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Oracle Cloud ERP RPA Implementation in the Procurement Area

João Pedro Rodrigues Oliveira

Project Work report presented as partial requirement for obtaining the Master's Degree in Information Management

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Instituto Superior de Estatística e Gestão de Informação
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ORACLE CLOUD ERP RPA IMPLEMENTATION IN THE PROCUREMENT AREA

By

João Pedro Rodrigues Oliveira

Project Work report presented as partial requirement for obtaining the Master's degree in Information Management, with a specialization in Information Systems and Technologies Management

Advisor: Vítor Duarte dos Santos, PhD

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STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration. I further declare that I have fully acknowledge the Rules of Conduct and Code of Honor from the NOVA Information Management School.

João Pedro Rodrigues Oliveira

August 8th of 2024, Lisbon

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ABSTRACT

The communication network world is changing day by day at a rate never seen before due to fast technological improvements, as companies try to take the lead in this new field “Hydra Marley” should not be any different. With companies trying to leverage customer service and quickness in solving issues it is crucial to find ways to satisfy their needs. As a result, Robotic Process Automation (RPA) offers not only a quick and simple solution but also an efficient one, by automating tasks that are valuable to the customer. The main aim of this project was to use Robot Process Automation technology to implement an RPA in Oracle Cloud in the Procurement area, thus guaranteeing a more efficient and precise solution to the users. Additionally, by implementing this technology we will further improve and eliminate any existent inefficiencies in the daily tasks. On top of that, we will be able to save on personnel, improve their well-being, and increase job satisfaction.

KEYWORDS

Procurement; Robotic Process Automation; ERP; Supplier Creation

Sustainable Development Goals (SGD):

INDEX

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS AND ACRONYMS

BPM	Business Process Management
BPMN	Business Process Model and Notation
CoE	Center of Excellence
ERP	Enterprise Resource Planning
FIN	Finance
FTE	Full Time Employee
GR	Good Receipt
PA	Purchase Agreement
PO	Purchase Order
PR	Purchase Requisition
PROC	Procurement
RPA	Robotic Process Automation
SCM	Supply Chain Management
TID	Taxpayer ID
TRN	Tax Registration Number

1. INTRODUCTION

1.1. BACKGROUND AND PROBLEM IDENTIFICATION

With the development of technology, soon enough companies started to take advantage of it and became increasingly spending billions trying to improve their processes to become faster and more efficient. One of these modern technologies is known as RPA (Robotic Process Automatization), which consists of software robots that help to automatize the daily repetitive tasks that one can have. E. Hartikainen et al. (2022)

With this project we want to understand how we can implement an RPA in Oracle Cloud ERP in the Procurement area.

In this context, we have a fictional company named "Hydra Marley", one of the companies that are facing these new challenges. Due to the yearly growth of "Hydra Marley", which is a company that is already established in several countries, the company keeps on increasing every year and as more countries are implemented, more and more suppliers are added to the system which are created by the CoE of the company (Center of Excellence), additionally, all the implementation of automation should be supported by the CoE. Anagnoste, S. (2017)

However, with this growth, the number of requests from creating suppliers will undoubtedly rise. Subsequently, the total number of verifications of the company's veracity and bank account details have risen has well. Moreover, the process of creation of supplier includes the usage of an application to create and manage tickets, called "Jira". In Jira the requester can create a ticket asking for the creation of a supplier, in this ticket there will be attached two documents, a template that is standardized by the company with all the information regarding the supplier, name, tax registration number, taxpayer id, address, payment method, payment terms, contact information and bank account information. Additionally, there will also be a bank account ownership certificate attached to the ticket. The ticket after being created is then assigned to Level 1 Procurement Specialist and awaits his response. In this process, the assignee will have to do a manual check of the veracity of the supplier information via a webpage and will also have to do a manual check of the bank account authenticity. On top of that, the assignee will also have to do the manual creation of the supplier in the system, ERP Oracle Cloud.

The company is facing a high volume of supplier creation, and on top of that, a high number of manual verifications of the company's veracity and bank account details are needed. Due to this workload expansion is important to find better ways to address this issue. According to

Coughlan et al. (2017) RPA could be implemented for the purpose of decreasing the time spent on creating the suppliers, checking the company's veracity, checking bank account details, cost reduction, and human errors.

This situation leads to the formulation of the following interrogations:

RQ1 – How to make an efficient implementation of an RPA for the purpose of delivering lower response times with higher supplier creations and veracity verification and bank details confirmation?

RQ2 – How to guarantee that the implemented RPA will impact the company in terms of cost reduction and time reduction?

RQ3 – How the implementation of an RPA could be a relevant answer to the treatment of high volume of supplier creation and veracity verification and bank details confirmation?

1.2. OBJECTIVES

The goal of the project is to develop efficient applications of RPA technologies to automatize procurement tasks such as supplier creation and supplier veracity verification.

In order to achieve the goal, the following intermediate objectives were defined:

• Framework Supply Procurement;

• Study the most suitable automated procurement workflow systems and process modeling and RPA implementation practices;

• Study the Robotic Process Automation field;

• Identify and modulate the most important Procurement tasks;

• Select the processes to be automatized and build the RPAs;

• Evaluate the project outcomes.

• Model the processes (as-is);

• Understand which improvements must be made in order to carry out the automation process;

• Analyze which of the processes must be given priority to be automated;

• Model the processes (to-be);

• Develop and implement RPA applications.

1.3. IMPORTANCE AND RELEVANCE

As artificial intelligence keeps rising and companies keep seeking new ways of implementing it “Hydra Marley” should not be different. With the addition of an RPA the company would benefit in many ways such as reducing future costs. These future costs are not only directly related to personnel but also to Oracle cloud licenses, which tend to have a significant cost. On top of that, given that the supplier creation, veracity verification, and bank details verification process is somehow very monotonous we would be also increasing the well-being of the workers, due to the fact that they will have the opportunity to explore new tasks. E. Hartikainen, V. Hotti and M. Tukiainen (2022). Additionally, as a result of the RPA implementation, workers will also be able to have more time to pursue new skills needed for other areas, or even shift to other areas that need more attention. The RPA will not only have a positive impact on the time spent on the creation of the suppliers but also on decreasing the human mistakes that might happen while creating them. Taking into account that the company will start to adopt this new technology it expands one’s horizon to what other processes can be changed and can also be automated. Not only that, but the company will also make its way through the market as distinct from the rest of the competition. Therefore, the project conclusion will aim to make the company more efficient and effective in the supplier creation process, to make the company more efficient and effective in the supplier veracity verification process, and to make the company more efficient and efficient in the supplier bank details verification process. Moreover, the elaboration of this project will also bring future cost savings related to personnel, reduce the supplier creation human errors, and allow the time spent on the creation of suppliers to be shifted to more important channels. On top of that it is also expected to have an overall faster process with fewer resources, thus having more profit at the end. Another big step for the company into not only a more technological state but also competitiveness is the fact that the company will implement and adopt a new technology, thus making it more appealing in the market.

With this project, we expect to further develop and increase the knowledge regarding the RPA area as well as the Procurement area. In addition, the outcome of the project will seek cost

efficiency since an RPA allows to automate repetitive and time-consuming tasks which will reduce labor costs and increase the efficiency of the task. As mentioned before, an RPA has the power to improve the efficiency of a task, thus improving the response times and subsequently the customer experience. Besides, as we are automating several processes, we will allow employees to focus on new areas and other tasks, it will also impact people's happiness as they can have more time to learn and practice other areas. On top of that, as we will automate tasks that are considered as monotonous the overall employee happiness is expected to increase. As previously mentioned, since tasks are expected to be done quicker, that will mean that productivity will increase, not only that but, RPA can work nonstop compared to human beings. Moreover, we will also see a reduction in human mistakes. Additionally, the usage of an RPA will help organizations cut expenses regarding the usage of paper and energy consumption, thus contributing to sustainability and a greener society. Lastly, the usage of RPAs will also create new job opportunities since it will be necessary for developers and RPA analysts. Hartikainen et all. (2022)

2. WORK PLAN

In this chapter, we will outline the Work Plan, introduce the Project stages, and discuss the tools that will facilitate the development of the project, along with the proposed timeline.

