Robotics process automation implementation in a large South African insurer

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ABSTRACT

Objectives

This report examines the direct and indirect impacts of robotic process automation (RPA) at Insurer X, a South African insurance company. The study will synthesize the results and key learnings into a roadmap for the successful implementation of RPA in other South African organizations and industries. The study also aims to contribute to the RPA body of knowledge and provides a platform for other researchers to build on. The study followed an inductive thematic approach to data analysis.

Methodology

This report is a qualitative case study design where the primary data collection method is semi-structured in-depth virtual interviews. Participants (Insurer X employees and an industry expert) were selected using a combination of purposive and convenience sampling to ensure knowledge of RPA and involvement in the project at Insurer X. This also ensured gender and role diversity and rich industry and RPA experience.

Results and conclusion

Nine participants were interviewed. The results indicate that RPA, directly and indirectly, benefited Insurer X across multiple areas, and these impacts are significant and, to a large extent, known; however, the indirect impact is unmeasured and not attributed to RPA. Twelve themes emerged when investigating critical success factors, learnings, and noteworthy barriers. These themes are synthesized into a roadmap for successful implementation.

Implications for theory and practice

The findings establish that significant direct benefits are achievable for insurance organizations wanting to pursue RPA in South Africa. There are also indirect benefits associated with RPA that can be measured if organisations are more deliberate upfront. There are key factors, learnings, and barriers that, if

appropriately navigated from the start can increase the likelihood of success and the benefits achieved.

Keywords

Robotics process automation, South Africa, financial services, insurance, benefits, financial impact, roadmap, implementation

DECLARATION

I, Mohamed Sader, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Name: Mohamed Sader Signature: 

Signed at: Cape Town

On the 29th **day of** June 2023

DEDICATION

To my wife, my rock and my supporter. Thank you for keeping me honest, for looking after our family and allowing me the space and time to complete this research. It would not have been possible without you.

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LIST OF ACRONYMS

AI – Artificial Intelligence

BPA – Business Process Automation

CoE – Centre of Excellence

DOI – Diffusion of innovation

IT – Institutional Theory

ML – Machine Learning

MS – Microsoft

RPA – Robotics Process Automation

TOE – Technology, Organisation, Environment

CHAPTER 1. INTRODUCTION

1.1 Statement of purpose

The purpose of this study is to examine the direct and indirect impacts of Robotics Process Automation (RPA) and develop a roadmap for successful implementation using a single case study methodology in the operations area of a well-established large South African long-term insurer (hereafter referred to as Insurer X). The research is theoretically rooted in the Diffusion of Innovation (DOI), the Technology-Organisation-Environment (TOE), and Institutional Theory (IT) for organisational technology adoption theories. The research model is an extension of Andresen et al. (2000) “Framework for Measuring IT Innovation Benefits” and an extension of Liévano-martínez & Fernández-ledesma’s (2022) paper on the “Roadmap for the implementation of robotic process automation in enterprises”.

1.2 Background of the study

Accelerated Use of Technology

Technology and digital services use in many industries is growing and accelerated by the global covid 19 pandemic. According to a survey done by Sungard Availability Services (2020b), the use of digital services by 2000 American consumers more than doubled during the pandemic across multiple industries, and 94% of these consumers use mobile financial services (Sungard Availability, 2020a). The rise in availability and usage of digital services leads to increased volume and speed of information flowing between consumers, intermediaries, and companies. Ribeiro et al. (2021) highlights the importance of business process automation, particularly RPA, in processing and responding to this increase (in volume and speed) quickly and accurately.

Definition of RPA and BPA

Business process automation (BPA) is the automation of manual tasks and processes using technologies such as RPA, machine learning (ML), and artificial intelligence (AI) (IBM, 2021).

RPA, a subset of BPA, is the automation of manual office tasks that involve a sequential, logical set of steps on applications using robotic software. These tasks are automated using the RPA technology which essentially creates software robots that mimic human behaviour (Doguc, O. 2019). Doguc describes the term RPA as being used as early as the mid-2000s however notes that terms such as “computer vision” and “workflow automation” were being used earlier. Additional features of the RPA technology are that it allows users to build automations visually as opposed to doing it by code therefore eliminating the need for coding knowledge as well as having the ability to recognize characters optically which is known as optical character recognition (OCR).

According to the literature review findings of Ivančić, L., Suša Vugec, D., & Bosilj Vukšić, V. (2019) RPA is described as applying the technology and methodologies associated with it to automate repetitive rules-based tasks through multiple existing visual interfaces. Depending on the complexity of the task, this definition could extend to AI, cognitive computing, process mining, and data analytics.

In the paper Process automation using RPA – a literature review, Moreira, S., Mamede, H. S., & