems, RPA aims to minimize disruption to underlying IT systems by replacing manual processes with automated ones through multiple layers (The Institute for Robotic Process Automation, 2019). Consequently, compared to the major IT platform updates, the implementation of RPA entails relatively minor burdens in terms of cost, timelines, and risk.

An RPA project goes through multiple stages as follows (Leshob, Bourgouin, and Renard, 2004):

1- Decision-making for RPA investment analysis: This step is crucial to determine if RPA suits the project. It involves evaluating if RPA is the best option and if its benefits align with the business objectives or address the organization's challenges. Additionally, the benefits need to be compared against the costs.
2- Organization setup: This step involves establishing the project within the organization, defining team roles and responsibilities, providing necessary training, and selecting the software supplier.
3- Process selection: This step entails identifying candidate processes suitable for RPA, documenting them, possibly modifying them, and assessing the value of each automated process to prioritize them for maximum benefit. Processes should be mapped out, including specifications, data flow, and actions to prepare for the next step.
4- Robot development: In this step, the RPA software license is chosen and acquired to begin using the software and developing robots.

5- Testing and controlling: This step involves checking the robot's performance to identify and eliminate errors before it is put into production.
6- Maintenance: The final step involves regularly checking the robot's performance and making improvements if necessary.

Januszewski, Kujawski, and Buchalska-Sugajska (2021) summarized the main benefits of integrating RPA within company processes in their review study. These benefits include cost reduction, faster processing, improved process control, and performance visibility, higher quality of data, uninterrupted operation, and a positive impact on employees, delegating repetitive and mundane tasks to robots allows employees to allocate their time more effectively. Another review paper by Moreira, Mamede, and Santos (2023) indicates that the most mentioned benefits of the adoption of RPA in the literature can be summarized as cost reduction, increased productivity, and enhanced accuracy. Notably, RPA aids in minimizing errors, eliminating risks, and increasing consistency in task execution. It allows for faster processing times compared to manual methods, enabling employees to focus on more complex tasks, thus increasing job satisfaction. Additionally, RPA ensures tasks are performed consistently and with precision, as human error is reduced. The technology also facilitates easier auditing mechanisms and seamlessly integrates into existing technological structures without disrupting services.

Despite the advantages of adopting RPA technology, it comes with challenges that might hinder the achievement of the intended objectives and goals. In some cases, these challenges can lead to additional efforts and costs for the company. This paper aims to explore and analyze these challenges that have been published in the literature. The remainder of the work is divided into three sections. Section 2 briefly describes the research methodology applied in this study. The results of the analysis are briefly discussed in Section 3. Finally, conclusions with future research are presented in Section 4.

2. Methodology

Lowry et al.'s (2004) recommendation for literature review selection was adapted to conducting systematic searches in the Google Scholar database using the search terms: "Robotic Process Automation Challenges", OR "RPA Limitations", OR "Challenges in RPA Adoption", OR "RPA Failures", OR "RPA implementation issues", and applying specific inclusion and exclusion criteria. The inclusion criteria were: (1) the article is available in full text in English; (2) the article is published within the period (2019-2024) (3) the article provides a rich description of RPA challenges, and (4) the article includes case studies of RPA adoption and implementation and describes the associated challenges. Exclusion criteria were: (1) the article does not focus mainly on RPA challenges; (2) the article is a business paper or marketing material written by a software vendor or a consulting firm, and (3) the article is a teaching case. Searches conducted in February 2024 yielded 70 papers, with 10 papers considered to be included in the analysis.

A structured six-step model was described by Braun and Clarke (2006) for data analysis then followed to conduct thematic analysis, which involved familiarization with the data, generating initial codes, searching for themes, reviewing and defining themes, and producing the final report. Through the analysis, key insights were aggregated from the 10 selected papers, focusing on RPA adoption and implementation challenges. To ensure the reliability and validity of the results, the authors collaborated closely, performing the analysis jointly and achieving consensus through discussions and working meetings.