2.1. PROJECT PLANNING

This project consists of six stages for Project development, which are designed to make it possible to achieve the main objectives of the project. These phases are aligned with the BPM lifecycle as introduced by Dumas et al. (2018).

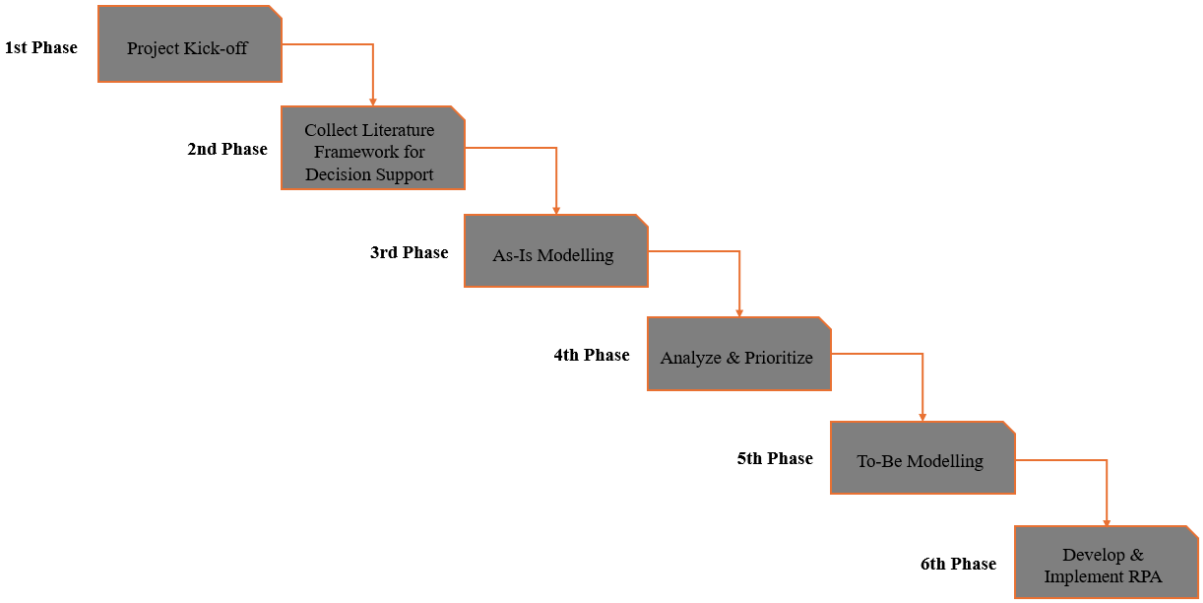

Figure 2.1- Project Management Stages

Source: Prepared by the author

Phase 1: Project Kick-off

We will start off with a Project Kick-off where we will analyze the company (Hydra Marley) and furthermore what department will the automation will take place in. By doing so, we will have a better understanding of which processes can be automated.

Phase 2: Collection of Literature Framework for Decision Support

Next, we will gather a collection of literature frameworks to help us in decision support, by this we will analyze the main challenges regarding BPM, particularly BPMN modeling, including its main challenges, characteristics, and benefits. On top of that, we will also study and assess RPA developments in shared services, more precisely in a Center of Excellence.

Phase 3: As-Is Modelling

Following the last step, we will use the existing team and documentation to understand how the process works. This collaborative approach will improve the identification of the challenges and possibly improve the teams' expertise. The expected result of this step is to obtain the current process model, an in-depth description of inputs and outputs, the systems involved, and any possible relation that might affect the process.

Phase 4: Analyze and Prioritize

Following up the previously made As-Is model will be analyzed and used as an input to find any possible upgrades and automation opportunities. After this analysis the processes will be set depending on their priority, starting off with how complex are they to automate (e.g., standardization, system stability), additionally, their ability in a given time frame to have a transaction volume will also be taken in consideration, as well as the awaited results regarding to time, cost or saved FTEs (full-time employee). Nonetheless, if one of the processes is crucial to procurement department and is seen as highly important, it will most likely bypass this step.

Phase 5: To-be Modelling

The expected result from this phase is to have all the processes that will become partially or completely automated modeled. The output of this phase is to get an upgraded As-Is model that already includes all the changes that will take place in order to remove or reduce any problem discovered. Moreover, we also have the objective of optimize the processes in terms of timing or if they can be done in a different way, thus having an overall improvement.

Phase 6: Develop and Implement RPA

Lastly, during this phase, the automation will be created by using the UiPath RPA Software. Once finished, the process will be introduced into the daily operations.

2.2. TOOLS & RESOURCES

Given that the Project involved modeling and automation processes, the main tools used were Bizagi Process Modeler, UiPath Studio Software, and ERP Oracle Cloud.

Since Bizagi Process Modeler met every requirement of this project, it was chosen as the modeling stages tool, it was user-intuitive, free of cost, and allowed BPMN process modeling.

The Bizagi Modeler program was used for the whole modeling part, and the UiPath platform's development and maintenance were essential to the automations that followed. As a result, the ideas and elements at play will be further explained in the sections that follow.

2.2.1. Bizagi Modeler

Bizagi is a program used to model and create business processes. Through the use of Business Process Model and Notation (BPMN) standards, it enables users to create visual representations of business processes. Offering features that support business process documentation, analysis, and optimization, Bizagi Modeler has been designed to be user-friendly and intuitive. The program allows users to create process documentation, flowcharts, and diagrams, which give a straightforward graphical representation of how a business process operates. It is widely used for process mapping and improvement in a variety of industries. (Bizagi, 2023)

Moreover, Bizagi offers a three-software bundle:

• Bizagi Modeler: It provides a free process modeling tool that uses BPMN notation and an easy to use drag and drop design interface.

• Bizagi Studio: It is a tool used for transforming, designing, and automating process models into executable applications and workflows which operates using a low-code. Additionally, Bizagi Studio, offers UiPath Integration, which enables the use of a robot at a particular process step and inputs the necessary parameters for execution.

• Bizagi Automation: A component for executing and overseeing applications created in Bizagi Studio.

As Bizagi (2023) points out, the Modeler has an easy-to-understand, user-friendly interface, as shown in Figure 2.2. There are only five primary components to it:

Toolbar – Holds customizable shortcuts for rapid access commands. Ribbon – Encompasses the primary functions for handling the model.

Palette – Contains every graphical BPMN element (as shown in section 2.2) that can be dropped and dragged onto the diagram to build models.

Element Properties – used to change the attributes of every model element in order to record the process.

View – Features that make it easier to navigate the project and allowing you to zoom in and out or resize the diagram as needed.

The software's features enable the modeling and documentation of processes, simulate different process scenarios, and, in the end, provide the ability to export documents in various formats, all of which contribute to a comprehensive experience.

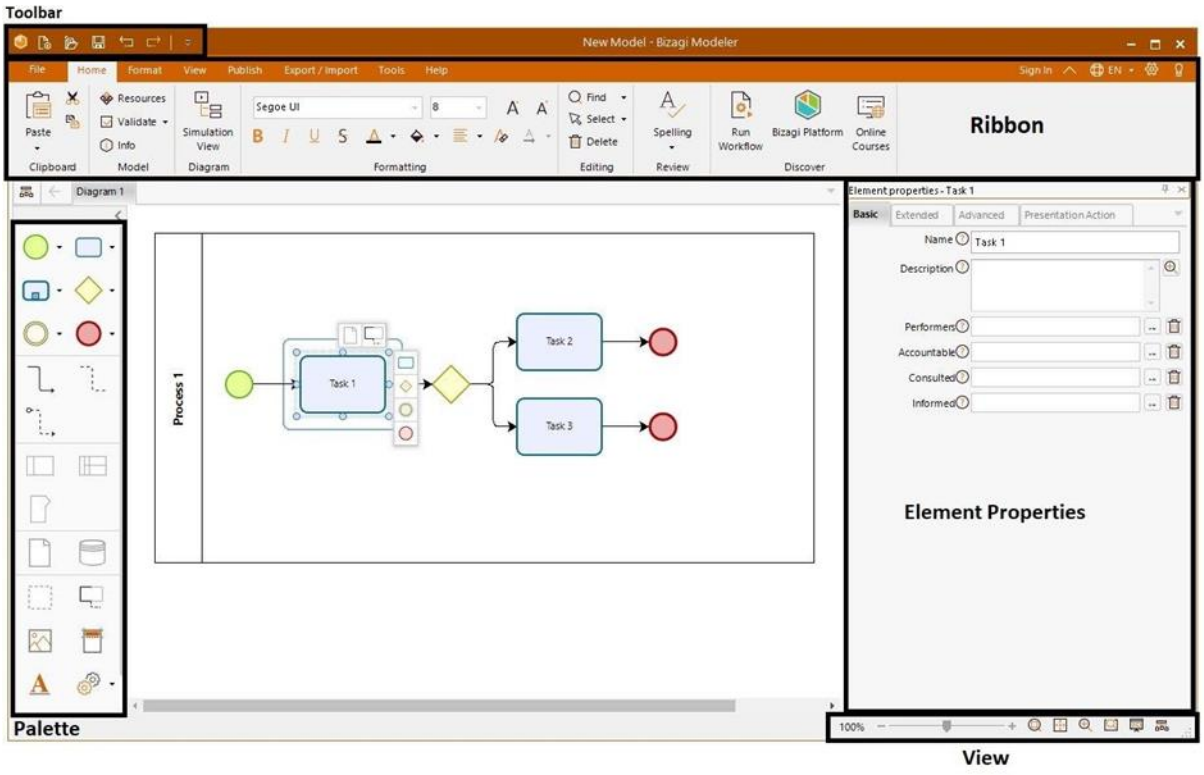

Figure 2.2- Bizagi Modeler User Interface

Source: Prepared by the author via Bizagi Modeler

2.2.2. UiPath

The three main components of the automation platform UiPath are UiPath Studio, UiPath Robot, and UiPath Orchestrator. Every product plays a distinct part in augmenting the automation capabilities of UiPath. The tool that makes automation design easier is called UiPath Studio. It uses diagrams to provide a visual approach to automation design. UiPath Robot is a different product that is used to carry out the automations made in UiPath Studio. UiPath also sells UiPath Orchestrator, a product specifically used for automation management. Robot and process deployment, scheduling, monitoring, and management are all possible by using this web application. (Javed et al. 2021)

2.2.3. ERP Oracle Cloud

Enterprise Resource Planning (ERP) systems are all-inclusive, cloud-based or on-premises platforms that are capable of handling every aspect of distribution or production-based, businesses. ERP systems are notable for their ability to support core accounting functions alongside with supply chain management, manufacturing, financial management, and human resources, all of which help to streamline operations.

ERP systems also provide transparency throughout the whole business process, tracking financial, logistical, and production details with great care. These integrated systems serve as a centralized hub that makes data accessible to multiple departments and streamlines end-to-end workflows.

ERP systems and software support a variety of functions for enterprises, mid-sized businesses, and small businesses, customizing solutions to meet the specific needs of various industries. (Oracle, 2024)

ERP software that is offered as a cloud service runs on a network of distant servers as opposed to a server room housed inside an organization. Unlike an on-premises system, which requires costly upgrades every five to ten years, the cloud provider handles patching, managing, and updating the software several times a year. Since businesses no longer need to invest in software, hardware, or additional IT staff, adopting the cloud can lower both operational and capital expenses. Instead of focusing on maintaining the organization’s current ERP software,

these resources could be used to investigate new business prospects. Employees are also able to refocus their attention from IT management to higher-value activities like innovation and expansion. (Oracle, 2024)

Figure 2.3 - ERP Oracle Cloud Interface

Source: Prepared by the author

2.3. CHRONOGRAM

The figure 2.4 illustrates the scheduled timeline for the project, which consists of seven phases, four milestones, and three deliverables.

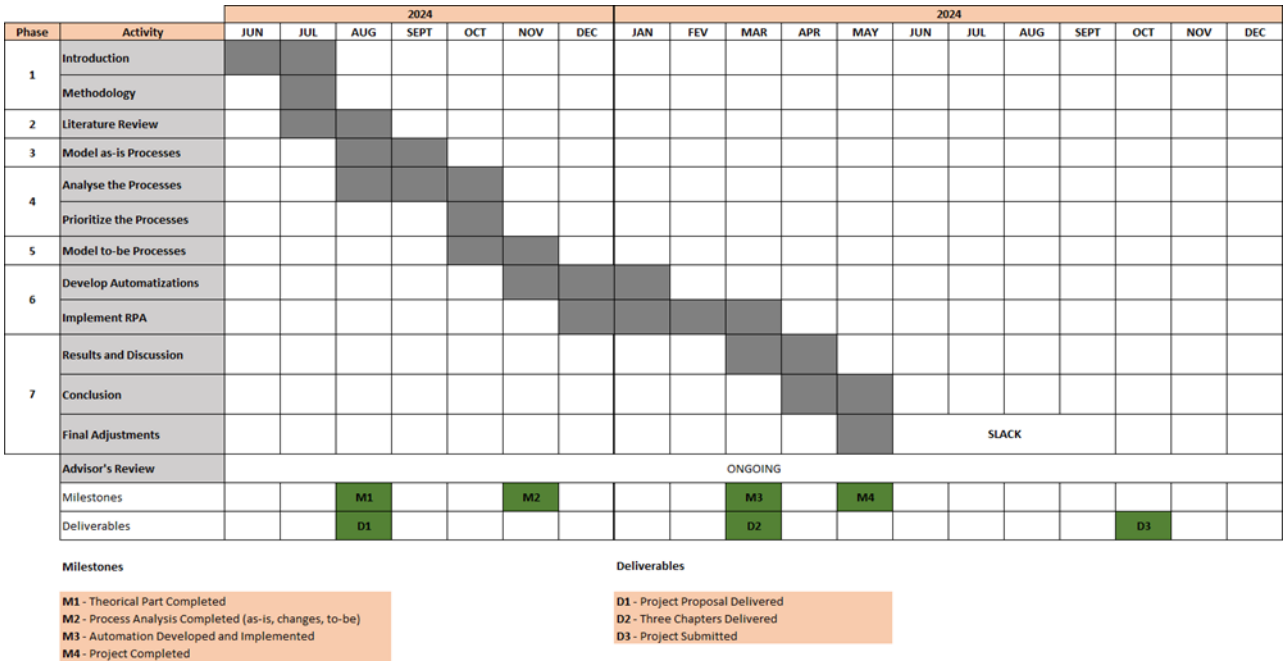

Figure 2.4 - Project Chronogram

Source: Prepared by the author

3. THEORETICAL FRAMEWORK

To achieve the established goals, it was essential to gather the knowledge and expertise held by the scientific community regarding the main topics mentioned in the project.

