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RPA and Governance: Integration of Business, IT, and People

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Department of Information Science and Technology

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The conclusion of this study represents another step in my academic career. This would not have been possible without the support of my family, friends, supervisors, and all those who collaborated in the interviews, sharing experiences and perspectives that added so much knowledge.

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Resumo

Com os avanços tecnológicos o RPA tem sido ainda mais utilizado como ferramenta de trabalho. Atualmente muitas empresas desejam automatizar processos em busca de potencializar a produtividade, eficiência, minorar os custos e erros. RPA é uma ferramenta de software para automatizar tarefas repetitivas e rotineiras que anteriormente eram exaustivamente feitas por colaboradores. O sucesso do RPA está ligado a áreas como o negócio, IT e também às pessoas, para obter uma ampla compreensão foi realizada uma revisão de literatura multivocal relacionada, foram utilizados 86 documentos que incluíam tanto a literatura tradicional como também a literatura cinzenta, e estavam relacionados a tópicos como RPA, governança, auditoria e políticas. Além disso foram conduzidas entrevistas tendo como objetivo obter informações, experiências e perspetivas sobre o assunto. As principais contribuições desse estudo incluem a compreensão sobre integração entre negócios e TI, a padronização de processos, a conformidade, o engajamento dos funcionários, as mudanças nos papéis e responsabilidades, e a gestão de mudanças, aumentando a probabilidade de sucesso das iniciativas e mitigando possíveis riscos.

Palavras-Chave: Automação de Processos Robóticos, RPA, Governança

Abstract

With technological advancements, RPA has been increasingly utilized as a work tool. Currently, many companies aim to automate processes in order to enhance productivity, efficiency, reduce costs, and errors. RPA is a software tool designed to automate repetitive and routine tasks that were previously exhaustively performed by employees. The success of RPA is linked to areas such as business, IT, and people. To gain a comprehensive understanding, a multivocal literature review was conducted, involving 86 documents that encompassed both traditional and gray literature, related to topics such as RPA, governance, auditing, and policies. Additionally, interviews were conducted with the aim of gathering information, experiences, and perspectives on the subject. The main contributions of this study include understanding the integration between business and IT, process standardization, compliance, employee engagement, changes in roles and responsibilities, and change management, thereby increasing the likelihood of successful initiatives and mitigating potential risks.

Keywords: Robotic Process Automation, RPA, Governance

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LIST OF ABBREVIATIONS AND ACRONYMS

AICPA	-	American Institute of Certified Public Accountants
CoE	-	Center of Excellence
GLR	-	Gray Literature Review
IT	-	Information Technology
MLR	-	Multivocal Literature Review
OCR	-	Optical Character Recognition
PCAOB	-	Company Accounting Oversight Board
ROI	-	Return on investment
RPA	-	Robotic Process Automation
SMAs	-	Medium-sized audit firms
SMEs	-	Medium-sized enterprises
SLR	-	Systematic Literature Review

1. Introduction

The term Robotic Process Automation (RPA) emerged in the 2000s and consists of an approach to automating processes or tasks through robots that replace human action in repetitive and well-defined situations or work in collaboration with humans in a hybrid approach [1]. Figure 1 demonstrates the growth of worldwide Google searches for "Robotic Process Automation" over the period between the years 2004 and 2023.

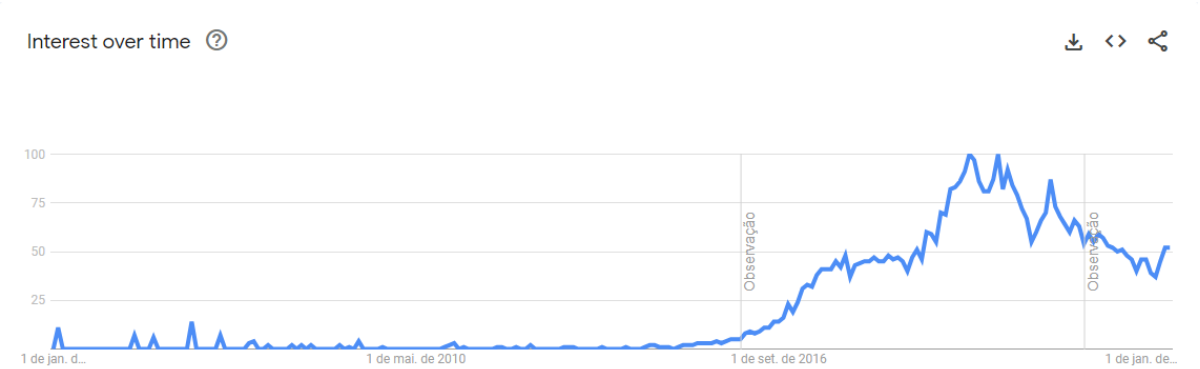


Figure 1 - Google Trends for Robotic Process Automation

RPA can be used in several areas providing greater efficiency, productivity, and cost reduction. Functions such as entering data in forms [2], collecting data in tables [3], processes or tasks based on rules [4], and repetitive interactions [4] with applications are examples of actions that can be performed by an RPA.

American Express Global Business Travel, for example, uses RPA for cancelling airline tickets and intends to expand it to automate tasks at the airport and make suggestions to customers [5]. RPA is not necessarily used to replace employees but to relieve them of non-value-added occupations so that they can dedicate themselves to tasks that require human interaction or to the supervision of the results of the automated tasks [6].

Nowadays, companies looking to develop a trajectory with RPA have more realistic expectations about the intended return than when the technology started to be popular. For there to be adequate delivery of value in all its potential, it is necessary for managers to ensure the implementation and maintenance of several robots at the same time, raising several questions about governance and how it should be applied [1], [7]. In a survey of 250 companies, 12% implemented RPA and half of the companies that implemented it had a positive Return on Investment (ROI) after 18 months [8].

Several aspects can hinder the achievement of established objectives within a company. It is necessary to understand how a lack of collaboration can influence [3], [7], [9], as well as the

relationship with compliance [3], [10]– [12], and various other points that may be related. The objective of this study is to explore and relate the governance of RPAs to Business, Information Technology (IT), and People, along with the linkage to audit and policies.

2. Background

2.1. Robotic Process Automation

Currently, in the literature, several definitions of RPA can be found, several articles identify the concept of RPA as the objective of replacing repetitive human tasks in business processes by software robots that interact with a graphical interface as a human would do [13]–[15].

RPA is not a physical machine, it is software that can communicate with other applications or digital systems and is capable of inputting, extracting, and manipulating data. RPA does not use physical robots, but software robots that are commonly known as bots. According to a case study that was published by Infosys, the use of RPA presented manual work in 58%, which does not mean a reduction in employees, but rather boosting the results of employees who can take advantage of bots as fast and effective assistants [9].

For the development of RPA, it is not necessary to develop code, instead, pre-defined code components are used, and the developer can drag and drop activities that can be configured later [16]. Because RPA does not require code development, staff can be trained in a short training time with sufficient skills for configuration and implementation [17]. As the implementation is relatively simple, there are cases where the conclusion is made without involving the IT department. However, it is not prudent that the initiatives are implemented completely outside the control of IT because this department is responsible for governance as well as infrastructure and security, ideally, IT should be involved from the start [5], [7]. The implementation of RPA is more suitable when processes are primarily standardized, based on rules, and with a certain level of interactions and complexity [6].

Finally, while RPA can provide a quick and easy automation option, structuring the governance to govern this initiative becomes challenging. If the organization chooses to make RPA part of the organization and not just a point solution, there will be a need and complexity in governance due to the growth in the number of bots and all the needs that are added to that [18].

2.2. Governance

The concept of governance can be described as the decision-making process involving both the decision-making itself and the implementation or non-implementation of choices made by individuals in positions of authority, and it can be used in various contexts, such as corporate governance [19].

Governance can take on various types depending on the activity performed in each area. For example, as shown in Figure 2, there is corporate governance, which is more related to the

business environment. IT governance, on the other hand, is associated with the field of information technology. Additionally, there are other types not referenced in the figure, such as environmental governance, which focuses on environmental management and related issues [20].

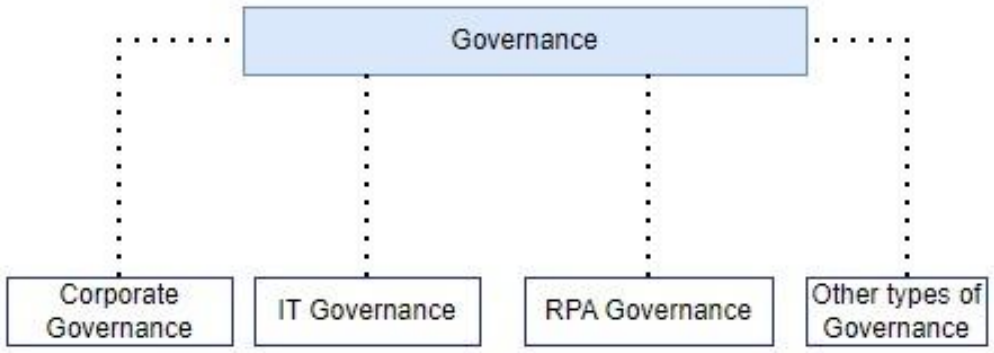


Figure 2 - Types of governance

Corporate governance

Corporate governance, for example, is defined as practices, laws, processes, and policies that aim to improve overall business management by balancing the interests of all parties involved, and the related parties can include shareholders, employees, suppliers, among others [21].

The lack of adequate corporate governance can result in problems at the level of goals to be achieved, limited support from shareholders or other related parties, and even financial damages that can lead to a business crisis. On the other hand, good corporate governance brings together principles like responsibility that implies that the company becomes aware of the impact of its decisions on each party involved, such as employees and shareholders. Thus, the company should manage its choices in a way that promotes sustainable development and long-term progress [22], [23].

IT governance

As a subset of corporate governance, there is IT governance, which differs from the former as it focuses specifically on the information technology sector within the company [24]. In reality, this idea translates into activities such as setting performance parameters and objectives, maintaining technical records, conducting inspections, analyzing knowledge gaps,

and implementing goal monitoring systems in relation to IT initiatives [25]. Figure 3 represents the 5 domains into which IT governance is divided [26], [27].

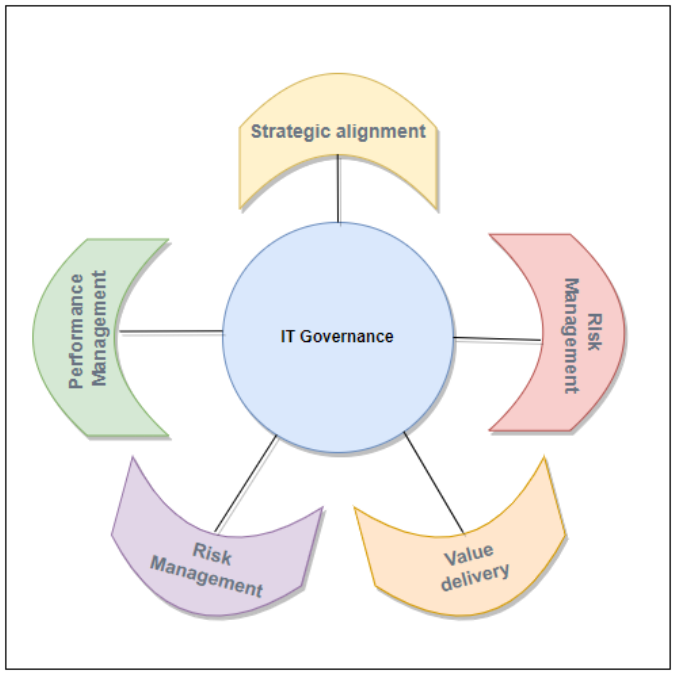


Figure 3 - How the IT governance is divided *(adapted from* [25])

- *Value delivery*: Focused on delivering IT benefits to other areas of the company.
- *Risk Management*: Ensures that risks are being identified, communicated, and appropriately addressed.
- *Strategic alignment*: Questions whether the objectives of IT and the rest of the organization are aligned.
- *Resource Management*: Focused on determining whether information technology resources are being managed correctly and effectively.
- *Performance Management*: Focused on how IT performance is being conducted.

One of the initial reasons for some organizations to start implementing IT governance is the purpose of achieving greater cooperation between business and IT, it is estimated that due to alignment and also well-defined responsibilities, companies that adopt IT governance efficiently can increase around 20% of profits [28].

RPA Governance

Regarding RPA, as the number of RPAs expands, it must be ensured that the robots are implemented and maintained correctly and for that, good governance is necessary that can provide improvements and the achievement of objectives. Different parts of the business are impacted by RPA, and this is one of the reasons for well-established charges and governance.

There are some governance models and the ideal model conditions, resources, infrastructure, and objectives to be achieved by the companies must be considered. The decentralized model allows more freedom in the different parts of the business, so it is recommended for companies that have different areas with extensive experience in RPA, and due to its greater flexibility, it can generate more innovations. The centralized model can contribute to risk reduction by having greater systematization and standardization of what must be followed [29], [30].

In the Nordea Bank case study, they tried to find a balance using the centralized model in the form of the Center of Excellence (CoE) for most questions about RPA and the decentralized model to distribute responsibilities among the different areas operating in the business [7].

A federated model is an option that balances the CoE with autonomous developments of the business units, in which decisions are not centralized and people have the option of debating and choosing priorities, the best option for standardization of automation and best practices [31], [32].

Within organizations, a widely used mechanism for governance is the CoE, which aims to assist in the design, development, and maintenance of bots [33]. As RPA grows within the organization, a CoE can be implemented, which is made up of a diverse team to define policies and standards that ensure that best practices are followed [14], [29].

The insertion of a CoE is an investment that must bring together responsibilities and competencies in the different sectors. The center is responsible for managing the RPA in terms of maintenance, licensing, and bot administration. With the cooperation of different sectors united by the CoE, a certain systematization in the functions of the various sectors can be achieved. In addition, the CoE is responsible for coordinating changes, integrating with IT, and propagating RPA. Depending on the organizational structure, governance can be constituted with the implementation of federated or centralized CoE [34].

The CoE, if centralized, can bring together everything involving RPA within the organization in one place. However, in this case, the effort is also centralized in one place, which can Create overloading resulting in a productivity bottleneck. Meanwhile, the federated model allows the distribution, to the business areas, of responsibilities and handling of the bots, so that each department can obtain assistance from the CoE [34]. Can then be portrayed as a space that is intended to develop high levels of action and achieve the objectives of a particular organization or department, through research, innovation, or even adaptation of technologies [12].

The creation of the CoE also aims to mitigate implementation-related risks that may be, wrongly selecting processes for automation, as they make a poor analysis of expectations. Therefore, a proof of concept should be made to confirm these benefits. Other risks that can delay the process are modifications and updates that can cost time and money, in addition, as the bots run and time passes, the business may lose knowledge of that process if there is no qualified documentation or can generate other risks [12].

The most successful RPA implementations have a CoE, which has dedicated employees responsible for achieving the proposed objectives [5]. Since the CoE can act in different parts of an organization identifying, prioritizing, and managing the development of RPA, it is seen as a long-term way to help RPA be scalable and in addition, be responsible for risk prevention. OptumServe, through the implementation of a CoE, managed to improve automation in its business, having 500 different robots in 2018 and being awarded in 2019 for “Best Creation of Competencies”. They managed to create a high level of standardization and maintenance in the robots [35].

3. Research Methodology

3.1. Multivocal Literature Review

A Multivocal Literature Review (MLR) is similar to a Systematic Literature Review (SLR) and it aims to gather both formal and informal sources of information. Academy writing is the genre of writing used in academic fields, while grey literature (GL) is a multisource of information that is produced outside academic forums and is not subject to any quality control mechanism like the peer review process before publication [36], [37].

For this study, a literature review was carried out based on sources in expertise. The MLR proved to be the best option due to the lack of maturity on the subject, which is still relatively new, and the published (formal) literature may not meet all research needs. As previously mentioned, the MLR encompasses the Systematic Literature Review and the GLR, a grey literature review that can include, for example, posts and blogs [36], [38].

Below is Figure 4 which represents illustrates the correlation between SLR, GLR, and MLR. The first part was searched in the databases and the other in Google Search, respectively.

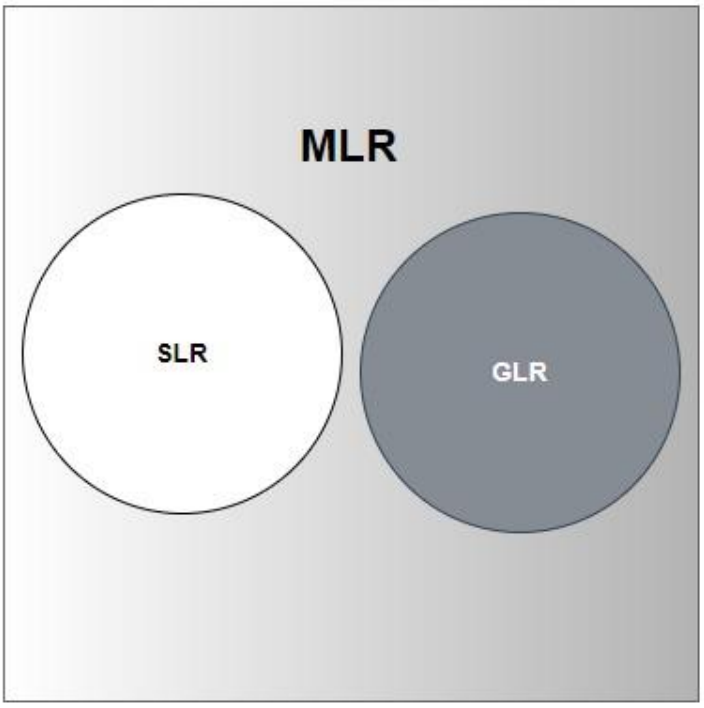


Figure 4 - The relationship between SLR, GLR, and MLR (adapted from [37])

The goal is to examine the outcomes of the MLR to give a comprehensive understanding of RPA and Governance aiming to:

1. Investigate the relationship between the governance of RPAs and their connection to Business, IT, and People, along with the linkage to audit and policies found in the analyzed documents.

Table 1 how's the differences between "White" literature, "Grey" literature, "Black" literature and specifies some of the appropriate selection of publications for each.

Table 1 - Distribution between "White", "Gray" literature and "Black" literature

'White' literature	**'Grey' literature**	**'Black' literature**
Conference	White paper	Concepts
Papers published in journals	Blogs	Ideas
Books	Lectures	Thoughts
	Audio-video media	
	Preprints	
	Data sets	
	e-Prints	

The MLR can be divided into three parts, first the planning, then the conduction and lastly the reporting as shown in Figure 5.

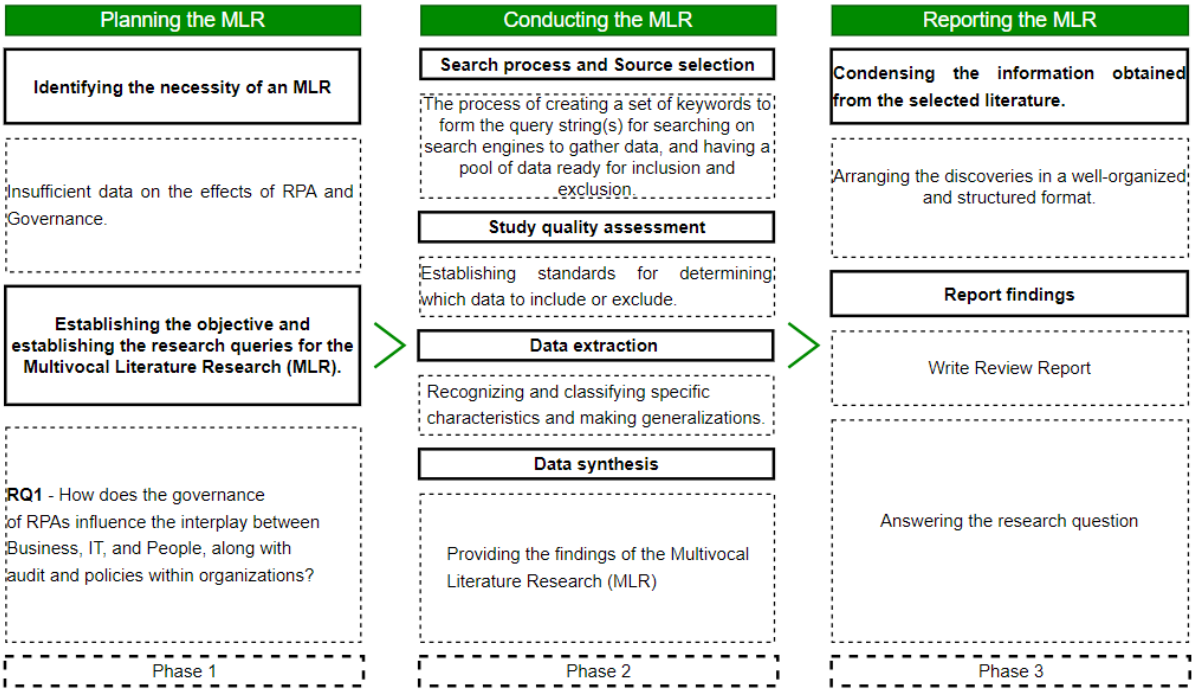


Figure 5 - Phases adopted in this research (adapted from [39])

The first stage, "Planning the MLR," is made up of two steps:

- Identifying the need for an MLR on the specific topic.
- Establishing the objective and research questions for the MLR.

The second phase is "Conducting the MLR" which is divided into five sub-stages:

- Search and selection: Creating a set of keywords that represents the main objective of the study.
- Quality assessment: Evaluating the credibility and impartiality of sources.
- Data extraction: Extracting the required data from the selected studies.
- Data synthesis: Combining and analysing the data in a way that allows the research question(s) to be answered.

The last phase is "Reporting MLR". The typical challenges encountered during the reporting phase of an MLR are similar to those outlined in the guidelines for conducting a SLR provided by Kitchenham and Charters [37].

3.2. Planning the MLR

3.2.1. Motivation

The importance of studying RPA lies in its ability to significantly influence and transform different industries, organizations and processes. By understanding the implications of RPA, it helps organizations better prepare to integrate and optimize their use of RPA to improve their operations and competitiveness [40].

Researching RPA governance helps organizations better understand the implications of the technology and develop best practices for implementation and use. RPA governance will become more and more important for businesses with RPA as RPA keeps developing in recognition and importance [41].

The motivation to this study is investigate the relationship between the governance of RPAs and their connection to Business, IT, and People, along with the linkage to audit and policies found in the analyzed documents.

Research Question

Based on the main objective of this study, one of the main steps for research is the definition of keywords, for this study was used:

> *RQ1* - How does the governance of RPAs influence the interplay between Business, IT, and People, along with audit and policies within organizations?

3.2.2. Review Protocol

Research is done to collect as much information as possible and the selected datasets are listed below:

Search string

- ("Robotic Process Automation" OR "RPA" OR "Robotic Automation") AND (Governance OR Audit OR Policies)

Datasets

- ACM Digital Library (https://dl.acm.org).
- Scopus (https://www.scopus.com/home.uri)
- EBSCO Information Services (http://search.ebscohost.com/)
- Scholar (https://scholar.google.com/)
- Google Search (https://www.google.com/)

Google search can be seen as a limitation, as it's harder to replicate consistently. However, according to some authors, searches can vary, and it's necessary to have a plausible argument instead of just determining a single search method [42]. Research

should be conducted systematically, and it's recommended to use a common search mechanism like Google. Additionally, beyond just the first few pages, a broader range of materials should be considered to ensure comprehensiveness [39], [43].

3.3. Conducting the MLR

3.3.1. Selection of studies

This is the second phase and refers to how the review was conducted. The research is carried out through searches for information in the database and after the data is selected and extracted, they are also analysed.

First, a search was carried out in the academic databases and was used some filters for reviewed publications in journals, academic journals, and articles. This step is shown in Table 2 and is part of the process of selecting and analysing the documents that are included in the inclusion/exclusion criteria.

For the GL search, after searching for the "string" on Google, the first 14 pages were considered, excluding any ads, service sales pages, opinions, and thoughts.

3.3.2. Study quality assessment

Selection criteria for determining which items to include or exclude are described and presented in Table 2.

Table 2 - Inclusion/Exclusion criteria used.

Include criteria	Exclusion criteria
Related to main keywords.	Not related to RPA and Governance.
Documents are written in English.	Documents are written in a language other than English.
Filtering the search results to only show the first 14 pages from Google Search.	Notifications from vendors about tools that have been excluded.
Abstract.	

3.3.3. Data Extraction

Figure 6 represents the collection process done in October 2022, showing the distinct filters used to synthesize the MLR.

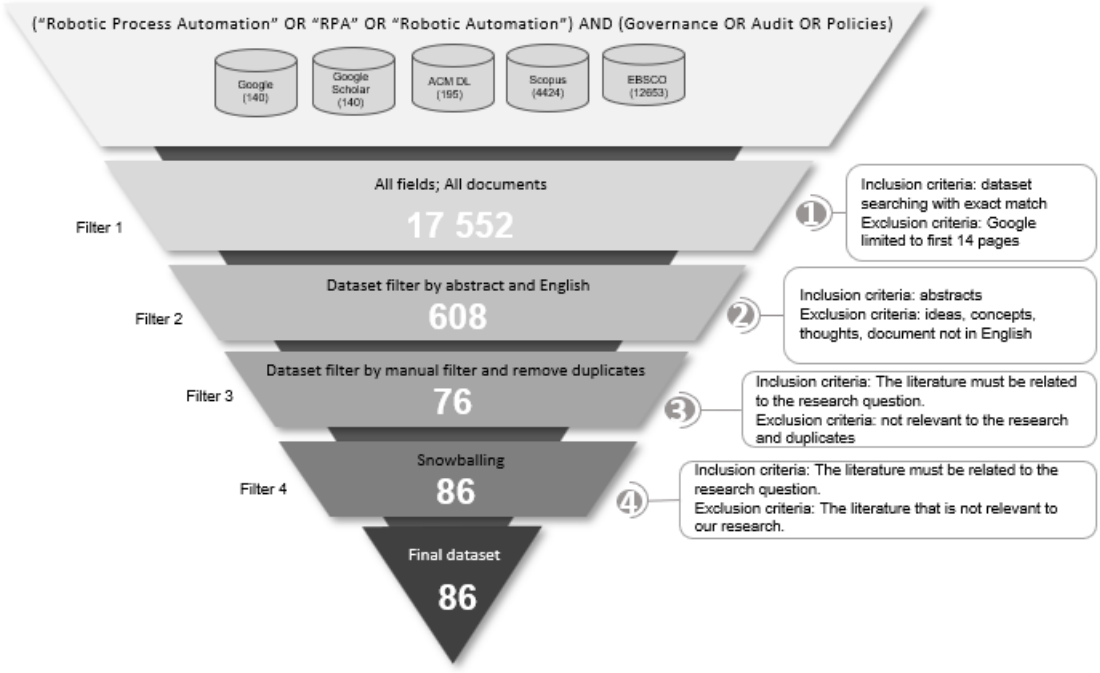


Figure 6 - MLR filters used (adapted from [39])

At the beginning, filter 1 was applied, which was the search in "full text" and in relation to Google and Scholar, the first 14 pages were considered. Then the second filter was applied, which was the search in abstract and only documents in English. And finally, a manual filter was made to separate the documents that were really related to the theme, and a duplicate exclusion was made. Snowballing was an approach used to ensure the inclusion of relevant sources for the study. The reference lists of selected articles were examined, and related citations were also considered [44].

4. Reporting the MLR

This section presents the results of research on the relationship between the governance of RPAs and their connection to Business, IT, and People, along with the linkage to audit and policies. RPA is a software solution that replaces human work in repetitive tasks [15], [45]. Software bots are given a user and password for a workstation, allowing them to work with the necessary permissions, just like a human would work. Due to the rapid implementation of RPA in companies, the governance of RPA initiatives is a current and important to be studied [46].

Governance refers to the mechanisms by which organizations or systems are controlled, organized, and managed. This can encompass risk management, policies, standards, and responsibilities in businesses, non-profit organizations, or even informal settings [47]. In Figure 7 ,it is possible to see that governance is overarching and encompasses the others, thus considered the foundation.

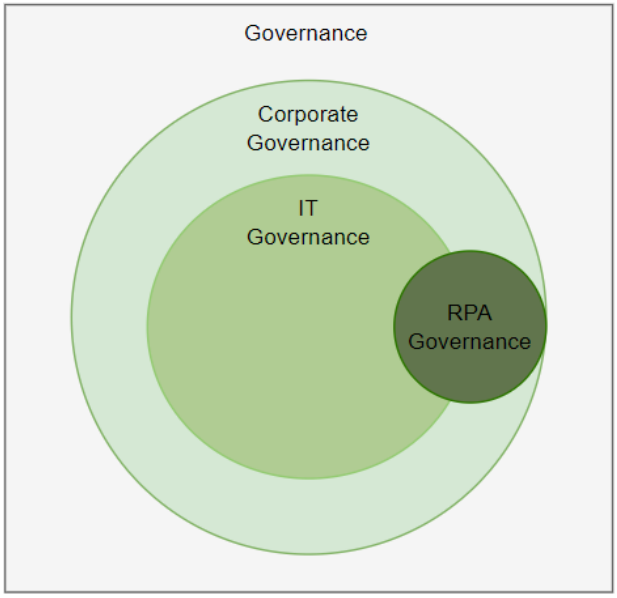


Figure 7 - Relationship between governances

Corporate governance is a subset of governance and focuses on business organizations, the systems processes that control and administer them, aiming to balance and achieve the objectives of stakeholders such as shareholders [47]. On the other hand, IT Governance is a subset of corporate governance and concentrates on the governance of technology within an organization, aiming to ensure that processes, systems, and everything involving technology align with established goals and standards [48]. By fulfilling IT Governance, it contributes to corporate governance in achieving its objectives.

In this context, RPA governance can be a subset of both corporate governance, encompassing the institution's policies and processes and aiming to be accountable to the involved parties, and IT governance, when it involves the process of selecting, developing, securing, and managing the robots [49]. It is advisable that there is collaboration between the IT area and the business so that they can work together, even if structural governance changes are necessary to achieve effective collaboration.

RPA Governance encompasses both the process aspect, such as the rules used, leadership, and planning. Even without highly technical components, it is possible to develop RPAs. However, the major challenge arises when it becomes necessary to orchestrate processes scattered throughout the institution, scale them, and design and size them appropriately [50], and is important to:

- Business Continuity: RPA can contribute to business continuity by providing flexibility, especially during challenging situations such as the COVID-19 pandemic. When employees were required to work remotely, RPA enabled organizations to keep their processes running even with staff working from home [8], [39], [41], [51].
- Security: RPA governance includes defining roles and responsibilities for individuals involved in RPA implementation, establishing security policies, and adopting guidelines to ensure the security of RPA systems and data [7], [8], [18], [41], [46], [51]–[56].
- Viability and scalability: Viability refers to investments, costs, resources, and the assessment of all these components. Scalability, on the other hand, is about the ability of RPA to expand and adapt as the organization grows. It involves handling and managing a larger number of automated processes while maintaining productivity and effectiveness even with business expansion [18], [41], [46], [56]–[58].

We began with an analysis of the selected articles, and Table 3 was generated from the results of this analysis. This table presents the topics that stood out the most, whether in the results sections, discussions, or any of the topics addressed in these articles. For each theme, the corresponding articles are listed.

Table 3 - Findings related to the research.

MLR Findings	
Integration between business and IT	[1], [2], [7], [18], [40], [41], [45], [46], [48]–[51], [53], [54], [56], [59]–[64]
Standardization of processes	[1], [2], [7], [15], [45], [46], [51], [54], [58], [59], [65]–[71]
Compliance and risk management	[2], [7], [8], [18], [39], [41], [46], [50], [65]–[70], [72]–[83]
Employee engagement, changes in roles, responsibilities, and change management	[1], [2], [7], [8], [39], [41], [46], [47], [50], [51], [54], [59], [65], [67]–[69], [72], [73], [79], [84]

Integration between business and IT

To better understand RPA governance, it's helpful to know that IT can be categorized as either heavyweight IT or lightweight IT. RPA falls under the category of lightweight IT, and the key differences between heavyweight IT and lightweight IT lie in the technologies used and the management approach. RPA is considered lightweight IT because it does not require extensive programming skills or complex technologies for development. As a result, RPA allows business departments to be involved in or even fully take charge of automation, whereas heavyweight IT is typically centrally driven by IT professionals.

Among the types of governance, there are centralized, decentralized, and federated models, and the choice of which one is most suitable depends on the specific characteristics of each company. The centralized model is commonly applied to maintain stability and is a way to prevent "shadow IT," which refers to the use of resources or software without the approval and supervision of the IT department, potentially leading to various issues. However, centralization may also raise concerns regarding the prioritization of processes, as both lightweight IT and heavyweight IT will be centralized.

In decentralized governance, decision-making is distributed among various parties, which means there is no central entity responsible, and each involved party has the freedom to make choices related to their own area of operation as long as they comply with regulations. Decentralization can allow departments that have a better understanding of the processes to work more efficiently in selecting and developing them since they are not dependent on a central entity. However, centralization enables process standardization, while decentralization may result in a lack of standardization, making administration more challenging. This can lead to future issues, such as loss of control due to multiple initiatives happening simultaneously across different sectors.

Federated governance, on the other hand, incorporates elements of both the centralized and decentralized models. In this model, there is a central entity that handles general matters, while individual entities manage issues within their respective areas of operation. This allows each sector to work autonomously but also collaborate towards collective goals.

Standardization of processes

Many companies have noticed the significant time and resource expenditure resulting from the wrong choice of processes to be automated. RPA is suitable for handling structured data, which is crucial for the robot to perform tasks based on predefined rules.

In the case of Nordea Bank, for example, they managed to establish that the processes that should be considered for automation have characteristics such as having structured data and using stable systems, thereby avoiding significant changes. For example, when a selector is changed, modifications in the robot are required as it no longer recognizes the properties of the selector.

Although the software can deal with unstructured data using Optical Character Recognition (OCR), it is preferable to have structured data to avoid high costs and a high error rate. Failure in choosing the process to be automated can occur from various aspects. In the centralized model, it may stem from the IT department lacking a deep understanding of the business. In the decentralized model, it can result from a lack of sufficient technical skills among the teams to comprehend structured data, for example.

Compliance and risk management

Companies like Deloitte and Kira Systems integrated RPA in auditing in 2016 and one of the major expectations with the implementation of RPA was to achieve significant benefits that lead to improvements in quality. Utilizing RPA helps improve the efficiency

and effectiveness of audit functions and allows auditors to stop spending time on routine activities like transferring data between spreadsheets and to prioritize high-priority, value-added task, avoiding errors and increasing the quality, and it can also promote the reengineering of the audit processes that can consist of radical changes. Promoting efficiency and effectiveness by automating repetitive and manual tasks in the auditing process such as sending emails, updating documentation, and generating standardized documents, auditors gain more time and resources to allocate towards higher-value matters. When using RPA to perform repetitive and routine tasks, there is a greater guarantee that data will not be lost and that the phases will be well executed, thus offering greater control, error supervision, and updates, among others.

The American Institute of Certified Public Accountants (AICPA) and Public Company Accounting Oversight Board (PCAOB) standards are complementary and aim to control the compliance of audit quality. However, traditional quality control measures are not sufficient. It is necessary to conduct in-depth studies and planning at the RPA level and understand the potential issues and challenges that may arise.

In the case of small and medium-sized audit firms (SMAs), there are obstacles such as gathering data from various systems, including those of clients, which may have different data formats and reports. This can result in time-consuming and tedious work, creating an imbalance when compared to larger companies that have resources to invest in technology-driven methods that streamline these processes. The cost incurred by small and medium-sized enterprises (SMEs) like SMAs compared to big companies is higher as there is more work to be done. Therefore, there is also pressure to perform the work with maximum efficiency and cost-effectiveness.

The audit has an essential function in governance, being able to identify risks and mitigate them, increasing quality and effectiveness and operational efficiency. Another important part of governance is the identification of risks. An employee, if they have the necessary credentials, could easily create a robot before leaving their position in the company and can alter or delete important data for the organization. A robot programmed incorrectly could potentially disclose confidential data of both the company and its clients.

Similarly, the use of virtual machines with vulnerabilities can allow data to be leaked or enable an attacker to program robots that frequently divert data. Detecting intruders is a challenge in virtualized environments, especially since the attacker could be within the

company itself, once they are familiar with the system and have permission to delete, clone, or tamper with virtual machines, among other possibilities, in a rootkit attack, tools are provided with the intention of disguising or hiding the presence of malware while granting remote control and access to the attacker. Due to this concealment, it becomes difficult to identify its existence. One well-known attack is the “Blue Pill”, created by Joanna Rutkowska, it operates in a way that, when executed, can manage, and monitor virtual machines imperceptibly, thereby gaining access to confidential information and privileges. The reduction of risks can be achieved through the implementation of an organizational framework with well-defined privileges, infrastructure, and management of failures and vulnerabilities. Often, proper planning involves a lower cost for the company compared to dealing with a security breach after it has been compromised.

Employee engagement, changes in roles, responsibilities, and change management

Just as security is an important part of governance, people also play a crucial role. While RPAs perform strictly defined and repetitive tasks, it does not guarantee that employees will not be replaced by robots. When it comes to implementing RPAs in an organization, workers could fear for their jobs, and these concerns are valid, both from the perspective of employees who may lose their jobs and from the standpoint of the company that may face knowledge transfer challenges.

However, from the company's perspective, they can benefit from reducing the number of workers, which can include reductions in wages, taxes, and benefits. Employers may prioritize employees who engage in less mechanical and more value-added work, allowing them to work in complement with robots, they may also replace workers who had more mechanical jobs with robots, as there are no taxes on RPAs (Robotic Process Automation), which, as mentioned earlier, can lower costs, it is estimated that a robot costs one-third of a full-time employee.

Governance should address these employee concerns and provide internal reallocation and training opportunities to facilitate effective collaboration between robots and workers. As for the taxation aspect, in the long run, despite the significant initial investment involved in implementing RPAs in organizations, employers may find cost savings and improved efficiency, the replacement of people with robots can be cheaper, which raises the possibility of taxing robots, like the taxation imposed on each employee.

However, functions that were previously performed by people are now being carried out by machines, demanding changes in terms of responsibilities and functions. It is necessary to assign the right roles to the right employees.

As a way of exemplifying and relating the previously exposed information, see Figure 8. In the image it is possible to see governance in general encompassing both IT governance and RPA governance and how processes, integration between departments, compliance and risk, as well as the people are interconnected.

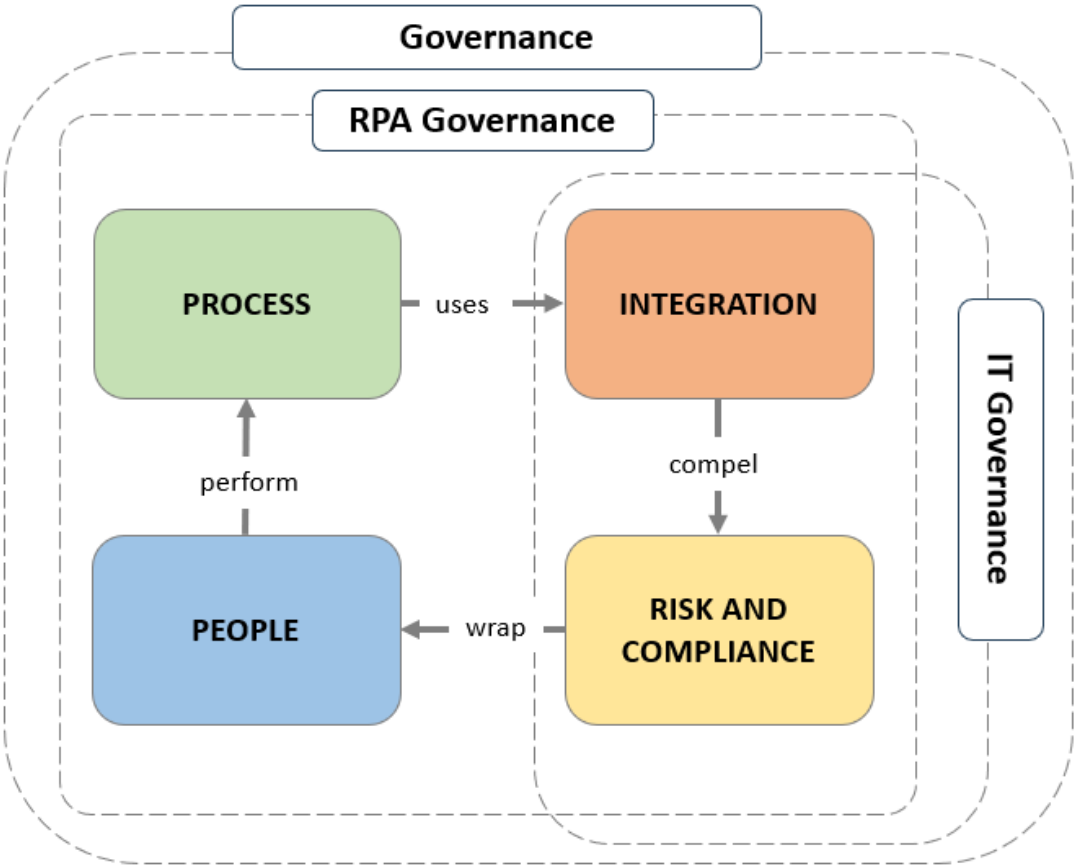


Figure 8 - Relationship between topics

5. Demonstration and evaluation

Quantitative research methods aim to validate and substantiate results through statistical tests. On the other hand, qualitative research methods utilize empirical tests, allowing for a deeper and more meaningful understanding through direct experience. Qualitative investigation can take a broader approach, encompassing values and motivations rather than solely analyzing numbers [85].

Through interviews, which aim to capture a fraction of the human experience [86], qualitative research was conducted to enrich the investigation. Interviews allow for the acquisition of information directly from the source, enabling a more detailed exploration of topics and an understanding of the experiences and perspectives of the interviewees. Furthermore, it's important to plan and adapt interviews to address research questions or assist in validating information uncovered during the research [85].

With the literature review, it was possible to understand what was being analyzed, and based on what was found, the interviews could be used to verify if there is a basis in what was investigated.

The research was conducted following the phases: The first phase involved creating a general context document on the subject to provide a foundation. The second phase involved formulating questions based on what was found in the literature review. In the third phase, a questionnaire with the questions was developed so that the interviewer could collect the answers during the interview. In the fourth phase, the interviewees were selected and contacted, and only then were the interviews conducted, both via Zoom and in person.

The interviews conducted were semi-structured, which means open-ended questions based on what is being studied, derived from the literature from the MLR, with the aim of gathering experiences, feedback, narratives, different perspectives, and contexts. This method of data collection allows for flexibility, exploring the depth of topics, enriching the study with contextualized information [86].

5.1. Population and Sample

To conduct the interviews, individuals from the business (clients), the IT team responsible for developing the robots, the team that analyzes processes, as well as individuals who do not work with RPA and those who work with the results achieved by RPAs.

Thirty-one individuals were interviewed who contributed to the research by sharing their experiences and understanding of the subject matter. In the case of those who did

not work with RPA (Robotic Process Automation), they provided a perspective from those who do not have direct experience with the subject or as individuals who work with the results generated by the robots.

5.2. Data Collection

First, a document, which is evident in Appendix A, was created to explain the context of the work and what was found and analyzed so that the interviewees could understand the purpose of the interview. After providing this context, the interviews were conducted individually using Zoom, a video conferencing platform, or in person. During the interviews, the responses were collected by the interviewer and stored in a previously constructed form that contained all the questions to be asked to the interviewees, it can be found in Appendix B.

The questions asked and stored did not include personal information such as names, companies, or any data that would allow the identification of any of the interviewees or the company they work for. In Table 4 are the collected interviewee information, and in Appendix C, the detailed data separated by interviewees.

Table 4 - Information about the interviewees

Questions	**Total**
Work Experience	
0-5 years	54.8%
5-10 years	16.1%
10-15 years	3.2%
15-20 years	3.2%
> 20 years	22.6%
Responsibility	
Developer	64.5%
Business Analyst	19.4%
Manager	9.7%
Other	19.4%
Work Experience in RPA	
0-5 years	87.1%
5-10 years	12.9%
10-15 years	0%
15-20 years	0%
> 20 years	0%
Number of RPA processes	
0	29%
1-5	12.9%
5-10	9.7%
> 10	48.4%

Questions	Total
Area	
Business	12.9%
IT	67.7%
Other	19.4%
Do you have RPA projects at your organization?	
Yes	83.9%
No	16.1%
If no, would you feel threatened if the company decided to implement it?	
Yes	20%
No	80%

Note: In the question about responsibility, it was possible to select more than one responsibility, which is why it exceeds 100%.

5.3. Data Analysis

The process of analyzing the interview data included an examination of the transcribed content. It involved categorizing based on similar concepts, experiences and perspective.

Credibility can determine how effective the questions asked are in achieving the research objective, and some steps can be taken to promote this. In this study, purposive sampling was used, where the investigator pre-defined the participants and the variations in roles that could bring interesting perspectives, providing a wealth of information [87]. A pilot study with a group of 5 people was conducted to help the interviewer better understand the approach, words, and interpretations [88].

Additionally, source triangulation was performed by collecting data individually from different interviewees, and not all of them worked in the same organization, allowing for the comparison of various perspectives. Throughout the interview, iterative questioning was employed, which allows questions to be revisited and placed in contexts that may detect inconsistencies with some of the previous answers, potentially leading to explanations [88].

Member checking was also conducted, which involves writing down what the interviewee said and validating it to confirm that it represents what they believe or if they would like to add or modify any more information.

The process of analyzing interview data is extensive and involves organizing the collected data so that subsequent interpretation can be done based on categories and

similar ideas. Once this step is complete, it is necessary to identify similar patterns, keywords and concepts among the respondents. Additionally, a narrative was constructed using shared stories grounded in the interviewees' experiences. Finally, after all these steps, the results are presented clearly and accurately.

5.4. Discussion

Table 4 presents the responses to the questions asked in the semi-structured interview and that were used to characterize each interviewee according to years of experience, roles, among other factors. The Table 5 presents in a summarized manner the information related to the closed-ended questions presented to the interviewees. The individual answers that led to these percentages can be found in Appendix D.

Table 5 - Summary of Closed-Ended Responses

Questions	**Total**
Q1 - Do you think that there should be integration between business and IT?	
Yes	100%
No	0%
Q2 - Do you think there could be issues if the process is solely defined by the business side or solely by the IT side without following a standard?	
Yes	100%
No	0%
Q3 - From your perspective, what is the meaning of careful selection of processes to be automated in RPA?	
Only open response	
Q4 - Since there are no taxes on robots, but there are many on people, if you were a business owner, would you prefer to retain and prioritize people over replacing them with robots for economic reasons?	
Yes	35.5%
No	64.5%
Q5 - Do you think RPA helps or replaces employees?	
Only open response	
Q6 - Do you believe that all individuals involved in the same project should have the same levels of permissions?	
Yes	3.2%
No	96.8%
Q7 - In your opinion, is understanding and preparing employees important for reducing compliance risks in RPA?	
Yes	100%
No	0%

To aid in the visualization of the information to be discussed later, Table 6 presents a summary in bullet points, providing a concise overview, more detailed responses can be found in Appendix E.

Table 6 - Responses from the interviewees in a concise format

Questions	**Information concisely**
Q1 - Do you think that there should be integration between business and IT?	• Alignment of goals • Process quality • Error reduction •Communication • Definition of responsibilities • Documentation
Q2 - Do you think there could be issues if the process is solely defined by the business side or solely by the IT side without following a standard?	• Knowledge limitations • Errors • Ambiguity • Resource wastage • Overload • Misalignment of objectives
Q3 - From your perspective, what is the meaning of careful selection of processes to be automated in RPA?	• Efficiency • Error Minimization • Stability • Viability
Q4 - Since there are no taxes on robots, but there are many on people, if you were a business owner, would you prefer to retain and prioritize people over replacing them with robots for economic reasons?	• Time Reduction • Mitigating Human Error • Profit • Efficiency • Essential Collaborators • Reallocation • Cost Reduction
Q5 - Do you think RPA helps or replaces employees?	• Organizational Objectives • Workload • Replacement • Reallocation
Q6 - Do you believe that all individuals involved in the same project should have the same levels of permissions?	• Hierarchy • Separation of Functions and Responsibilities • Security • Project Management
Q7 - In your opinion, is understanding and preparing employees important for reducing compliance risks in RPA?	• Training and awareness • Motivation • Risks and impacts

Below are presented the interview questions and the compilation of responses provided by the interviewees, followed by the development of the previously introduced topics, enabling a more detailed understanding:

Q1) “Do you think that there should be integration between business and IT?" in unanimity, the interviewees portrayed that integration between business and IT is a necessity in RPA. The following points were portrayed throughout the interviews as ways to emphasize the importance of collaboration between the two areas:

- *Alignment of goals*: When deciding to implement RPA, an organization has objectives to achieve, such as cost reduction, reduced working time, increased efficiency, improved service or product quality, among others. To ensure that the organization's goals are met, it is crucial to ensure that IT and business areas understand each other's needs and priorities.
- *Process quality*: Business areas are familiar with the planning requirements, business rules, and customer expectations. In collaboration with IT, which understands the technical aspects and can handle exceptions and maintenance, the two areas can jointly identify potential failures and implement necessary solutions.
- *Error reduction*: When IT and business work together, it enables a better understanding of where errors occur because the business has extensive knowledge of the processes. Together with IT, they can identify errors more easily. Furthermore, collaboration between the two areas allows process requirements to be defined more specifically and business rules to be validated, avoiding redundancies and implementation failures.
- *Communication*: Effective communication between the two areas is essential for mutual understanding of objectives. Additionally, when an error occurs, it needs to be corrected quickly and effectively. Adequate communication ensures that problems can be identified and mitigated more rapidly and efficiently.
- *Definition of responsibilities*: When responsibilities are well-defined, errors and ambiguities can be avoided. For example, changes to processes and definitions should not be made without first consulting all parties involved in both the business and IT. Failure to do so can result in short or long-term impacts.
- *Documentation*: Documentation is a record of process information that enables planning, understanding, change control, and version management. It also allows everyone involved in both the business and IT to have knowledge of what is happening in the process.

In summary, IT brings its expertise in technology, implementation, and maintenance, while business areas contribute their knowledge of processes, requirements, and rules. Together, these areas can promote a greater likelihood of process success.

Q2) "Do you think there could be issues if the process is solely defined by the business side or solely by the IT side without following a standard?" 100% of the interviewees believe that there could be problems if a process were entirely handled by the business area or by IT. The referenced obstacles were:

- *Knowledge limitations*: There may be a lack of understanding about business rules, requirements, implementation, testing, and integration. Not everything the business knows is also known by IT, and vice versa. It can result in processes that do not achieve their objectives, leading to resource loss, poorly defined requirements, subpar implementation, and difficulty in understanding documentation later.
- *Errors*: Various errors can occur, such as oversight in requirement gathering, negligence during implementation, and testing.
- *Ambiguity*: When done by only one of the parties, ambiguity can arise, leading to difficulties in process interpretation and implementation failure.
- *Resource wastage*: Processes handled solely by either the business or IT can result in the waste of resources such as time, money, and employee effort, especially when, for example, a robot is implemented but does not deliver the expected returns.
- *Overload*: Without collaboration, there can be an overload on one of the parties, with excessive use of resources like time and personnel, leading to delays and inefficiency.
- *Misalignment of objectives*: Synchronization between the business and IT is necessary for objectives to be achieved. If the process is handled by only one side, not all interests will be considered, and not all knowledge will be leveraged to execute the process.

A process involving collaboration from both areas has a higher likelihood of achieving its objectives and addressing and minimizing these challenges.

Q3) "From your perspective, what is the meaning of careful selection of processes to be automated in RPA?" According to the interviewees, the choice of processes to be automated is very important, and some points should be taken into consideration, as presented below:

- *Efficiency*: To save resources like time and money, the right processes should be chosen for automation. Repetitive and rule-based processes should be considered.
- *Error Minimization*: Some processes generate or are prone to constant known errors. If the organization decides to analyze and implement RPA for these cases, it can both reduce execution time and mitigate errors.
- *Stability*: When choosing a process for automation, it's important to not only understand all the requirements and rules but also ensure the greatest possible stability of the programs used by the robot. For example, websites that need to be accessed but constantly change selectors, the layout of page elements, among others, which can lead to errors.
- *Viability*: The analysis to determine if it makes sense to automate each process, the intended return, implementation cost, maintenance, time, and effort. It's not always about the volume of automations but the quality and return of each one. The wrong choice of processes can result in resource loss, and the process may not yield the desired return, possibly leading to discontinuation.