3. Results and Discussion

The results of the thematic analysis are shown below. First, we summarized selected papers on RPA challenges, discussing various aspects such as social and human aspects, organizational and technical perspectives, barriers to implementation in purchasing and supply management, and insights from specific industries like automotive and global business services. Following that, the second section outlined the initial coding process, where meaningful segments of data were identified and labeled based on the qualitative dataset, helping break down the data into manageable units. The third section involved searching for themes within the dataset, aiming to uncover recurring patterns, topics, or concepts across the considered papers, facilitating a deeper understanding of RPA implementation challenges. Lastly, in the fourth section, we reviewed and defined the identified themes, ensuring accuracy, consistency, and coverage of the themes and codes derived from the dataset.

3.1 Summary of Selected Papers on RPA Challenges

According to Moreira, Mamede, and Santos (2023), RPA limitations are categorized into social and human aspects, encompassing concerns about job displacement and the need for effective communication and trust-building. The second category involves ignorance of the technology itself, including a lack of RPA know-how, distrust, and considerations about the cost and capabilities of adopted tools. The third group pertains to unfamiliarity with RPA implementation, covering issues like analyzing the current scenario, assessing digital readiness, choosing processes for automation, and ensuring compatibility between systems. Post-implementation governance presents further challenges, such as installation and configuration time, maintenance needs, adaptation to dynamic environments, and managing bot-human interaction for exceptions. The complexity of RPA, especially without additional technologies like Artificial Intelligence, may necessitate profound organizational transformations. The authors emphasize the crucial shift in management philosophy towards advanced, possibly digital, models for successful RPA adoption, highlighting the risk of failure if such transformations do not occur.

Choi, R'bigui, and Cho (2021) reviewed the report of the Global RPA Survey 2019 and summarized the implementation limitations based on it. They mentioned that the limitations can be categorized into organizational and technical perspectives. From an organizational viewpoint, challenges include prioritizing potential RPA initiatives, aversion to risk, limited RPA skills, and a lack of urgency. These challenges emphasize the need for careful selection of processes, risk management strategies, skill development, and creating a sense of urgency for efficient RPA adoption. On the technical side, concerns involve cybersecurity and data privacy, scalability of applications, deciding on the best applications, implementation costs, and convincing business cases. Addressing these technical limitations requires secure RPA development, scalable automation processes, benchmarks for application selection, and strategies to accelerate the process analysis phase. Additionally, regulatory constraints pose a challenge, necessitating the development of new technologies to meet compliance requirements.

Based on a multiple case study involving 19 organizations that implement RPA from the public and private sectors, a study by Flechsig, Anslinger, and Lasch (2022) provides comprehensive insights into the potentials, barriers, suitable processes, best practices, and components for implementing RPA in purchasing and supply management (PSM). For the barriers of implementation part, they reveal various technical, organizational, and environmental barriers, encompassing aspects like IT infrastructure and human resources, internal communication, financial resources, top management support, organizational structures, supplier-related issues, and government regulations. Figure 1 summarizes these barriers to RPA for PSM.