Hence, this chapter will start with a description of the Procurement concepts, followed by the main activities of Procurement, and lastly, the challenges and opportunities.

3.1. PROCUREMENT AND SUPPLY MANAGEMENT

3.1.1. Concepts

3.1.2. How can Procurement be defined?

Over the course of history, the perception of procurement has undergone a transformative journey, evolving from an administrative task to an indispensable and key element within the framework of a business. (Johnson et al., 2015)

During the early stages, procurement might have been perceived as a more transactional and administrative job, mostly focused on acquiring goods and services. Nevertheless, as businesses evolved so did procurement, becoming not only a more complex, compound task but also an area that other areas rely on. Nowadays, the procurement role no longer only focuses on obtaining goods and services but is also a dynamic process that involves strategic decision-making, risk management, and cultivating collaborative partnerships between suppliers and stakeholders.

Procurement is described as one of the key elements in the operational structure of a business, its main objective is to come across opportunities in the supply market while applying the best strategies that will lead to a better outcome for the resources of the organization, its stakeholders, and customers. Thus, meeting the needs and goals of the organization. Procurement concerns both knowledge and skills of managing external resources. (Lysons et al., 2016)

In today's day and age procurement is increasingly seen as a strategic function that no longer is related to cost-saving measures. Currently, procurement has it reputation as being a pivotal role.

Some of the aspects that procurement is related to nowadays is strategic collaboration, innovation driver, risk management, sustainability and CSR, data-driven decision-making, and supplier relationship management. (Spiller et al., 2014)

3.1.3. Strategic Collaboration

Working together strategically in procurement is a modern way that highlights combining procurement tasks with bigger organizational objectives. This means closely working together between the procurement team and other important parts of the business. Working in a strategic way can be beneficial in various ways. Since the whole business is aligned this can ensure that the decisions made by procurement have some support and will undoubtedly improve the business.

On top of that, we will mitigate any risk through collaboration since we will be working together while sharing information. (Chick et al., 2014)

3.1.4. Supplier Evaluation and Supplier Relationships

Establishing robust connections with suppliers is one of the key factors that enable development, creativity, and adaptability, which plays a role in the overall success of not only the business but also its suppliers. (Chick et al., 2014)

3.1.5. Ensuring Compliance

Ensuring procurement compliance is an important aspect of organizational management, particularly when it comes to purchasing goods and services. Compliance refers to adhering to the laws, regulations, guidelines, and ethical standards that govern the procurement process. This ensures that the business operates in an ethical way and in compliance with legal requirements.

Key elements of procurement compliance include fair competition, non-discrimination, transparency, and accountability. (Lysons et al,. 2016)

3.1.6. Managing Costs

Procurement cost management is a complex process that includes strategic planning, negotiation skills, risk management, and the use of technology. Strategic sourcing involves selecting suppliers based on factors such as cost, quality, and reliability, often with a comprehensive supply chain analysis to help reduce costs. Life cycle costing evaluates the total cost of ownership, taking into account not only the initial purchase cost, but also ongoing costs. Cost-benefit analysis evaluates the financial impact of a purchasing decision and weighs costs against expected benefits. Supplier relationship management is key to long-term cost management, emphasizing communication, review, and collaboration. (Baily et al., 2015)

3.2. Scope and Main Activities

The scope includes sourcing, negotiation, purchasing, receiving, and recordkeeping.

3.2.1. Purchase Requisitions

A purchase requisition is a document used within an organization to initiate the purchasing process. It is a formal request to purchase goods or services, usually made by an employee or department to determine the need for a specific item. The purchase requisition includes details such as item description, quantity, estimated cost, and any other relevant information.

Once the purchase requisition is approved, it becomes the purchasing department's authority to make the purchase. Purchase requisitions are an important part of the overall procurement process, helping to simplify and standardize the workflow in order to obtain the necessary goods and services needed by the organization.

In Oracle Cloud ERP, the purchase requisition acts as the first document to start the buying process. It contains information like item descriptions, quantities, estimated costs, and other important details.

Once a purchase requisition is approved, it becomes the basis for creating a purchase order and, moreover, it can be used to create a purchase agreement.

3.2.2. Purchase Agreements

A formal contract between a supplier and a customer is called a purchase agreement, sometimes known as a contract purchase agreement or a blanket purchase agreement. It outlines the terms

and conditions of impending transactions. Purchase agreements in Oracle Cloud ERP allow businesses to establish long-term relationships with their suppliers. They ensure a steady supply of goods or services over a longer period of time and help negotiate advantageous pricing. These contracts include a wide range of topics, including costs, delivery dates, terms of payment, and quality requirements. Cameron, M.A. (2009)

3.2.3. Purchase Orders

A buy order is activated following approval of a purchase requisition. This order is a formal document that authorizes the supplier to accept the purchase of the listed products or services. Purchase orders in Oracle Cloud ERP typically refer back to the details specified in the associated buy request. On top of that, they may have ties to purchase agreements, particularly in cases when the procurement entails a long-term, fixed-term commitment.

Each of these components mentioned above works together in Oracle Cloud ERP to improve the effectiveness of the procurement process. Combining purchase orders, purchase agreements, and purchase requisitions makes it easier for businesses to manage their purchasing responsibilities, maintain consistency, and have open lines of communication with suppliers.

The entire efficiency of procurement within the ERP system is improved by this integrated strategy. Cameron, M.A. (2009)

3.2.4. Catalogs

Catalogs serve as primary repositories of goods and services that a company can purchase within Oracle Cloud ERP. By providing users with a well-organized list of goods or services they might request, they streamline the purchase process.

Additionally, catalogs provide a structured inventory of goods and services, which serves as the foundation. On top of that, catalogs help purchase requisitions by allowing users to request things in a consistent manner. Purchase agreements can use catalogs as a reference to establish uniform conditions for acquiring particular goods. Purchase orders ensure that the requested items match approved and standardized options by using catalog information.

The procurement process in Oracle Cloud ERP may be made more efficient, standardized, and controlled by linking catalogs with other procurement papers. By helping businesses manage

their purchases more precisely, swiftly, and in compliance with established guidelines, this integration eventually raises the efficacy of procurement as a whole. Cameron, M.A. (2009)

3.2.5. Suppliers

Suppliers are important participants in the procurement process in Oracle Cloud ERP, and their engagement is directly related to purchase orders, purchase agreements, purchase requisitions, and catalogs.

Suppliers are outside companies or people who provide goods or services to a company. They may consist of a range of suppliers, from companies that produce goods to those that focus on providing goods or services.

Accurate, consistent, and controlled supplier interactions are ensured by Oracle Cloud ERP through the seamless integration of supplier data into various procurement documents. This integration helps businesses build strong and trustworthy relationships with their suppliers while also enhancing supplier management and transparency. Cameron, M.A. (2009)

3.3. CHALLENGES

3.3.1. Change Management

ERP undoubtedly will change how a company manages its processes and how employees perform their tasks. A failed implementation can lead to serious harm not only to the company but to its employees, this translates into a significant decrease in sales and earnings. To avoid this matter, it must be clear that all the business's processes, flows, tasks, and standards are integrated into the ERP implementation. Thus the importance of a meticulous and conscient strategy. James et al. (2015)

On top of that, it is essential to have a clear vision of the future ahead, and foremost to ensure that the change becomes permanent (Kotter, 2011)

3.3.2. Changing Processes

Changing processes is a major part of an ERP adoption, throughout this, change one might face challenges trying to change a task, not only the change of the process itself but also the

resistance of the workers regarding change. An ongoing challenge in the first months will be undoubtedly the persuasion of coworkers to adapt to the new methodology.