As an example, one of the interviewees mentioned the losses suffered by a bank. The bank had access to a list of customers who had credit card transactions flagged as fraudulent. If a customer initiated legal action to recover the money, not only would the credit card issuer have to reimburse the funds, but the bank would also have to pay interest for the time the money was out of the account. Since employees couldn't keep up with the workload, a robot was created to address this need. While the chosen process did not provide immediate financial returns, it could prevent significant long-term problems, making it a viable process. This was crucial both for avoiding a financial impact and protecting the bank's reputation.

Q4) "As there are no taxes on robots, but there are many on people, if you were a company owner, would you prefer to retain and prioritize people over replacing them with robots for economic reasons?" 35.5% responded that they would prefer to retain and prioritize people, while 64.5% would prioritize automation. The points mentioned by the interviewees were as follows:

- *Time Reduction*: RPA can work 24 hours a day, unlike a human, so the execution time of a process decreases considerably.
- *Mitigating Human Error*: Robots are rule-based, which minimizes errors. Humans can make mistakes due to lack of concentration, inadequate understanding of the process, or other reasons.
- *Profit*: RPA, by executing repetitive and rule-based tasks, can mitigate errors, increase quality, and reduce time by handling large volumes of information quickly.
- *Efficiency*: Increased efficiency is related to the continuous work of the robot, executing tasks quickly and accurately.
- *Essential Collaborators*: Some collaborators are essential for the process to continue functioning, whether for analysis, maintenance, or any activity that requires human interaction.
- *Reallocation*: The reallocation of employees to activities that require more critical thinking and analysis may also require investment in training so that employees can perform functions that add more value to the organization.
- *Cost Reduction*: Cost reduction can be related to both robots working 24 hours a day and the replacement of people, which would reduce salaries, healthcare costs, and taxes.

As the topic was discussed, 100% of the interviewees reached the same conclusion. Those who chose to prioritize people explained that they would opt for automation to handle repetitive tasks, freeing employees for new training and reassignments in roles that require analysis, critical thinking, among other skills. On the other hand, those who chose to prioritize automation aimed for profit, time and cost reduction, efficiency, error mitigation, and collaboration between humans and robots. They would replace employees in repetitive activities, retaining specialized personnel in necessary

positions and investing in training so that these employees could engage in critical thinking activities essential to the business.

Q5) "Do you think RPA helps or replaces employees?" According to the interviewees, RPA does not completely replace humans but certainly assists them. The points discussed during the interviews are reported below:

- *Organizational Objectives*: Depending on the organization's objectives, reducing employees can be an option, reducing various factors such as taxes and salaries. However, depending on the objectives, the company may choose to reallocate employees.
- *Workload*: If the company has a high workload, the implementation of RPA for repetitive tasks helps in freeing up people to work on tasks that add more value.
- *Replacement*: One of the interviewees shared an example in which a situation was mentioned where an entire department hesitated to share knowledge for the construction of RPAs. The reason behind this reluctance was that employees were aware that the company's intention was not to reallocate them but to lay off a significant portion of the department once the robots were operational.
- *Reallocation*: Another interviewee provided an example in which robots in their institution did not result in layoffs; instead, employees were always reallocated. Many robots were also built to allow individuals to retire and transition from these repetitive tasks to software-based solutions.

Whether RPA helps or replaces employees depends on the company's objectives. RPA can assist with repetitive tasks, workload, and freeing up employees to perform other tasks or even retire. However, it can also replace employees, keeping only essential staff.

Q6) "Do you believe that all individuals involved in the same project should have the same levels of permissions?" 96.8% of the interviewees expressed opposition to having all individuals in the same project at the same level of access. The points below were expressed by these interviewees:

- *Hierarchy*: Allowing for the designation of employees responsible for making decisions and supervising.

- *Separation of Functions and Responsibilities*: The division of tasks is also very important, avoiding errors. For example, one interviewee shared a situation where an employee, instead of executing a process in a testing environment, mistakenly executed it in a production environment, working with real data. This situation was only discovered months later during an audit, revealing the unauthorized transaction.
- *Security*: Not everyone should have access to confidential data handled daily. For instance, a junior employee may not have the same understanding and caution as a senior employee when dealing with various situations.
- *Project Management*: Each employee should perform their assigned role, and if they need additional access, they should request it. The organization should be protected against data breaches or unauthorized changes.

3.2% of the interviewees stated that for small projects involving few individuals, even if it's not necessary, it could be advantageous for everyone to have the same levels of access because it would streamline work and prevent delays caused by waiting for permissions. However, it was emphasized that all actions should always be carried out under supervision, with regulation and data encryption.

Q7) "In your opinion, is understanding and preparing employees important for reducing compliance risks in RPA?" 100% of the interviewees believe that this understanding on the part of employees is crucial in reducing compliance risks in RPA. Below are some topics pointed out by the interviewees:

- *Training and awareness*: Employees must understand the business, regulations, the types of data being handled, roles and responsibilities, and also the risks related to access.
- *Motivation*: Understanding the impact that processes have in the real world can motivate employees to ensure a broad view of the organization, awareness, and experiences.

- *Risks and impacts*: Employees who are not prepared, have limited experience, and can make errors that can have impacts such as the breach of confidential data.

An organization that promotes an environment of awareness and responsibility is more likely to minimize compliance risks, increase the chances of successful RPA processes, and better protect sensitive and confidential data.

People should be informed about the risks and benefits of what they are creating and handling, as errors are sometimes made without an awareness of their impact. These errors can have financial implications for the company, as illustrated by an interviewee's example. In this scenario, an employee of an outsourced call center receives reports generated by an RPA from a bank and is responsible for conveying this information to the customer. If there is an error, such as a 4,000 euros invoice being transmitted as 3,000 euros, and it is due to human error, the third-party company is responsible for compensating the customer in case of a complaint. However, if the error originates from the report generated by the RPA, the amount of compensation to the customer is the responsibility of the bank. Therefore, it is evident how understanding the work, its real-world implications, differences in users, risks, and applications are fundamental factors.

6. Conclusion

This study was conducted based on a MLR, interviews, and analysis, allowing for the identification and investigation of the aspects presented below and promoting contributions to RPA and governance related to the integration between business and IT, process standardization, compliance, risk management, employee engagement, changes in roles, responsibilities, and change management.

With the aim of drawing conclusions about what was investigated, both what was found in the MLR, and the results of the interviews will be presented together, providing a broader understanding of the study. As previously mentioned in the MLR report, there are governance models, namely centralized, decentralized, and federated, each with its specificities. The centralized model contributes to risk reduction due to greater systematization and standardization. The decentralized model distributes decision-making among various parties, and the federated model has a central entity handling general matters while individual entities manage matters within their respective areas of operation.

With the help of interviews, it became evident that integration between business and IT is fundamental to increase the likelihood of success in RPA initiatives, as it allows for alignment of objectives, improves service or product quality, mitigates errors and costs, enhances overall understanding of documentation, defines responsibilities more clearly, reduces the likelihood of ambiguities and knowledge limitations, avoids overburdening of any one sector, and prevents unnecessary resource expenditure. Therefore, collaboration between departments enables a greater chance of success in RPA processes.

Regarding the careful selection of processes to be automated, the MLR findings indicate that process selection is a crucial step, and companies that do not pay attention to or are unprepared for this selection may have poor results in the short or long term. RPA is suitable for dealing with structured data, repetitive tasks, and well-established rules. It is also essential to assess whether the resource expenditure and return on investment are within the organization's expectations. Interviewees emphasized that well-selected processes could increase efficiency, reduce errors, consider process and external application stability that the robot needs to use, evaluate viability factors such as costs, return on investment, maintenance, time, and effort put into the project. This alignment with objectives helps prevent process discontinuation or excessive resource spending.

Auditing, on the other hand, has an essential function of identifying and reducing risks. However, when RPA is integrated, new challenges, vulnerabilities, and compliance risks arise. For example, depending on the credentials that an employee has access to, they may, knowingly or unknowingly, jeopardize the organization's and clients' confidential data, violating policies and regulations and potentially causing financial and reputational losses to the institution. Another compliance risk could be the security of virtualized environments that may be targeted by intruders and are challenging to detect, especially because the intruder may be within the company itself, provided they have knowledge of the system and the necessary permissions.

Based on the interviews, the need for hierarchy, role separation, and responsibility allocation to make informed decisions, restrict access based on each employee's role, and avoid data breaches was evident. The importance of employee awareness and training was also emphasized so that they understand both the business and tools as well as the impact of their actions in the real world, thereby mitigating possible compliance violations and motivating employees to work more cautiously and consciously, contributing to the success of RPA.

In the MLR, it was observed that people play a crucial role. Although RPAs perform repetitive, rule-based tasks, it does not mean that humans are no longer needed. However, when RPAs are implemented in organizations, there may be some fear among people about job loss due to replacement by RPAs. However, during the interviews, this issue was not seen as a major concern by the interviewees.

From the company's perspective, as mentioned in the MLR, there may be benefits in reducing the number of employees, thereby reducing costs such as salaries and taxes. However, companies can encourage collaboration between robots handling repetitive tasks and humans performing tasks that add more value to the organization. In the interviews, there was unanimous agreement on the importance of this cooperation, emphasizing the need for employee improvement and training to perform tasks with more analysis and added value. Nevertheless, the decision to terminate or relocate employees depends on the company's objectives.

If there is an option for relocation, it is important to ensure the redistribution of roles and responsibilities and align with the interests and expectations of employees and the company. If the company chooses to terminate, it must manage the changes and deal with resistance in knowledge transfer. When employees are valued and skilled, they can contribute more to the success of RPA.

In response to the research question RQ1**,** RPA governance influences by facilitating the interactions between Business, IT, People, Audit, and Policies, making the success of process automation initiatives more likely. It aligns organizational objectives, integrates teams, selects processes appropriately, correctly assigns roles and responsibilities, thus preventing compliance risks such as data breaches and regulatory violations. It also addresses change management concerns and employee motivation and preparation.

6.1. Limitations

As a limitation to what was done, the lack of currently available literature on the topic of RPA can be considered. RPA is still considered a relatively recent technology, making it challenging to find an extensive information base on the subject.

6.2. Future Work

As future work, a deeper investigation into specific research areas could be conducted, such as studying organizations over an extended period to observe adaptations made to RPA governance and its impacts over several years. This would enable a better understanding of business needs and the necessary adaptability in various related sectors.

Additionally, the communication processes between different sectors could be examined to identify potential optimizations in these necessary interactions. Furthermore, in-depth case studies could be conducted to understand how companies are managing the reallocation and training of employees transitioning from repetitive tasks to other roles.

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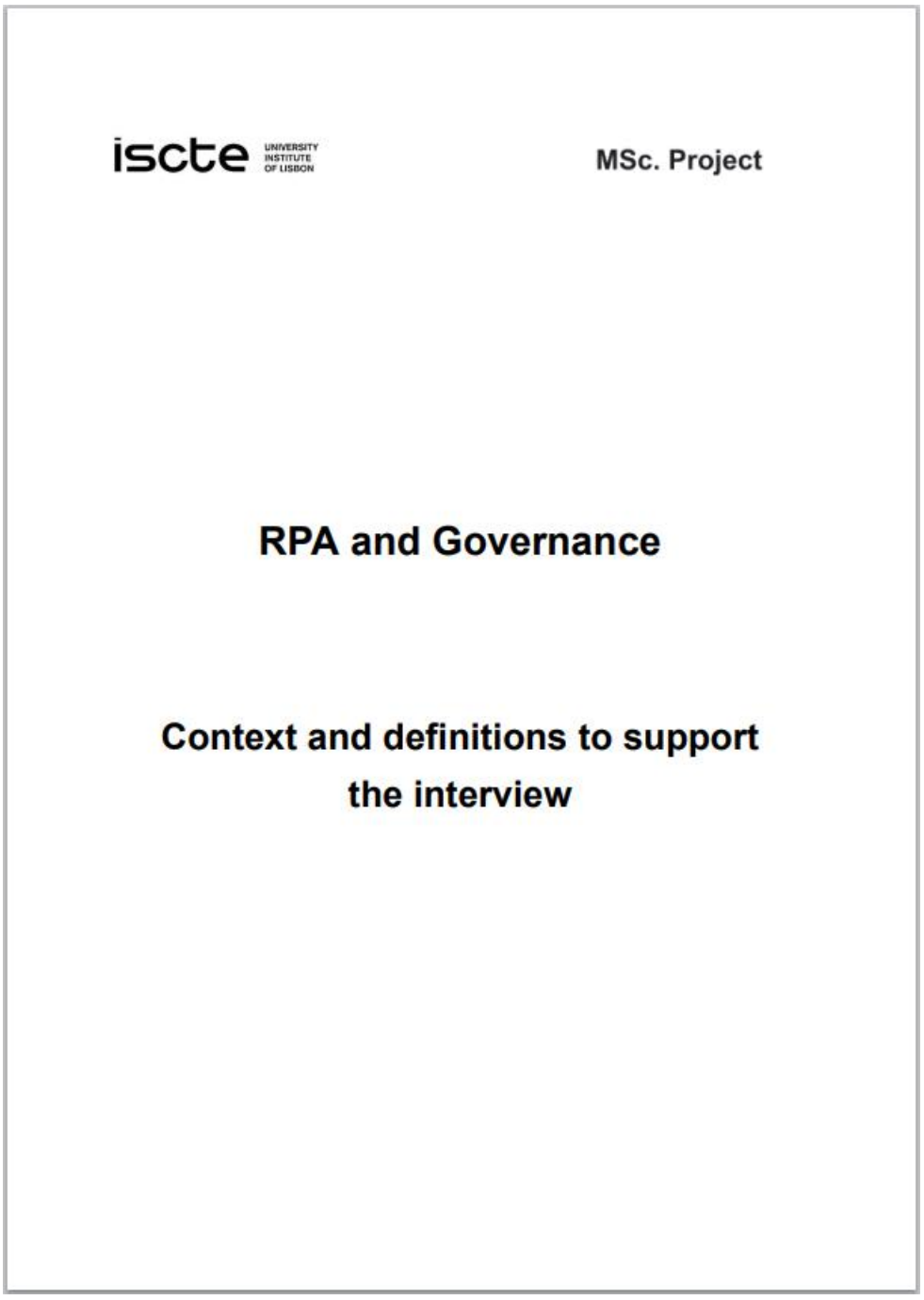
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Appendix A

Document given to the interviewees to provide context for the interview.