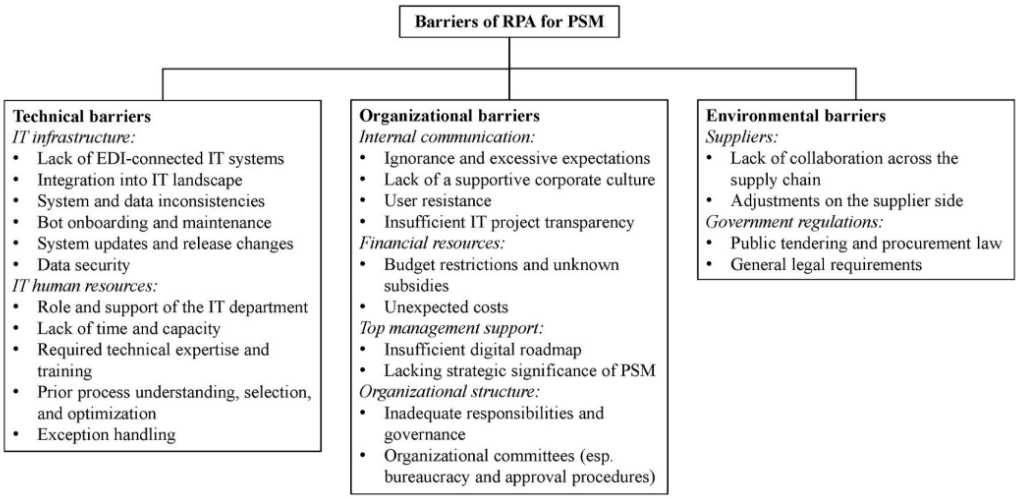

Figure 1. Barriers of RPA for PSM (Flechsig, Anslinger and Lasch, 2022)

Limitations and challenges in IT infrastructure include supplier resistance to standardized templates and full EDI integration, leading to RPA being used as a patch solution rather than addressing fundamental system issues. Complex IT infrastructures, particularly in public organizations, hinder RPA adoption. Data complexity and security concerns, including questions about the handling of confidential data, emphasize the need for meticulous data management and security measures. On the human resources front, challenges involve skepticism among IT professionals, understaffing, and a lack of digitalization skills. The selection of suitable processes for RPA implementation is crucial,

requiring a detailed understanding and optimization of tasks. Concerns about RPA's ability to efficiently handle exceptions in purchasing and supply management processes are also highlighted, leading to an increase in monitoring and quality assurance tasks for personnel involved in PSM and IT (Flechsig, Anslinger, and Lasch, 2022).

Organizational barriers in RPA implementation, highlighting challenges related to internal communication, financial resources, top management support, and organizational structure. Internal communication hurdles arise from exaggerated promises in practitioner literature, leading to misguided decisions. Employee resistance, particularly from older colleagues, poses a significant challenge, fueled by concerns of redundancy or undesirable new responsibilities. Trust-building and acceptance are crucial to overcoming this barrier. Financial constraints often lead to rejected RPA projects, with the unpredictability of total costs complicating decision-making. Lack of top management support, especially in public organizations with outdated mindsets, hampers RPA projects initiated by procurement departments. Finally, organizational structure issues, including bureaucracy, scattered responsibilities, and tedious approval processes, are observed, particularly in public organizations, impacting the seamless integration of RPA into existing structures. Addressing these organizational challenges is vital for successful RPA implementation (Flechsig, Anslinger, and Lasch, 2022).

Environmental barriers to RPA implementation, focusing on supplier involvement and government regulations. Supplier collaboration is essential to prevent issues like faulty bots, but holistic RPA projects often neglect necessary adjustments on the supplier side. In the public sector, procurement law regulations hinder adequate supplier management, emphasizing the need for competition over concentration and optimization. Government regulations pose a significant obstacle, particularly in public tendering, with strict legal requirements limiting optimization and making the process time-consuming and costly. The complexity of RPA vendor functionalities, pricing, and license models further complicates the tendering process (Flechsig, Anslinger, and Lasch, 2022).

A literature review that aimed to provide an approach for analyzing RPA development in business organizations showed that the key challenges of implementing RPA include the need for robot maintenance due to frequent changes in user interfaces, requiring costly and time-consuming reconfigurations when systems change. Another challenge lies in the lack of understanding about RPA, with confusion arising from its association with robotics when it pertains to software robots. The absence of human checks before task execution can lead to faster errors, and robots, lacking the ability to wait for application responses like humans, may encounter connection problems and perform incomplete tasks, raising security concerns. The responsibility for implementing RPA lies with the business side, creating potential ambiguity in the division between business and IT functions. Lastly, the impact on employees poses a challenge, as some companies reallocate workers while others replace them with robots, leading to tensions in the workplace (Santos, Pereira, and Vasconcelos, 2020).