3.3.3. Supply Chain Disruptions

Procurement faces significant challenges when dealing with supply chain issues, which are frequently caused by events outside of a company's control, such as natural disasters or political unrest. These issues have an impact on sourcing practices, availability, and supplier reliability, which can have negative effects on production schedules and revenue streams. Procurement professionals must work closely with suppliers, manage risks efficiently, and communicate clearly in order to address these challenges. Having multiple suppliers, utilizing technology, and making resilience plans are crucial strategies for managing and mitigating the effects of these disruptions. Generally speaking, the secret to building robust and adaptable supply chains that can withstand disruptions is to employ a variety of techniques in a proactive and strategic manner. Manners-Bell, J. (2014)

3.3.4. Risk Management

In order to recognize, evaluate, and address possible risks to the procurement procedure and the larger supply chain risk management in procurement is essential. Checking the reliability of suppliers, managing supply chain disruptions from outside sources, managing risks associated with market shifts, adhering to a variety of changing regulations, handling data security and cyber threats, guaranteeing the quality and performance of acquired goods and services, taking ethical and social responsibility issues into consideration, assessing supplier capacity and capability, navigating the complexities of global operations, and putting effective strategies like contingency plans and supplier diversification into practice are the main challenges.

Organizations must take a proactive and strategic approach to address these issues, regularly assess their risk landscape, and maintain flexibility in reacting to evolving risks in the ever-changing business environment. Edquist et al. (2015)

3.3.5. Cost Management

Controlling and optimizing the costs associated with obtaining goods and services requires effective cost management in the procurement process. Good terms negotiations with suppliers, managing the impact of market fluctuations on costs, computing total ownership costs,

cultivating and maintaining positive relationships with suppliers, controlling spending within budgetary constraints, balancing the upfront costs of technology investments, conducting cost analysis and benchmarking, monitoring supplier performance, mitigating various risks, considering sustainability costs, and adapting to shifting market conditions are the challenges. It is mandatory for procurement professionals to adopt a comprehensive and strategic approach, regularly monitor market conditions, maintain positive relationships with suppliers, make prudent use of technology, and implement efficient measures to control costs and guarantee optimal value for the organization.

3.3.6. Supplier Relationship Management

Managing relationships with suppliers can be a complex and delicate task as companies have suppliers from all parts of the world, not only that but also dealing with a large variety of products, services, and contract terms. On top of that, there can be communication barriers between the business and the suppliers since each can have different communication preferences and practices. Additionally, besides having good supplier relationship management it is crucial to have a good conflict resolution, since different suppliers have different demands and standards and the business must solve the conflicts with the suppliers using strategies to maintain positive and productive partnerships. In order to surpass this challenge it is necessary to have strategies and a proactive approach, emphasizing clear communication and ongoing monitoring.

3.3.7. Technology Integration

The need to seamlessly integrate digital solutions into the complex processes of procurement is the foundation for navigating the challenge of technology integration in the procurement landscape. Potential compatibility problems resulting from misalignments with current organizational systems and processes further exacerbate this complexity and add another level of difficulty to the implementation. Furthermore, the increasing focus on data security in this ever-evolving field raises more concerns, especially since the organization will be tasked with managing extremely sensitive data, requiring a steadfast dedication to guaranteeing its security at all times.

3.3.8. Regulatory Compliance

As businesses have several suppliers scattered all over the world this means that in order to face this multifaceted environment requires a deep understanding of the many compliance requirements. Nonetheless, as technology changes so does the regulation, thus meaning that constant changes are happening, and the business must keep up to date with the latest regulatory developments. Failing to comply with these evolving regulations exposes the company to potential legal consequences.

3.4. OPPORTUNITIES

3.4.1. Cost Saving and Value Creation

Successful procurement tactics, such as bargaining, buying in bulk, and identifying vendors who provide affordable solutions, can save a significant amount of money. Procurement specialists can create value by establishing trusting bonds with suppliers, negotiating advantageous conditions, and guaranteeing the acquisition of superior products and services.

3.4.2. The usage of Robotic Process Automatization

The integration of artificial intelligence is gaining momentum day by day, companies are actively exploring new possibilities for its integration. The implementation of Robotic Process Automation (RPA) into the organization's activities holds numerous advantages, the most significant of which is the potential cost savings. These possible savings include large reductions in Oracle Cloud license costs and in addition to direct personnel-related expenses. Moreover, optimizing the rather tedious procedures linked to the creation of suppliers, authenticity confirmation, and bank information verification improves not only effectiveness of our operations but also the well-being of our personnel. Giving staff members the chance to work on new and intriguing projects. Hartikainen et al. (2022)

3.5. PROCESS AUTOMATION

3.5.1. Overview

Different forms of automation exist, such as attended and unattended automation.

Additionally, two distinct types of Robotic Process Automation (RPA) are notable, one functions as a supportive entity that can be summoned to aid in task completion, while the other is primarily employed for administrative tasks. It's important to note that process discovery modeling revolves around understanding and visualizing processes, whereas RPAs focus on the actual automation of these processes.

Nonetheless, there is still intelligent process automation (IPA), hyper-automation, and industrial automation.

In the following chapter we will provide a more in-depth analysis.

3.5.2. Robotic Process Automation

Robotic Process Automation (RPA) is the use of machines to perform tasks more quickly and accurately while also increasing precision. RPA, to put it simply, is an approach that uses robots to automate business processes and minimize the need for human intervention. RPA provides a way to automate less interesting work because it succeeds at handling repetitive and routine tasks. With the help of technology, you can devote more time to activities that are unique to humans, such as satisfying your coworkers, superiors, and clients. Williams, Z., (2019).

3.6. TYPES OF ROBOTIC PROCESS AUTOMATION

In the world of RPA, there are two different types of RPA that are used for different targets. One of them serves as a support figure whom you can summon to assist you in accomplishing tasks. While the other is mostly used for more administrative tasks. Mullakara et al. (2020)

Attended automation, as the name suggests, it is necessary human intervention for it to work. These automations operate on the worker's computer and aid in the completion of ongoing tasks.

According to Mullakara et al. (2020), this form of automation is most commonly used in call centers with the aim of helping the workers in decreasing their time performing day-to-day tasks and subsequently contributing to the amplification of the customer experience.

Unattended automation, as the name suggests, it is not necessary human intervention for it to work. They work nonstop and usually operate on servers. According to Mullakara et al. (2020), this form of automation allows a higher level of control over the automation since it adapts to

your rules and autonomously completes the tasks. This kind of automation is best applied to processes where the goal is to replace all functions, to tasks that are well organized and well mapped, or to back-office tasks like collecting, organizing, distributing, and analyzing massive volumes of data.

3.6.1. Intelligent Process Automation

Given that RPA automates repetitive and routine tasks (for instance, copying data from one system to another), it has made it possible to integrate systems that otherwise would not have been able to be integrated. This has reduced the workload for business process workers.