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MSc. Project

RPA and Governance

Context and definitions to support the interview

Robotic Process Automation

The term Robotic Process Automation (RPA) emerged in the 2000s and consists of an approach to automate processes or tasks through robots that can replace human action in repetitive and well-defined situations or work in collaboration with humans in a hybrid approach.

Functions such as data input in forms, data collection from tables, rule-based processes or tasks, and repetitive interactions with applications are examples of actions that can be performed by an RPA, which is not a physical machine but rather a software. As this is an ongoing investigation, it is important to discover what the impact of RPAs on existing governance structures is.

RPA Governance

The concept of governance can be described as the decision-making process that involves both the decision itself and the implementation or non-implementation of choices made by individuals in positions of authority, and it can be applied in various contexts depending on the activity being carried out in each area. For example, as illustrated in Figure 1.

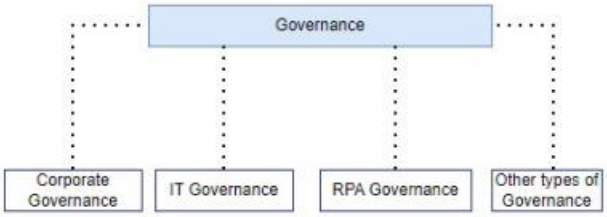


Figure 1 - Types of governance

As the number of RPAs expands, it is important to ensure that the robots are implemented and maintained properly, and for this, effective governance is necessary to facilitate improvements and the achievement of goals. Different parts of the business

are impacted by RPA, and this is one of the reasons for having well-established oversight and governance.

Proposed impacts

In the Figure 2, it's possible to observe the overall governance encompassing both IT governance and RPA governance, and how processes, departmental integration, compliance, and risks, as well as people, are interconnected.

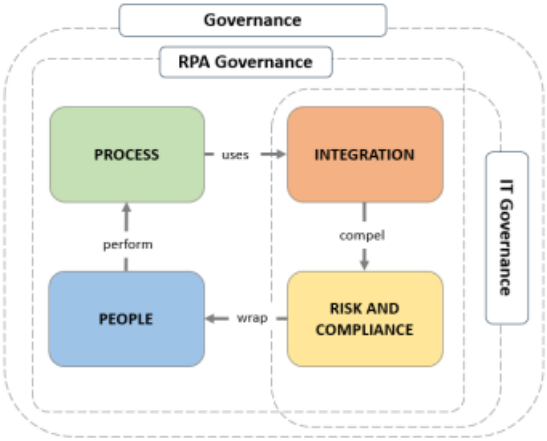


Figure 2 - Relationship between factors

Business and IT Integration: To better understand RPA governance, it's helpful to know that IT can be categorized as either heavyweight (enterprise IT) or lightweight (business IT). RPA falls into the lightweight IT category, and the key differences between heavyweight and lightweight IT lie in the technologies used and the management approach. RPA is considered lightweight IT because it doesn't require extensive programming skills or complex technologies for development. As a result, RPA enables business departments to get involved or even take full control of automation, whereas heavyweight IT is typically managed centrally by IT professionals.

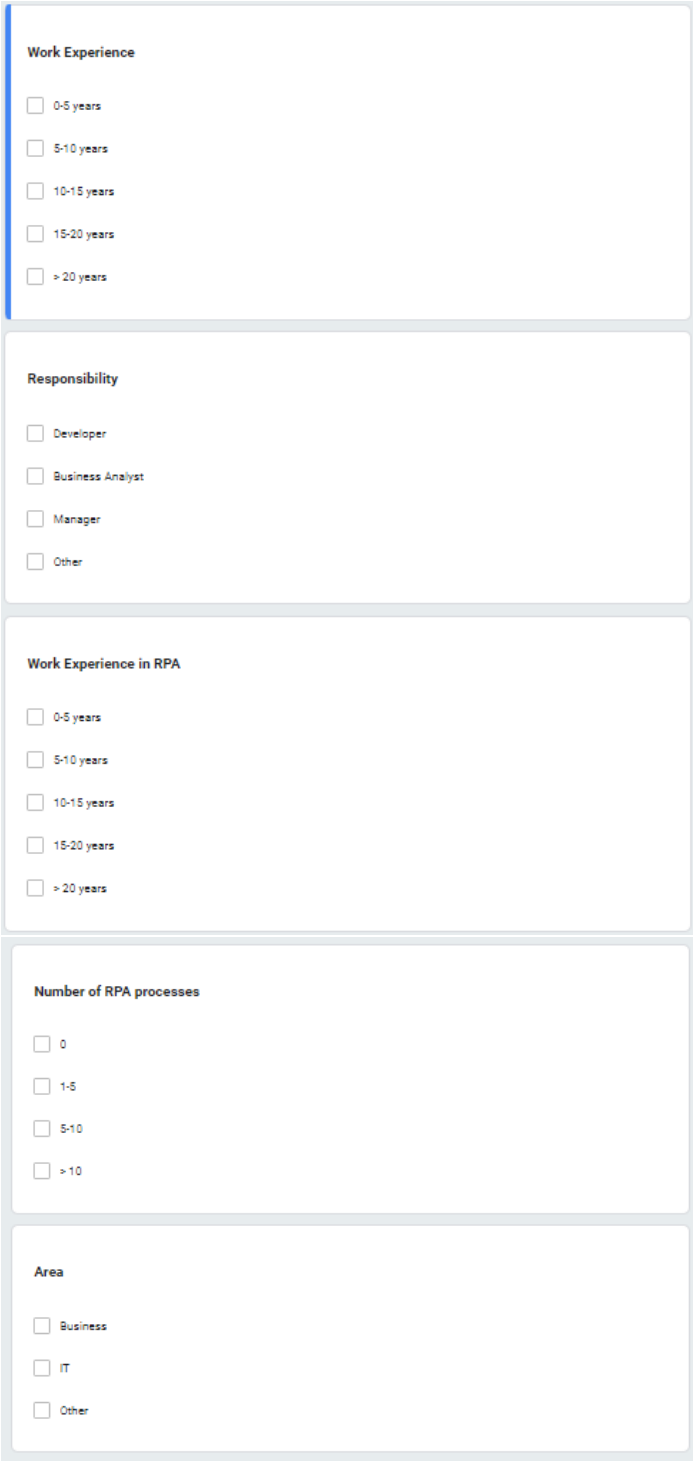
Standardization of processes: Concerning significant time and resource expenditures stemming from the wrong choice of processes to be automated, RPA is suitable for dealing with structured data, which is crucial for enabling the robot to perform tasks based on predefined rules.

Compliance and risk management: Auditing can identify risks and mitigate them, enhancing quality, operational effectiveness, and efficiency. Another aspect of governance is risk identification. The use of virtual machines with vulnerabilities can lead to data breaches or allow an attacker to program robots that frequently divert data. Detecting intruders is a challenge in virtualized environments, especially because the attacker might be within the company itself once they are familiar with the system and have permission to delete or clone it.

Employee engagement, changes in roles, responsibilities, and change management: Just as security is an important part of governance, people also play a crucial role. While RPAs perform strictly defined and repetitive tasks, this doesn't guarantee that employees won't be replaced by robots. From a company's standpoint, they might benefit from a reduced workforce, which could involve salary cuts, taxes, and benefits reductions. Regarding risks, an employee, if possessing the necessary credentials, could easily create a robot before leaving their position in the company, which might alter or delete crucial data for the organization. An incorrectly programmed robot could inadvertently expose sensitive company and customer data.

Appendix B

Form used by the interviewer to collect the responses.



Do you have RPA projects at your organization? *

- Yes
- No

If no, would you feel threatened if the company decided to implement it?

- Yes
- No

Do you think that there should be integration between business and IT? *

- Yes
- No

Please explain the reason why: *

Texto de resposta longa

Do you think there could be issues if the process is solely defined by the business side or solely by the IT side without following a standard? *

- Yes
- No

Please explain the reason why: *

Texto de resposta longa

From your perspective, what is the meaning of careful selection of processes to be automated in RPA? *

Please explain the reason why:

Texto de resposta longa

Since there are no taxes on robots, but there are many on people, if you were a business owner, would you prefer to retain and prioritize people over replacing them with robots for economic reasons? *

- Yes
- No

Please explain the reason why: *

Texto de resposta longa

Do you think RPA helps or replaces employees? *

Please explain the reason why:

Texto de resposta longa

Do you believe that all individuals involved in the same project should have the same levels of permissions? *

- ◯ Yes
- ◯ No

Please explain the reason why: *

Sua resposta

In your opinion, is understanding and preparing employees important for reducing compliance risks in RPA? *

- ◯ Yes
- ◯ No

Please explain the reason why: *

Sua resposta

Appendix C

Table 7 - Detailed table about the interviewees

Interviewee	Work Experience	Responsibility	Work Experience in RPA	Number of RPA processes	Area	Do you have RPA projects at your organization?	If no, would you feel threatened if the company decided to implement it?
1	0-5 years	Other	0-5 years	0	Other	No	No
2	0-5 years	Developer	0-5 years	1-5	IT	Yes	-
3	0-5 years	Developer	0-5 years	> 10	IT	Yes	-
4	0-5 years	Developer	0-5 years	1-5	IT	Yes	-
5	0-5 years	Developer	0-5 years	1-5	IT	Yes	-
6	0-5 years	Developer	0-5 years	> 10	IT	Yes	-
7	0-5 years	Developer	0-5 years	5-10	IT	Yes	-
8	0-5 years	Developer	0-5 years	0	IT	No	Yes
9	> 20 years	Business Analyst	5-10 years	> 10	IT	Yes	-
10	> 20 years	Business Analyst	0-5 years	> 10	Business	Yes	-
11	15-20 years	Business Analyst	0-5 years	> 10	Business	Yes	-
12	> 20 years	Manager	5-10 years	> 10	Business	Yes	-
13	10-15 years	Developer	0-5 years	1-5	Business	Yes	-
14	0-5 years	Developer	0-5 years	> 10	IT	Yes	-
15	0-5 years	Developer	0-5 years	> 10	IT	Yes	-
16	0-5 years	Developer	0-5 years	> 10	IT	Yes	-

Interviewee	Work Experience	Responsibility	Work Experience in RPA	Number of RPA processes	Area	Do you have RPA projects at your organization?	If no, would you feel threatened if the company decided to implement it?
17	0-5 years	Developer	0-5 years	5-10	IT	Yes	-
18	> 20 years	Developer and Business Analyst	0-5 years	> 10	IT	Yes	-
19	> 20 years	Other	0-5 years	0	Other	No	No
20	> 20 years	Other	0-5 years	0	Other	No	No
21	> 20 years	Developer and Business Analyst	0-5 years	> 10	IT	Yes	-
22	5-10 years	Developer and Business Analyst	5-10 years	> 10	IT	Yes	-
23	0-5 years	Developer	0-5 years	5-10	IT	Yes	-
24	5-10 years	Other	0-5 years	0	IT	Yes	-
25	0-5 years	Developer	0-5 years	> 10	IT	Yes	-
26	5-10 years	Manager	0-5 years	0	Other	Yes	-
27	0-5 years	Other	0-5 years	0	Other	No	No
28	5-10 years	Developer	0-5 years	> 10	IT	Yes	-
29	5-10 years	Manager	0-5 years	0	Other	Yes	-
30	0-5 years	Developer	0-5 years	> 10	IT	Yes	-
31	0-5 years	Developer	0-5 years	0	IT	Yes	-

Interviewee	Work Experience	Responsibility	Work Experience in RPA	Number of RPA processes	Area	Do you have RPA projects at your organization?	If no, would you feel threatened if the company decided to implement it?
Total	0-5 years - 54.8% 5-10 years - 16.1% 10-15 years - 3.2% 15-20 years - 3.2% > 20 years - 22.6%	Developer- 64.5% Business Analyst- 19.4% Manager – 9.7% Other – 19.4%	0-5 years – 87.1% 5-10 years – 12.9% 10-15 years - 0% 15-20 years - 0% > 20 years - 0%	0 – 29% 1-5 – 12.9% 5-10 – 9.7% > 10 – 48.4%	Business – 12.9% IT – 67.7% Other – 19.4%	Yes – 83.9% No – 16.1%	Yes – 20% No – 80%

Appendix D

Table 8 - Connection between each closed-ended response provided by every interviewee.