A study examining the primary technical, economic, legal, privacy, and resource obstacles to RPA adoption for tall building safety management was conducted using a pilot survey involving 161 Malaysian tall building specialists. The full questionnaire poll included 231 experts, and the data were analyzed through EFA and SEM. The research concluded that all factors, except resources, significantly affected RPA adoption. According to the findings of the path analysis, legislation was shown to be the most influential factor, followed by concerns about privacy, technological advancements, and economic factors. The final framework, based on the structural model summarizing the results, is shown in Figure 2 (Waqar et al., 2023).

Da Silva Costa et al. (2022) conducted a Systematic Literature Review on general implementation approaches of successful RPA adoption cases, observed benefits, challenges commonly faced by organizations, characteristics that make processes more suitable for RPA, and research gaps in the current literature. They found that one of the main challenges is the lack of knowledge and experience in RPA implementation, leading to difficulties in finding suitable solutions and facing internal resistance to cultural change. Employee awareness and stakeholder endorsement are crucial aspects impacted by this resistance, hindering the innovation drive needed for successful RPA adoption. Additionally, the persistence of paper-based and unstructured documentation poses obstacles, as RPA requires structured digital documents. Identifying suitable processes for automation is another challenge, with attempts to automate unsuitable processes arising from a lack of knowledge and preparation. Access and security concerns also

emerge, with new measures required to manage robots' access to information, and the absence of established standards and methodologies further complicates RPA adoption for organizations.

A study by Wewerka and Reichert (2021) introduced insights into three RPA use cases from the automotive domain and mentioned the main challenges to be tackled when introducing RPA in this domain. An exploratory case study was conducted, wherein the three use cases were selected from real RPA projects. After that, a systematic method for analyzing the cases was applied. The general challenges were derived from conducting interviews with the experts, and the results were then compared with findings from the literature to classify our results in current research. The challenges identified in the study encompass various aspects of RPA implementation in the automotive domain. Firstly, there is a challenge in identifying the right processes for automation, emphasizing careful selection based on factors such as rule-based nature and standardization. Secondly, understanding the factors influencing user acceptance of RPA is crucial, addressing issues such as concerns about job losses and resistance to change for smooth adoption. Thirdly, effective communication about RPA is essential, requiring transparent strategies tailored for highly skilled engineers to explain RPA and its advantages to users. Fourthly, designing interactions between humans and bots requires careful consideration, evaluating, and optimizing this interaction to minimize changes in work habits and enhance user acceptance. Finally, providing tailored software development guidelines for RPA implementation is crucial, with recommendations including reusing components for faster implementation and adopting agile development methodologies. These challenges collectively underscore the need for comprehensive approaches in process selection, user acceptance, communication, interaction design, and software development within the automotive RPA landscape (Wewerka and Reichert, 2021).