Intelligent Process Automation (IPA) not only automates simple repetitive tasks but also more complex ones by using AI to lessen the need for human-dependent training and automate decision-making tasks. The goal of IPA is to automate complicated tasks that require judgement calls, in-depth knowledge, in-depth analysis, or the orchestration, coordination, and cooperation of several IPA solutions. This builds upon the foundation of traditional RPA technologies. Chakraborti et al. (2020)

3.6.2. Hyper-automation

Hyper-automation is primarily concerned with improving automation initiatives by adding more intelligence and using a more efficient system-based approach. This method highlights how crucial it is to strike the ideal balance between automating difficult steps to maximize efficiency and substituting human labor. Experts in business processes are in a better position to spot opportunities for automation that many employees might miss. Through the capabilities of hyper-automation solutions, users can automate a multitude of processes within their functions, achieving faster results with the resources at their disposal. This therefore makes it possible to refocus on activities that have a greater overall impact, like strategy and planning. The organization's value of integrations with large on-premise technologies and various data platforms can be expressed more fluidly thanks to hyper-automation. Haleem et al. (2021)

3.6.3. Industrial Automation

Reducing human involvement is the main objective of industrial automation, which entails integrating computers, robots, and control systems to monitor machinery and processes in

industries. Modern automation is heavily focused on raising the quality and flexibility of manufacturing processes, having previously been primarily concerned with increasing productivity and reducing costs. The benefits include lower operating output, better-quality products, task flexibility, accurate data collection, and higher safety requirements. However, there are drawbacks to industrial automation, such as high upfront costs and the requirement for staff training. However, the significant advantages it offers in terms of increased productivity, better product quality, and increased safety all at a reduced total cost are what propel its broad acceptance. Mamodiya et al. (2014)

3.7. PROCESS DISCOVERY AND MODELLING

Over the course of the last recent years, there has been a substantial improvement and change to the procurement area. This change started by the digitalization of some procurement activities, thus marking the beginning of the transformation. The primary benefit of this change is the increase of several procurement activities. As we can notice a shift has occurred from the traditional method, which was backed by a system that collected all the data and actions associated with the procurement process and allowed a more direct communication between both supplier and buyer. Bienhaus et al. (2018)

Numerous options for gathering data on a digital platform have been made possible by digitalization. All supply chain participants have an easy access to, transparency in sharing, and processing of this data. A new way of working characterized by real-time capabilities and multi-directional communications have emerged as a result of this revolutionary change. It makes it possible to quickly construct networks that cover the whole range of production flows and to smoothly integrate systems at different phases of the company's planning process. This integration creates immutable value networks by including several departments, thus forming unchangeable values. Nicoletti (2017)

This claim is supported by the fact that the buying process is a multifaceted procedure that entails a number of intricate and interconnected steps. These steps include determining the needs, developing technical specifications, assessing possible suppliers, and making the final decision to make a purchase. Businesses are then forced to innovate in response to the continuous advancement of information technologies in an effort to reduce procurement risks and improve overall productivity. This calls for the early adoption of cutting-edge technologies

such as Robotic Process Automation to simplify and speed up communications between businesses and their suppliers.

4. PROJECT

In this chapter, we will look at the procedures and approaches that will guide the project's implementation. The project is divided into six phases that are connected between each other, each of which is intended to carefully address and improve our goals towards a successful implementation.

At last, we will concentrate on project benefits and impact assessment. This stage is essential for evaluating the efficacy of the solutions put into practice, tracking their results, and comprehending the project's overall benefits.

4.1. PHASE 1: PROJECT KICK-OFF

This project kicks off with the aim to automate the procurement process of creating the suppliers. Since the creation of suppliers falls under the responsibility of the CoE in the Procurement Area, the focus of this project will be developed in that specific division of the company.

As previously mentioned, "Hydra Marley" is an international company with a main activity related to communication networks.

The company currently has a COE (Center of Excellence) working in three different areas, procurement, finance, and supply chain, yet they are undoubtedly interrelated and help each other.

Taking into account that both the finance and supply chain areas are full of staff and every process requires some sort of human intervention we shifted our attention towards the procurement area, which is an area where currently is short on staff and has more dull tasks.

4.2. PHASE 2: COLLECTION OF LITERATURE FRAMEWORK FOR DECISION SUPPORT

This phase is an ongoing process that will follow the Project Lifecycle and consists of a collection of scientific works developed regarding Business Process Management and Robotic Process Automation with the goal of constructing a framework that aids decision-making throughout the project. The Literature Framework gathered in this phase is presented and analyzed in the Literature Review.

4.3. PHASE 3: AS-IS MODELLING

After analyzing the day-to-day activities of the COE procurement team, we were able to understand which tasks could be automated, thus increasing productivity and battling the short-staff situation. As the company needs to produce cameras and alarms it is necessary to create suppliers.

Moreover, any type of material acquired for the company buildings must be registered in the system and a supplier must be created. The creation of the supplier starts with a requester creating a ticket with an Excel template file attached and inside we can find all the information related to the supplier. Afterwards the procurement team has to verify the supplier's authenticity as well as the veracity of the bank account, after confirming that both these pieces of information are valid, we then start the creation of the supplier in Oracle Cloud ERP, starting off with adding information to the profile, then creating an address, site, and contact. Lastly, a screenshot of the supplier's name and number is taken and shared with the requester via the ticket and then the closure of the ticket is followed.

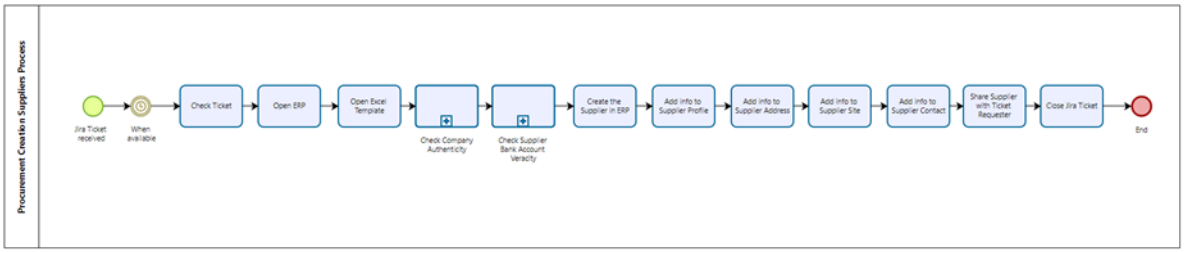

Figure 4.1 - Procurement Creation Suppliers Process

Source: Prepared by the author

As mentioned previously, and as it can be seen in *figure 4.1* the process starts when a requester opens a ticket via an app called Jira, the ticket is then created is created by the requester for the Procurement area and then this ticket is assigned to a CoE PROC Specialist. When the assignee is available, he then checks the ticket and reads the description in order to understand the issue reported, after he then opens the Oracle Cloud ERP and the Excel template that is attached to the Jira ticket containing all the necessary information to create the supplier in the system. Afterwards, we have the subprocess "Check Company Authenticity" and "Check Supplier Bank Account Veracity". It is important to mention that in some cases the template might have some

missing information which then the assignee must request it in the ticket to the user, which makes the process much longer, especially when the user takes a lot of time to reply.

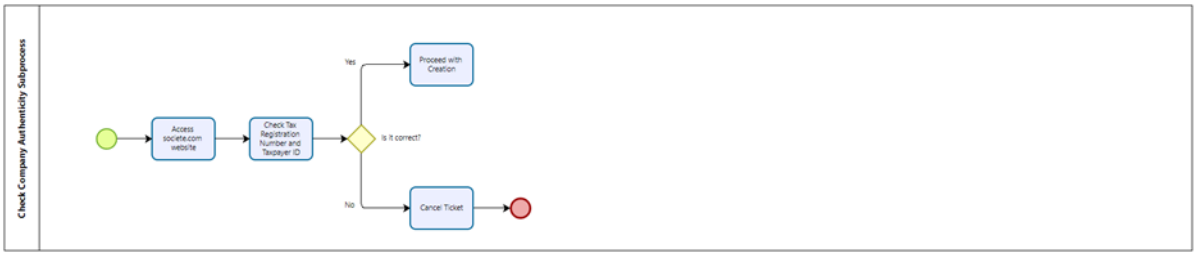

Figure 4.2 - Check Company Authenticity Subprocess

Source: Prepared by the author

As can be seen in *figure 4.2*, we have the illustration of the workflow of the subprocess "Check Company Authenticity Subprocess" which starts by accessing the webpage *societe.com* and checking the Excel template, and confirming in the webpage that the Tax Registration Number and the Taxpayer ID exist. If by any chance either the TRN or the TID doesn't exist we must consult the user regarding this issue, and in last case, the ticket is canceled. If all the information is correct, we proceed with the creation of the ticket.