Interviewee	Q1 - Do you think that there should be integration between business and IT?	Q2 - Do you think there could be issues if the process is solely defined by the business side or solely by the IT side without following a standard?	Q3 - From your perspective, what is the meaning of careful selection of processes to be automated in RPA?	Q4 - Since there are no taxes on robots, but there are many on people, if you were a business owner, would you prefer to retain and prioritize people over replacing them with robots for economic reasons?	Q5 - Do you think RPA helps or replaces employees?	Q6 - Do you believe that all individuals involved in the same project should have the same levels of permissions?	Q7 - In your opinion, is understanding and preparing employees important for reducing compliance risks in RPA?
1	Yes	Yes	Only open response	No	Only open response	No	Yes
2	Yes	Yes	Only open response	Yes	Only open response	No	Yes
3	Yes	Yes	Only open response	No	Only open response	No	Yes
4	Yes	Yes	Only open response	Yes	Only open response	No	Yes
5	Yes	Yes	Only open response	Yes	Only open response	No	Yes
6	Yes	Yes	Only open response	No	Only open response	No	Yes

Interviewee	Q1 - Do you think that there should be integration between business and IT?	Q2 - Do you think there could be issues if the process is solely defined by the business side or solely by the IT side without following a standard?	Q3 - From your perspective, what is the meaning of careful selection of processes to be automated in RPA?	Q4 - Since there are no taxes on robots, but there are many on people, if you were a business owner, would you prefer to retain and prioritize people over replacing them with robots for economic reasons?	Q5 - Do you think RPA helps or replaces employees?	Q6 - Do you believe that all individuals involved in the same project should have the same levels of permissions?	Q7 - In your opinion, is understanding and preparing employees important for reducing compliance risks in RPA?
7	Yes	Yes	Only open response	Yes	Only open response	No	Yes
8	Yes	Yes	Only open response	Yes	Only open response	No	Yes
9	Yes	Yes	Only open response	Yes	Only open response	No	Yes
10	Yes	Yes	Only open response	Yes	Only open response	No	Yes
11	Yes	Yes	Only open response	No	Only open response	No	Yes
12	Yes	Yes	Only open response	No	Only open response	No	Yes
13	Yes	Yes	Only open response	Yes	Only open response	No	Yes
14	Yes	Yes	Only open response	Yes	Only open response	No	Yes
15	Yes	Yes	Only open response	No	Only open response	No	Yes

Interviewee	Q1 - Do you think that there should be integration between business and IT?	Q2 - Do you think there could be issues if the process is solely defined by the business side or solely by the IT side without following a standard?	Q3 - From your perspective, what is the meaning of careful selection of processes to be automated in RPA?	Q4 - Since there are no taxes on robots, but there are many on people, if you were a business owner, would you prefer to retain and prioritize people over replacing them with robots for economic reasons?	Q5 - Do you think RPA helps or replaces employees?	Q6 - Do you believe that all individuals involved in the same project should have the same levels of permissions?	Q7 - In your opinion, is understanding and preparing employees important for reducing compliance risks in RPA?
16	Yes	Yes	Only open response	No	Only open response	No	Yes
17	Yes	Yes	Only open response	No	Only open response	No	Yes
18	Yes	Yes	Only open response	No	Only open response	No	Yes
19	Yes	Yes	Only open response	Yes	Only open response	No	Yes
20	Yes	Yes	Only open response	No	Only open response	No	Yes
21	Yes	Yes	Only open response	No	Only open response	No	Yes
22	Yes	Yes	Only open response	No	Only open response	No	Yes
23	Yes	Yes	Only open response	No	Only open response	No	Yes
24	Yes	Yes	Only open response	No	Only open response	No	Yes

Interviewee	Q1 - Do you think that there should be integration between business and IT?	Q2 - Do you think there could be issues if the process is solely defined by the business side or solely by the IT side without following a standard?	Q3 - From your perspective, what is the meaning of careful selection of processes to be automated in RPA?	Q4 - Since there are no taxes on robots, but there are many on people, if you were a business owner, would you prefer to retain and prioritize people over replacing them with robots for economic reasons?	Q5 - Do you think RPA helps or replaces employees?	Q6 - Do you believe that all individuals involved in the same project should have the same levels of permissions?	Q7 - In your opinion, is understanding and preparing employees important for reducing compliance risks in RPA?
25	Yes	Yes	Only open response	No	Only open response	Yes	Yes
26	Yes	Yes	Only open response	No	Only open response	No	Yes
27	Yes	Yes	Only open response	No	Only open response	No	Yes
28	Yes	Yes	Only open response	No	Only open response	No	Yes
29	Yes	Yes	Only open response	No	Only open response	No	Yes
30	Yes	Yes	Only open response	No	Only open response	No	Yes
31	Yes	Yes	Only open response	Yes	Only open response	No	Yes
Total	Yes – 100% No – 0%	Yes – 100% No – 0%	-	Yes – 35.5% No – 64.5%	-	Yes – 3.2% No – 96.8%	Yes – 100% No – 0%

Appendix E

Table 9 - Representation of the responses provided by the interviewees.

Interviewee	Q1	Q2	Q3	Q4	Q5	Q6	Q7
1	The interviewee spoke about the importance of the union between business and IT because each one has a type of responsibility and expertise.	In agreement with the previous response, if each department works within its specialization, it will decrease the likelihood of errors and consequently losses to the organization.	Processes that don't require human critical thinking and accurate choices save time and money.	I would prioritize the implementation of RPA, reducing process time, increasing profits, and lowering various unnecessary costs while retaining essential employees and reallocating others.	Depending on the company's objectives, it can either replace people or assist with the workload of others.	There should be project management, and accesses should be requested and granted based on each collaborator's responsibilities.	The knowledge and ongoing training of employees are essential to prevent compliance risks such as regulatory violations, fraud, or data leaks.
2	The combination of IT and Business can optimize the way business is done when compared to traditional business	The business knows how the process works and the IT knows how to implement. One without the other could lead to errors in the process or non-ideal scenarios	Processes need to be repetitive for maximum optimization, and making the wrong choice can lead to future losses.	It mainly depends on the task. If the task is repetitive, the robot is perfect. But if there are exceptions, the human does it better	It helps as it reduces repetitive workload from employees	Security. A developer should not have access to financial records as it could be a breach in security	It’s always good to prepare employees to deal with anomalies that come from robotic processes, as they would more efficiently respond to what happened.

Interviewee	Q1	Q2	Q3	Q4	Q5	Q6	Q7
3	Process should be improved collaboratively by the IT and business for greater efficiency and success.	The lack of collaboration between these areas can result in unnecessary resource expenditure due to misalignment of objectives or even a lack of necessary knowledge.	A process should have well-defined rules and minimal changes to prevent discontinuation or resource losses in the future.	Robots would perform the work more efficiently and quickly, but can fail, so human oversight is necessary.	RPAs help people by handling the most tedious tasks at work and completing certain steps much faster than humans can.	Each person should have the appropriate permissions for their role and the tasks they need to perform.	RPA is a simple technology; however, it can cause significant issues if those who use it lack basic knowledge of the process/technology.
4	There should be a balance so that both areas can contribute their specialties, increasing the quality of processes, and aiding in standardization and knowledge transfer through documentation.	If the process is solely defined and executed by one of the departments, errors can be made, and collaboration between them is crucial to ensure everything progresses smoothly.	RPA processes should be the ones where tasks are repetitive and follow a specific standard that is not being altered very often	People must be present to maintain the robots and people offer certain skills that robots cannot mimic	It doesn't fully replace them, but it definitely helps them.	There are confidential and sensitive data that should only be accessed by whoever is needed.	If you are dealing with sensitive data, it is important that people are aware and know how to deal to avoid breaches.

Interviewee	Q1	Q2	Q3	Q4	Q5	Q6	Q7
5	IT is a mean to achieve business goals. So, those two sectors must be integrated, somehow.	Business side must consider IT potentialities and limitations as well IT side must know what the business goals are to focus on delivering what is required.	Prioritizing the right processes ensures that RPA implementation delivers the desired benefits while minimizing potential risks and challenges.	We live in a competitive market so reducing costs without losing quality is mandatory to "survive".	If an employee or a group of employees are only performing tasks that could be fully automated, the company has the choice to reassign the attributions of that employee or dismiss them, totally or partially.	Is important to protect business from data breaches or unauthorized changes.	Employees can have insights that helps identifying risks and addressing them before it escalates furthermore.
6	Integration between the two areas is crucial as they complement each other. The business is vital in identifying processes and monitoring them, while the IT area is better suited for implementing solutions and solving technical issues.	IT may need the business due to a lack of sufficient knowledge in the business area, and the business may need IT to overcome technical issues.	The processes to be selected should add value to the company, based on well-defined and repetitive rules.	I'd prefer robots, not only for economic reasons but also due to their greater efficiency compared to humans and I'd adapt employees to new roles integrated with RPAs.	They help workers by freeing up humans for more analytical and higher-value tasks in the company.	There must be different permission levels due to data confidentiality issues and project vulnerabilities.	If workers were better informed about the reality of RPAs and even involved in their management, there would be fewer associated operational risks.

Interviewee	Q1	Q2	Q3	Q4	Q5	Q6	Q7
7	An organization where IT and business strategy are in integrated can improve agility and operational efficiencies while also enterprises function better, make more profit and hit their goals with less effort.	The lack of standard processes involving both areas can lead to unmet business expectations.	Carefully check the complexity, stability, scalability and importance of the process	This means RPA would replace humans and many would be out of a job, but as a business owner everything is a transaction so I would try to save as much money as possible	RPA is here to replace tedious and repetitive tasks that human has. It mimics human behavior without the human errors while the performance is also better.	I believe they should have the level of permission of the job category they are currently performing to avoid confidentiality risks for example	It is important in order to protect data integrity, data security, and employee and customer privacy
8	Working together could reduce costs, align goals and promote process improvement	It is essential that both sides work together, follow determined processes and communicate well, to ensure that initiatives generate value for the organization.	Thorough analysis to select processes in line with the organization's objectives and suitable for automation, thereby increasing the likelihood of success and financial return.	People need to be present to maintain the robots, and people offer specific skills that robots cannot mimic. Robots can be present in repetitive tasks, reducing possible human errors.	If implemented correctly, it can increase employee satisfaction by allowing them to focus on tasks that generate more value. Therefore, RPA, along with a human touch, can be the key to a higher likelihood of process success.	Increased security, risk minimization, and role-based hierarchy are crucial as not all individuals require the same levels of access.	Training employees is a fundamental aspect of reducing compliance risks in RPA and data protection. There should be a culture of awareness and responsibility.

Interviewee	Q1	Q2	Q3	Q4	Q5	Q6	Q7
9	Important because if it's only in IT and separate from the business, it won't address the organization as a whole; it will be from a single perspective.	Yes, because they wouldn't address the topics comprehensively.	If the right process selection is not made, there can be a loss of time in implementation, and maintenance ends up with higher costs and a greater risk of poor results.	Economically, I would choose to replace people, but in other aspects, there is the analysis and evaluation of results that must be done by a human.	If they are small, repetitive processes, it replaces tasks and not people, activities without the need for analysis.	There are confidential data and each person's seniority to consider. Very junior employees don't need access to confidential information.	This should be part of the onboarding for each project, there should be a framework to understand the risk of actions.
10	The best way would be to come together for process understanding and follow-up when it goes into production.	There is a lack of technology knowledge, especially for maintenance if it's done solely by the business, and if done solely by IT, there would be a lack of business knowledge for automation.	The risk is to continue having people with repetitive tasks and automating processes that don't need it. Sometimes there is too much concern about the volume of automation and not enough focus on quality.	Prioritize robots, saving money and having everything done the same way, and reallocate the necessary employees to higher-value activities.	RPA helps with the most repetitive parts, and people focus on what generates value.	It should be segmented to eliminate risks.	It's important to be aware of the risks because sometimes tasks are carried out without awareness of the impact.

Interviewee	Q1	Q2	Q3	Q4	Q5	Q6	Q7
11	It's important because it bridges the languages of business and IT, which are different, and this translation of language is crucial for correct interpretation.	If it were done by the business, they probably wouldn't be implemented efficiently, and if it were done by IT, the business details wouldn't be considered.	Processes should always have a hierarchy and consider profitability. FTEs means people are reallocated and not fired, and in FSTS cost reduction or elimination should be prioritized.	But there should always be a human foundation.	It helps with replacements but also aids in maintaining tasks that couldn't be ensured because the number of hires decreases while tasks do not.	They should be segmented according to functions, but there can be a person with access to everything.	Training is very important; the structure of RPA, cross-modules, impacts, and risks should be explained.
12	Certainly, the connection is critical; if there isn't that connection between the two, it can generate many risks for the organization, not just financial risks.	All the problems, primarily a waste of time and money.	Adding value, a good selection increases the added value to the organization, and a poor selection is a waste.	It's not about paying taxes; humans should add value and not be engaged in repetitive activities.	It helps humans with repetitive activities. It can free up those at the end of their careers for retirement, but the intention is to complement or free up for other activities.	Not everyone, needs to be a mix of experiences and responsibilities.	It's very important because using robots for operations instead of humans, if there is any damage, it will be faster and on a larger scale.
13	Collaboration between these two functions is very important for reasons such as alignment of objectives and effectiveness.	Problems such as lack of standards, lack of alignment of objectives and inefficiency may arise.	Can significantly impact the success and efficiency of an implementation.	People are still needed because automatism can generate errors that have to be corrected by a human.	It helps because people are still necessary; robots can generate errors that need to be corrected by human hands.	Having different levels of permissions and access rights can be a critical aspect of security and management.	Understanding and preparing employees is essential, so that they are aware of compliance, risks, and how to deal with them.