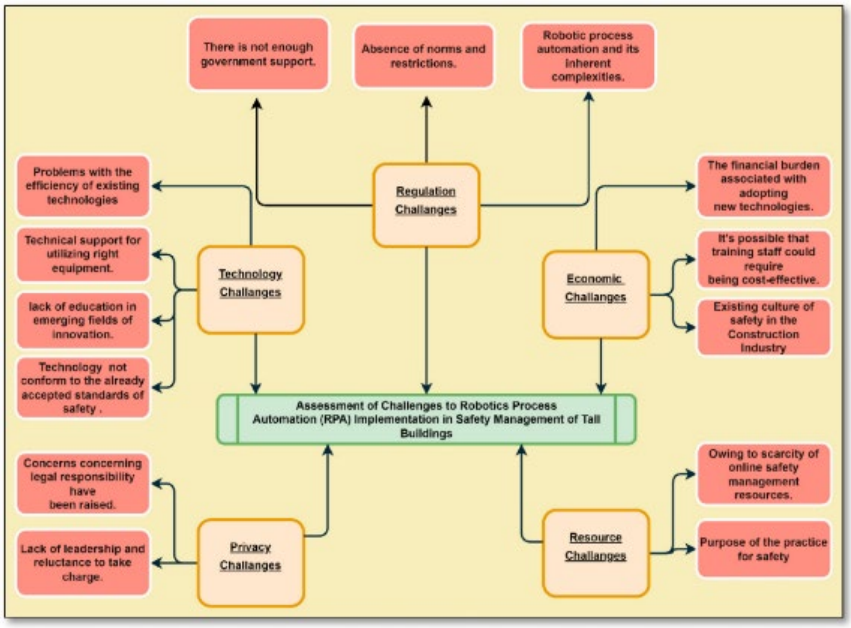

Figure 2. Final Framework Based on The Structure Model (Waqar et al.,2023)

To understand the challenges of implementing RPA in the Global Business Services (GBS) industry a study by Fernandez and Aman (2021) is conducted using an in-depth case study approach and interviews at one of the world's largest oil and gas organizations in the GBS industry. The results of the analysis show that there are three main types of challenges which are the type of task that can be automated, system failure, and safety and data privacy. For the type of task, rules-based processes have shown to be better to automate, this is because RPA still needs a thorough guide to completing certain tasks Furthermore, organizations should target more mature processes as the process is more stable and predictable. System failure can be caused due to errors in RPA operations which may lead to a shift in context, affecting work quality and potentially causing widespread issues within the organization. They mentioned incidents such as forgetting to include decimal points during robot configuration were reported, resulting in system failures. Despite their ease of development, robots lack human adaptability and interpretation skills, underscoring the need for careful attention to detail in their development and operation. Security risk management is a priority issue in

the implementation of RPA in the GBS organization. The main focus is on preventing any misuse of confidential data, either by the software robots or by the people running the system. Security measures should be emphasized in the RPA from the beginning of its implementation.

Gotthardt et al. (2020) reviewed the implementation of RPA in accounting and auditing, highlighting the challenges associated with its implementation. They identified and filtered relevant literature based on technologies and industries pertinent to understanding the current state and challenges of RPA implementation. Additionally, an extensive literature review prioritized practical insights over theoretical models, complemented by two use cases and an extended interview to validate findings, with peer review contributing to the creation of a research framework. The results indicate that the successful implementation of RPA systems depends on proper guidance and understanding, particularly among upper-level managers who may lack familiarity with the technology. Risks arise from mismanagement and misuse, with the need for comprehensive education and motivation aligned with business objectives. Cybersecurity vulnerabilities in financial systems demand extra attention and robust measures to mitigate risks effectively.

RPA implementation in global retail companies to enhance their digital supply-chain capabilities has been investigated by Lambourdiere, Corbin, and Ledru (2022), they examined three key project phases: pre-implementation, implementation, and post-implementation and identified patterns of managerial practices and challenges related to digital technology implementation. They indicated that while RPA offers benefits such as cost reduction and time savings, organizations face challenges in implementing it effectively. These challenges include the need for end-to-end transparency, replacing absent employees, predicting risks across supply chains, and reducing demand uncertainties.

3.2 Generating Initial Codes

After reviewing the considered papers, the next step is generating initial codes which involves systematically identifying and labeling meaningful segments of data within the qualitative dataset. This process helps to break down the data into manageable units and begin the process of identifying themes and patterns. Based on the above review, Table 2 shows the defined codes.