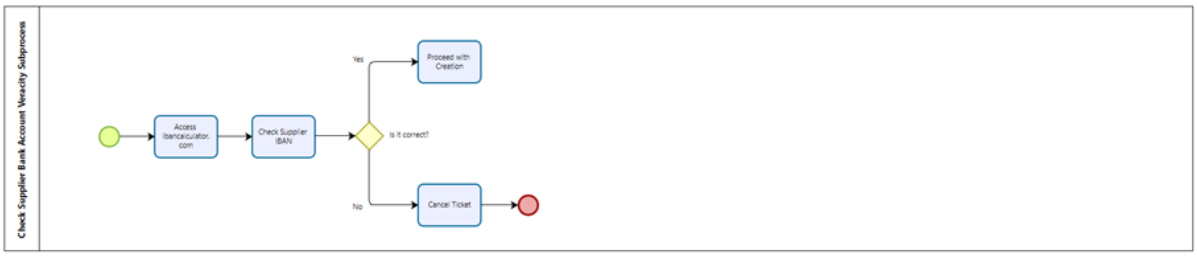

Figure 4.3 - Procurement Bank Account Veracity Subprocess

Source: Prepared by the author

As it can be seen in *figure 4.3*, we have the illustration of the workflow of the subprocess "Check Supplier Bank Account Veracity" subprocess that starts by accessing the webpage *ibancalculator.com* and checking the Excel template and confirming in the webpage that the IBAN exists. If by any chance the IBAN doesn't exist or is wrong we must consult the user

regarding this issue, and in last case, the ticket is canceled. If all the information is correct, we proceed with the creation of the ticket.

4.4. PHASE 4: ANALYZE AND PRIORITIZE

We will take into account the procedures described in Phase 3 and understand which automations are most important, and subsequently, we will understand which automations should be prioritized.

We will evaluate the procedures by applying the standards outlined in section 3.2.1 as an indicator to decide whether or not using RPA technology in these processes is appropriate.

The most important six requirements are the following (Joseph & Le Clair, 2020; Josephson, 2020; Le Clair, 2018; Ostdick, 2016; Painter, 2019; UiPath, n.d.-a):

• Complexity of the Processes;

• Transaction Volume;

• Stability and Standardizations;

• Time-consumption;

• Amount of manual work;

• "Rule of 5".

Additionally, the prioritization will be made taking into account the benefits that the automation will offer, thus obtaining and implementing the most beneficial and crucial changes.

4.4.1. RPA-ready Analysis

Considering the previously established criteria is necessary to analyze this process from an RPA-ready standpoint.

1. Complexity of the Processes:

3 applications and 2 websites are used in this process – Jira tickets, ERP Oracle Cloud, Excel, Societe website, and Iban calculator website. Moreover, it doesn't demand a significant cognitive ability as it consists of straightforward tasks, mostly copying and pasting information, and gathering pieces of information.

2. Transaction Volume:

Approximately 350 tickets are involved in this process each month (88 tickets per week), which places an enormous load on the team.

3. Stability and Standardization:

This procedure follows a well-defined workflow and complies with predetermined guidelines. It depends on very stable applications since they don't require a lot of handling of exceptions for automation and rarely receive significant updates.

4. Time-consumption:

This operation takes an average of 20 minutes per ticket, and due to the high volume of work that the team faces, there is an average take time (waiting time) of 1 hour.

5. Amount of manual work:

This process is executed completely in a manual way.

6. "Rule of 5":

Less than five decisions are made in the procedure, and only three applications are used, which are less than the five applications specified by the rule.

4.4.2. Operational Benefits

As mentioned previously in section 1.1 the company will benefit from reducing future costs, which are not only directly related to personnel but also to Oracle cloud licensing, which tends to have a significant cost. Additionally, given that the supplier creation, veracity verification, and bank details verification are monotonous, adding the RPA would have a positive impact on the well-being of the workers. Moreover, they will have the opportunity to explore new tasks. On top of that, as a result of the RPA implementation, workers will also have the chance to shift to other areas that need more attention, thus developing new skills in new tasks. Also, as stated before, the RPA will make the creation of suppliers faster and reduce the human mistakes made.

Nonetheless, overall, the company will become more efficient and effective in the supplier creation, supplier veracity verification, and supplier bank details verification processes. Furthermore, we will produce future cost savings related to personnel and we will have an overall faster process with less resources, thus having more profit. Lastly, due to the implementation of a new technology, the company will become more competitive in the market.

4.5. PHASE 5: TO-BE MODELLING

This phase reflects the result of the processes that were updated taking into account the As-Is procedure and the deficiencies found. The models that are shown below line up with how the procedures ought to be carried out in order to increase the speed and efficiency of the current creation, verification of veracity, and verification of bank details process.

After analyzing the As-Is model it is clear that with the use of an RPA, we could reduce the number of processes needed to create the supplier. As previously stated, it takes around 20 minutes to completely create a supplier manually, however, with the addition of an RPA not only we are reducing the number of processes needed, but we are also reducing the time to completely create a supplier. The model of the future To-be process shown in the following figure outlines all these changes to the process.

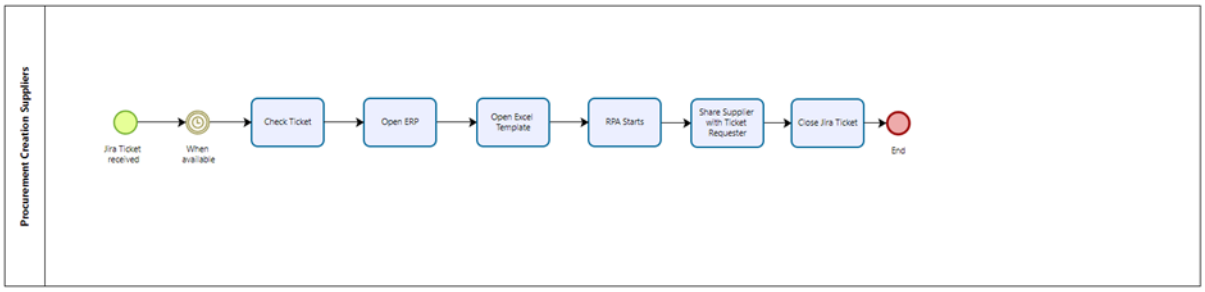

Figure 4.4 - To-be Procurement Creation Supplier Process Model

Source: Prepared by the author

As can be seen in *figure 4.4* we have eliminated the subprocesses "Check Company Authenticity Subprocess" and "Check Supplier Bank Account Veracity". On top of that, we have removed the processes where the CoE PROC Specialist needs to manually create the supplier and add the information to the supplier profile, supplier address, supplier site, and supplier contact. By doing so, the CoE PROC Specialist no longer needs to be innumerous times copying and pasting the information from the Excel file down to the ERP Oracle Cloud software as it has been previously mentioned previously in section *4.3: As-Is Model*. Additionally, by removing these processes, we have immensely turned the process of creating a supplier much faster than before.