Interviewee	Q1	Q2	Q3	Q4	Q5	Q6	Q7
14	With the help of IT, the improvement and facilitation of many business processes can be achieved.	It should never be defined by just one party. The business should define rules and provide examples of how the process is done manually, and IT will assess the feasibility and suggest possible step-by-step improvements.	Automating daily and repetitive processes should involve analyzing the cost of automation, including licenses and infrastructure, when choosing a process. It's essential to balance the benefits of automation with the required investment.	The ideal strategy would be to reduce resources per process instead of replacing them completely.	We can't claim that we're always helping or always replacing; it's usually a combination of both. It all depends on the perspective and how they are implemented.	I don't think all individuals on a project should have the same permissions, but there should be autonomy to fully carry out our work.	It's an important part of appropriate training according to roles, enabling preparation to face all difficulties, a very important factor in a company's growth.
15	I know of a department that created their own robots without specialized employees, resulting in poor development and maintenance difficulties, which can harm the institution.	The business side doesn't understand the technical aspects, and IT doesn't know how to gather requirements or manage processes.	It's very important because there are things that can meet customer expectations and others that can't, and this analysis and realism are necessary in this regard.	Economically, I would prefer the robot and hire experienced people to manage it.	It replaces, some RPAs can replace an entire department, and people are not always reallocated.	Should be a hierarchy; a junior should not have the same level as a senior who has a certain level of trust from the client.	Important are trainings, test environments, and permissions, as well as an employee to validate so that when there is an audit, an error is not considered fraud.

Interviewee	Q1	Q2	Q3	Q4	Q5	Q6	Q7
16	I think one doesn't exist without the other; you need the business part well defined first, and then you can have software that works well.	The robot might not be useful in the end; it might not solve the business problem if it wasn't well-defined from the beginning or executed well.	It's what solves the problem; it's better to invest in processes that can contribute than in processes that don't save as much work.	For purely economic reasons, I would prioritize robots, but for other issues, a robot wouldn't replace a human.	It helps more than it replaces, but in some cases, it does replace when the work is repetitive and doesn't require creativity and critical thinking, and there is no possibility of reallocation.	Difficult to manage due to security reasons. Access should be based on each employee's responsibility.	To mitigate risks, everyone should be aware. Sensitive data is used, and often, developers may not be aware of what type of data it is and how dangerous it can be.
17	There should always be communication between the two; otherwise, it can go wrong for both sides.	A businessperson may have an easier time understanding and communicating with the client, while a developer has more knowledge of what can be done at the code level.	There should be attention in the process selection; it should be a process that saves someone's time, which can be used for more critical tasks.	I would prioritize robots and keep only the necessary people.	It helps because employees can move to more important roles.	There must be a hierarchy; people with more knowledge have higher levels of access.	Employees must be prepared because otherwise, the company is at risk due to poor preparation and understanding.

Interviewee	Q1	Q2	Q3	Q4	Q5	Q6	Q7
18	The business understands more about the business rules, while IT is more focused on the technical aspects.	It would be much more difficult to reach the end goal as the number of processes scales up.	It depends on whether the development is feasible, feasibility analysis is one of the key aspects of a process. If not done correctly, it can lead to overspending of resources.	Robots because they are more efficient and competent.	In most cases, it helps people with significant roles rather than those with repetitive tasks.	No, for data security, access levels must be well-defined.	It's very important for employees to be more careful when developing and understand the impact it can have.
19	That's exactly what prevents errors because there is the person who develops the process and the person from the business who understands the day-to-day work to be executed.	Yes, because each person has knowledge of their part, that's why there should be a union between the two.	Time savings, fewer errors, reduced costs, and consequently, having time for other activities that require greater human intelligence.	I would prioritize people because I understand that there could be a union between humans and robots, but robots alone wouldn't be able to complete the work entirely.	It helps the employees because it optimizes time and reduces costs.	There are people with less knowledge than others, there needs to be a hierarchy.	There should be a lot of awareness of the entire process; people need to understand what each permission can cause.

Interviewee	Q1	Q2	Q3	Q4	Q5	Q6	Q7
20	One evolves with the other; if the business part doesn't work well, technology cannot execute.	The person who writes the process knows about the business logic and not about the execution part, and vice versa.	The wrong choice can generate costs, loss of time, and labor.	I would replace everything possible with robots for repetitive tasks and would place people in roles requiring critical thinking	It helps the employees because it is essential for optimizing time and resources. People should be placed in non-repetitive areas and in critical areas that require human thinking.	There should be a hierarchy for direction; a junior doesn't reason like a senior and doesn't know the risks and processes. Knowledge is necessary for decision-making.	Everyone must be aware of the risks associated with the process and the tools to be used. Risks should be well understood, and it's very important to know what one is doing to avoid causing losses to the business.
21	It's important that the department also has some understanding of how the processes to be automated work in order to communicate effectively with those handling the technical aspects.	On the IT side, people may not have a complete understanding of the process, and on the business side, they may not have a complete understanding of the tools.	This can lead to application errors, business errors, data non-conformity errors; the processing can be done incorrectly, resulting in an unexpected outcome.	If the robots are well-developed, they can work 24 hours a day, and the likelihood of errors is lower. The volume of work they can handle is higher than what a human can do, even though it's still necessary to have humans involved.	Human knowledge about the process is essential, as is human intervention for development and maintenance.	People may not always have access to all the information.	It's necessary; people should understand the risks of their actions and the need as well.

Interviewee	Q1	Q2	Q3	Q4	Q5	Q6	Q7
22	Collaboration between the two areas is essential, as well as clear alignment, communication, and well-defined roles and responsibilities.	The combination of both areas is an asset, merging business knowledge with IT expertise.	Loss of time, money, and resources. A process that won't yield returns is a detriment to the organization, impacting both its reputation and finances.	Functions can be performed by robots, saving money. However, it is necessary because humans possess critical thinking abilities that robots do not.	They help; robots don't replace human analysis. However, people aren't always reassigned, it depends on the company's plan, and it can hinder the knowledge transfer for RPA development.	It's challenging to manage and analyze everything; however, it can hinder the speed and efficiency of the process.	It's essential, it's important to grasp the business, understand the technology being used, comprehend the access levels, and the purpose of each activity within the process.
23	Collaboration is necessary; those who will develop lack knowledge in the business area, and vice versa.	IT may not know how to gather the process correctly, and the business side may not develop as efficiently.	The choice of processes to be automated is those that bring time and cost savings to the organization.	Only in functions that can be automated and provide a return, saving time for employees to perform other tasks.	They help employees have more time to engage in more important activities.	Considering that processes involve confidential data, access should be limited according to the hierarchy.	So that employees understand and become more proactive in seeking solutions, thereby reducing risks.
24	I believe that the business and IT should maintain unity, as I think it would optimize time, service, and contribute to the product's quality.	IT without full knowledge of the business and the business without full knowledge of IT could lead to a series of errors.	If a process is not chosen carefully, it may lack data and knowledge about the process, which can result in a loss of time, money, and other resources.	I would prioritize robots because they would lead to more financial gains and select specialized individuals for the management and maintenance of the robots.	It aids people by replacing repetitive tasks, requiring individuals to specialize in handling tasks that involve critical thinking.	People should only access what they need to know, limiting it to the area in which they specialize according to their responsibilities.	Preparation is necessary; employees must understand what they are working on and the risks of their actions to the organization.

Interviewee	Q1	Q2	Q3	Q4	Q5	Q6	Q7
25	Both sides bring something valuable to the process. On one hand, there's business knowledge, and on the other, technical knowledge. Robots work better when both are present.	If only IT handles everything, the business knowledge will be missing, and if it's solely the business side handling it, they might not do it as efficiently, potentially not saving the money and time intended.	They should have certain characteristics such as being repetitive and having as few special exceptions as possible to avoid resource loss.	I would prioritize people by reallocating them to other tasks and investing in training so that these employees could perform activities requiring critical thinking, while I would keep robots for repetitive tasks.	It helps because it allows employees to focus on tasks that require critical thinking, while robots are used for more repetitive tasks.	I believe so because it streamlines the work and eliminates the wait for permissions, always with supervision, regulation, and data encryption.	it's very important. It helps to better understand the business, avoiding future constraints, makes the work more direct, and regarding IT, it can even help developers feel more motivated by knowing what they are doing and the impact on people's daily lives.
26	Collaboration between the two is important, and there should be alignment so they can work together and avoid conflicts of interest.	The business side wouldn't be able to provide the necessary maintenance and effective development, whereas the IT side may not understand the business's gains and losses. Each area has its focus, and their union is ideal.	If the choice is not made carefully, it can result in the loss of money and time. If the goal is to reduce time spent on repetitive tasks, selecting the wrong processes can hinder achieving that objective.	If RPA was chosen to reduce costs and time, it doesn't make sense to prioritize or keep people in roles that RPA can perform. People are required people for evaluation and execution, especially in case of failures.	Helps essential personnel and replace individuals in mechanical roles that don't require human reasoning because it doesn't always make sense to relocate these individuals to other functions.	For security reasons, hierarchy must be respected to prevent errors, fraud, and other issues. People without sufficient knowledge and with high levels of permission can have a negative impact on the organization.	Crucial to extract the best from the business and the process. If people are well-trained and comprehend what they are working on, the risks and real-life impact, the chances of errors occurring decrease.

Interviewee	Q1	Q2	Q3	Q4	Q5	Q6	Q7
27	Integration between the business and IT is important because it streamlines the work of both, reducing time as each is an expert in their respective areas, and it decreases costs by preventing errors.	There needs to be unity so that the IT department can complement the knowledge of the business area.	It can lead to errors, unnecessary time and money spent because not every process is feasible to automate. Some processes may not be repetitive, or the economic benefit for the organization may not justify automation.	Economically, I would prefer to prioritize robots for tasks that can be automated and keep the necessary employees in other roles.	It can replace tasks that can be fully automated and can assist individuals in roles requiring analytical thinking.	There are confidential pieces of information, and a certain level of trustworthiness is necessary to access and handle this type of information.	The higher the level of knowledge, the lower the chance of making errors. People should be informed about the risks and benefits of what they are creating and handling.
28	The business needs to focus on the analysis and process documentation, while IT should handle the development and maintenance of those processes.	the business may not possess as much technical knowledge, which could lead to errors or process inefficiencies. Conversely, a developer without business knowledge would struggle to analyze the necessary or unnecessary steps in building a process.	It's essential to choose what truly needs to be automated, as otherwise, it could be discontinued for various reasons.	I would prioritize robots because I would want to save money on both salaries and other expenses. The fewer human errors, the greater the financial return for the organization, while people would be assigned to essential functions.	It helps with repetitive processes and replaces humans in functions where they are not necessary.	Because not everyone has the same perception and sensitivity regarding the systems and data used, they may end up making errors that could tarnish the organization's image, in addition to incurring costs and wasting time.	I find it important both to avoid losses and to help and motivate each employee in their respective roles.

Interviewee	Q1	Q2	Q3	Q4	Q5	Q6	Q7
29	Each one plays their part in the area they know best: the business side analyzes and documents processes, while IT develops, aiding in organization and preventing overload.	Overloading, as the business may not know how to develop and maintain processes, and IT may not understand the business enough, leading to future problems.	It can have an impact because the robot may not be able to do what the business requires, which can affect other areas that depend on correct execution.	I would prioritize robots for tasks that are time-consuming for humans and keep employees engaged in activities that require human analysis and thinking.	It helps employees by freeing them from repetitive tasks so they can focus on other things.	Because of the levels of responsibility, for example, a junior employee may not have as much knowledge about risks as a senior employee.	People need to understand the area they are working in, the real-life impact, and the risks.
30	Working together, the goals are more likely to be achieved, and the union of these two areas will combine their respective strengths.	It can bring problems like a lack of specialized knowledge, which can translate into significant business impacts.	There should be stability in the process to be automated, it must be a well-structured process, using stable applications, and estimating and analyzing the impact in terms of resource allocation is crucial.	I would prioritize robots for economic reasons, mitigating human error, and exponentially increasing the value added to my company. It would accomplish the same work while reducing costs related to human labor, including salaries, healthcare expenses, taxes, and saving time.	I believe RPA helps people by relieving them of a lot of repetitive tasks and replacing employees who are no longer needed.	Because there should be an assignment of responsibility, and those who hold these responsibilities should be individuals whose roles in the project follow a hierarchy. Additionally, for security reasons, there should be a separation of functions and responsibilities.	Employees need to understand what they have access to, the information, and their responsibility to protect and handle that information as sensitive. They should also know how to handle this information to prevent data breaches.

Interviewee	Q1	Q2	Q3	Q4	Q5	Q6	Q7
31	It's important to always have a bridge between the two areas for better understanding of the contexts each part executes. It's also essential to have someone who understands both sides to facilitate the connection between them.	Handling processes individually can lead to limited knowledge, a lack of effective documentation, and communication with the potential for negative impacts.	The choice of a process should consider the benefits to the organization, the cost of execution, and the time saved.	I would prioritize people, using robots for repetitive tasks and reallocating individuals. If the company's goal is to expand, there are always tasks for people to do. It's important to assess medium and long-term objectives, provide training for people who will be reallocated, and prepare them for this transition.	It helps employees in repetitive activities.	For security reasons, and because not everyone applies knowledge in the same way, people should have permissions according to their responsibilities.	It is necessary because an individual may not know the entire context, but they should understand the risks that execution can bring, including impacts on the company such as a bad reputation and significant losses.

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