Table 2. Initial Codes

Job Loss Example: "Employees fear losing their jobs due to automation."	Knowledge Gap Example: "Organizations struggle with understanding and implementing RPA due to a lack of expertise."	Process Identification Example: "Organizations face difficulties in identifying suitable processes for automation."
Communication Barrier Example: "Poor communication within organizations hampers trust and adoption of RPA."	Cybersecurity Risk Example: "Concerns about data security and privacy hinder RPA implementation."	RPA Understanding Example: "Employees lack understanding about RPA technology and its potential impact."
Technical Complexity Example: "Implementing RPA systems requires addressing technical challenges such as cybersecurity vulnerabilities and scalability issues."	Organizational Resistance Example: "Resistance from various organizational levels, including top management and employees, poses significant challenges to RPA adoption."	Regulatory Constraints Example: "Government regulations impose strict legal requirements on RPA implementation, leading to delays and increased costs."
Task Optimization Example: "Challenges arise in optimizing tasks for RPA automation, particularly in complex processes such as purchasing and supply management."	Collaboration Issues Example: "Holistic RPA projects may overlook necessary adjustments on the supplier side, posing challenges related to collaboration and integration."	Post-implementation Governance Example: "Maintaining RPA systems post-implementation requires addressing challenges such as installation and configuration time, maintenance needs, and adaptation to dynamic environments."
Resistance to Change Example: "Internal resistance driven by cultural change poses challenges to RPA adoption, including skepticism among IT professionals and concerns about job roles."	Compliance Requirements Example: "Regulatory constraints, especially in public tendering, present challenges with strict legal requirements, making the process time-consuming and costly."	Budgetary Limitations Example: "Financial constraints often lead to rejected RPA projects, with the unpredictability of total costs complicating decision-making."

3.3 Searching for Themes

This step involves identifying recurring patterns, topics, or concepts across the dataset. It aims to uncover commonalities, differences, and relationships between various codes generated during the initial coding phase. Below is the initial definition of themes and what to include in each one:

- Job Displacement and Workforce Impact:

Explore themes related to concerns about job loss and workforce impact due to RPA implementation. Look for codes such as "Job Loss" and "Resistance to Change" to identify patterns in how organizations address employee fears and manage workforce transitions.

- Knowledge and Experience Gap:

Investigate themes related to the lack of knowledge and experience in RPA implementation. Consider codes such as "Knowledge Gap" and "RPA Understanding" to understand how organizations address knowledge deficits and foster learning environments.

- Process Selection Challenges:

Analyze themes associated with difficulties in identifying suitable processes for automation. Look for codes like "Process Identification" and "Task Optimization" to identify patterns in how organizations prioritize processes and optimize tasks for automation.

- Communication and Trust-Building:

Explore themes related to communication barriers and trust-building in RPA implementation. Consider codes such as "Communication Barrier" and "Trust and Adoption" to understand how organizations improve communication channels and foster trust among stakeholders.

- Security and Privacy Concerns:

Investigate themes related to cybersecurity risks and data privacy concerns. Look for codes like "Cybersecurity Risk" and "Compliance Requirements" to identify patterns in how organizations address security vulnerabilities and comply with regulations.

- Technical Challenges and Solutions

Analyze themes associated with technical complexities and solutions in RPA implementation. Consider codes such as "Technical Complexity" and "Software Development Guidelines" to understand how organizations overcome technical challenges and optimize RPA systems.

- Organizational Barriers and Solutions

Explore themes related to organizational resistance, budget constraints, and governance issues. Look for codes like "Organizational Resistance" and "Budgetary Limitations" to identify patterns in how organizations overcome barriers and implement effective governance structures.

- Supplier and Regulatory Challenges

Investigate themes related to collaboration issues with suppliers and compliance with government regulations. Consider codes such as "Collaboration Issues" and "Regulatory Constraints" to understand how organizations navigate supplier relationships and comply with legal requirements.

- Cultural Change and Adoption Strategies

Analyze themes associated with cultural change resistance and adoption strategies. Look for codes like "Resistance to Change" and "Employee Awareness" to identify patterns in how organizations foster cultural change and promote RPA adoption.

- Maintenance and Continuous Improvement:

Explore themes related to post-implementation governance, maintenance needs, and continuous improvement. Consider codes such as "Post-implementation Governance" and "Continuous Improvement" to understand how organizations ensure the long-term success of RPA initiatives.

3.4 Reviewing and Defining Themes

The review step involves thoroughly assessing the accuracy, consistency, and coverage of identified themes and codes derived from the dataset and scrutinizing each theme and code to ensure they faithfully represent the data and address

the research objectives. Below are the defined themes of RPA limitations and challenges based on the reviewed papers considered and by following the mentioned thematic analysis:

- Job Displacement Concerns:

This theme encompasses fears and concerns among employees regarding potential job loss due to automation. It includes resistance to change, workforce transitions, and the need for effective communication and trust-building to address employee anxieties.