4.6. PHASE 6: DEVELOP AND IMPLEMENT RPA

This project phase describes how the RPA was developed using the UiPath automation tool and how each process is implemented.

During this phase, the focus shifted towards the development and integration of the RPA into the ERP Oracle Cloud framework. The process starts by copying all the information that exists in the Excel spreadsheet, such as the supplier name, tax registration number, taxpayer id, address, contact information, email, bank account, payment method, payment terms, and opening the Oracle Cloud ERP and pasting it on the various fields. Inside of Oracle Cloud ERP the supplier is composed by four parts, the profile, address, site, and contacts. The RPA was designed to be able to copy the information needed for the profile and paste it in the correct places, and the same happens address, site, and contact information.

4.7. IMPACT EVALUATION

As previously mentioned before, in this chapter, we will take a closer look by exploring the results of the impact analysis and advantages of using robotic process automation in our project. We will evaluate how well RPA streamlines operations and reduces costs by looking at particular metrics and performance indicators.

Moreover, we will also discuss the project benefits associated with the implementation of the RPA.

4.7.1. Project Benefits

The average number of tickets related to the creation of suppliers per week is 88 tickets, as mentioned before each ticket takes around 20 minutes to be concluded, which means that per week we are using around 29 hours to perform a single task. With the implementation of an RPA, this process should take around 10 minutes to be concluded, which means that per week we will start spending around 14.5 hours on this task.

As a result, the use of an RPA would save approximately 50% of the time previously spent on the process. Moreover, we would be saving per month around 400€, which equals to half of the cost of one FTE (full-time employee).

	Automation Standards						Projected Savings	
Process	Complexity of the Process	Average number of tickets	Stability and Standardization	Average Time Consumption	Amount of Manual Work	"Rule of 5"	Time Reduction	Cost Reduction
Creation of Suppliers	3 Apps	Aprox. 350	Rule-Based Stable Process Stable Apps	20 min	Fully	Complies	Aprox. 88h	Aprox. 400€

Table 5.1 - Process Analysis Summary

Source: Prepared by the author

However, as the company will have to use two software's, Oracle Cloud ERP and UI Path we can not forget that it will be mandatory to acquire licenses to both programs. As we know, Oracle Cloud ERP and UI Path licenses tend to cost thousands of euros, in some cases companies often opt to not use such programs due to their cost. In this case, it would be

necessary to have a study done with the financial department to understand if the cost of licenses could be affordable. Knowing that the licenses for Oracle Cloud ERP Procurement cost around 35.000€ per year without the software update license and support, and the licenses for UiPath cost around 10.000€ per year, once again without the software update and support service included. So, it is crucial to evaluate the cost-effectiveness and return on investment of implementing these technologies and understanding if it is worth it to have them, as some companies end up giving up on applying these innovations due to the high cost of licensing.

Taking into account the previous numbers, with the purchase of all the licenses we would still have an expense of around 40.000€ per year.

	Value
Oracle Licenses	-35,000.00 €
UiPath Licenses	-10,000.00 €
RPA Cost Reduction	5,000.00 €
Total Cost Saved	-40,000.00 €

Table 5.2 – Cost Analysis Summary

Source: Prepared by the author

Furthermore, to buy the Oracle Cloud ERP licenses all the modules require a minimum of 5 users in some cases, but for certain modules, the minimum number of users can go from 10 up to 10.000 users. Which can contribute to the failure of the implementation, since some companies lack the number of users necessary.

To conclude, with the presented scenario the company will no longer be able to save money, but instead it will have a very high expense per year to buy all the licenses to be able to use the softwares. However, this investment will promote a better customer service experience, along with improved well-being for the staff.

5. CONCLUSIONS

5.1. SUMMARY OF THE DEVELOPED WORK

This project was initiated with the purpose of showing how to implement a Robotic Process Automation in Oracle Cloud ERP with the objective of not only saving costs to the company, being able to answer to high number of supplier creation requests, but also improving the customer experience to the users.

It was fundamental to review the body of the existing literature regarding the methods, approaches, and technologies used in the development in order to guarantee that this project complied with the industry's best practices. Thus, it became evident that the project's development demanded four steps:

Initially, it was important to understand which processes the Center of Excellence team thought were most appropriate for automation. To do so, several meetings had to be held to collect all the data required for each process. As a result of this collection and collaboration, it was possible to assemble the As-Is model, thus having a better view of the current processes. On top of that, having the As-Is model enables us to better understand what needs to be automated and where to automate.

Furthermore, with the previous model mentioned before, we managed to analyze accordingly with the aspects expressed in the literature review regarding the automation of processes, such as: Complexity of the processes; Transaction volume; Stability and standardization; Time-consumption; Amount of manual work; "Rule of 5".

Afterward considering the literature, we prioritized the processes, and subsequently, we designed the To-be model, which is a combination of the As-is model with the addition of all the improvements that seemed to be feasible towards our goals of the implementation. It is important to refer that, as this process was already optimized the only focus that was needed was the automation part, if not, the automation part could rather have a negative impact.

At last, the RPA procedures could be automated with the help of the UiPath Studio tool. Additionally, the fact the 6 steps are followed makes the possibility of having a much better and more positive outcome.

The project's main objective was achieved, according to what was stated in Chapter 1, through the implementation of 3 automations, due to the milestones set in the beginning. The Center of

Excellence team said that the automations had a huge impact on the daily tasks, which helped them reduce their response time, improved their well-being since they no longer have to do monotonous tasks and have more time to dedicate to important tasks or learn new skills. Not only we were able to have a significant impact on the lives of the team, but we also had an impact on the requesters who would wait longer for a response. Moreover, we were also able to reduce costs to the company, as we can reduce the team by one member.

5.2. LIMITATIONS

The project might face security barriers inside of the organization, as it will be necessary the approval to use the UiPath tool. Additionally, it is necessary to acquire a new license for Oracle Cloud, so we can have an account being used only for this purpose. Moreover, the fact that RPA needs access to the system and data, could possibly introduce security vulnerabilities. On top of that, it is required to have an ongoing monitorization of the RPA so we can assure that is meeting our goals. This means that we will have to have additional costs to have ongoing support for the tool. Additionally, as mentioned in *4.7.1* there will be other costs added to acquire licenses, development costs, and implementation costs. Not only the costs can go up to the thousands of euros, but there is also a need to have a minimum of users depending the module that will be implemented, thus having the possibility of not being able to be profitable.

5.3. FUTURE WORK

With the adoption of RPA by the company 'Hydra Marley' it can be achievable in the future to have other processes automated and there is also the possibility of optimize even further the existing RPA in order to not only do more work, but also become quicker.

The supplier creation process showed to be the most used process in the company, not only that, but it was also the one that was taking more time to be concluded, thus making it the best candidate for automation. On top of that, the process itself was already quite optimized, so the automation was something that would have a positive impact.

As analyzed in the As-is model supplier veracity and bank account verification, were 2 different processes that were dependent on each other, however, in the future, there is the possibility of removing both processes if the requesters do these verifications themselves.

One idea would be to conduct afterward the implementation itself and do a study or surveys regarding the employees' satisfaction in relation to the automation of the processes.

Also, another opportunity would be to use automation to not only open the ticket and the files, but also to close the ticket and share a screenshot of the supplier creation with the requester.

Lastly, since the company now has a new perspective and view on automation, a study could be done inside the company to understand which processes are the most time-consuming and then apply the automation.

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APPENDIX

A. Business Process Model and Notation Poster

Source: http://www.bpmb.de/images/BPMN2_0_Poster_EN.pdf