- Knowledge and Experience Gap:

This theme revolves around the lack of knowledge and experience in RPA implementation. It involves challenges in understanding RPA technology, providing necessary training and education, and fostering a learning culture within organizations.

- Process Selection Challenges:

This theme highlights the difficulties organizations face in identifying suitable processes for automation. It includes issues related to process identification, task optimization, and ensuring compatibility with RPA technology.

- Communication and Trust-Building:

This theme focuses on communication barriers and the importance of trust-building in RPA implementation.
It involves improving internal communication channels, addressing skepticism among stakeholders, and building trust in RPA initiatives.

- Security and Privacy Concerns:

This theme addresses cybersecurity risks and data privacy concerns associated with RPA implementation. It includes measures to mitigate security vulnerabilities, comply with regulations, and safeguard sensitive data.

- Technical Limitations:

This theme encompasses technical complexities and challenges in implementing RPA systems. It involves issues such as scalability, software development guidelines, human-bot interaction design, and addressing environmental limitations.

- Organizational Barriers:

This theme explores organizational resistance, budget constraints, and governance issues hindering RPA adoption. It includes challenges related to organizational structure, internal communication, financial resources, and top management support.

- Supplier and Regulatory Challenges:

This theme addresses collaboration issues with suppliers and compliance with government regulations. It involves challenges in supplier involvement, navigating regulatory constraints, and managing government regulations affecting RPA implementation.

- Cultural Change and Adoption Strategies:

This theme focuses on cultural change resistance and strategies for promoting RPA adoption. It includes addressing resistance to change, fostering employee awareness, and implementing effective change management strategies.

- Maintenance and Continuous Improvement:

This theme encompasses post-implementation governance, maintenance needs, and strategies for continuous improvement. It involves ensuring the long-term success of RPA initiatives through effective governance, maintenance practices, and continuous optimization.

It is worth mentioning that "Process Selection for RPA Implementation" is the most mentioned challenge viewed in the considered studies. Moreira, Mamede, and Santos (2023), Flechsig, Anslinger, and Lasch (2022), and Wewerka and Reichert (2021) have mentioned it. This limitation refers to the difficulty organizations face in identifying and choosing the right processes within their operations that are suitable for automation using RPA. This involves careful consideration of factors such as the nature of the processes (rule-based or standardized), optimization potential, and compatibility with RPA technology.

4. Conclusion

In this paper, a comprehensive review of the challenges and limitations encountered in the implementation of RPA within organizational contexts. Through a literature review and thematic analysis, ten papers have been reviewed to identify common key challenges across various sectors for RPA adoption and implementation, shedding light on the complexities organizations face in integrating this transformative technology into their processes.

The findings highlight several critical themes, including concerns about job displacement and the impact on the workforce, knowledge and experience gaps in RPA understanding, challenges in process selection, communication

barriers, security and privacy concerns, technical limitations, organizational barriers, supplier and regulatory challenges, resistance to cultural change, and strategies for maintenance and continuous improvement. Considering these challenges and investigating their impact can enhance the companies' readiness and effectiveness in adopting RPA, ultimately realizing the full benefits of automation in improving productivity, accuracy, and competitiveness in the digital age.

For future research, conducting longitudinal studies tracking RPA implementation beyond the current timeframe could provide insights into evolving challenges and best practices over time. Additionally, exploring industry-specific RPA challenges and solutions could offer tailored recommendations for different sectors. Investigating the effectiveness of specific strategies for overcoming identified challenges and evaluating the long-term impact of RPA adoption on organizational performance and employee satisfaction are also vital areas for future inquiry. Furthermore, examining the integration of RPA and other emerging technologies like artificial intelligence and machine learning could provide a more holistic understanding of automation's role in shaping the future of research.

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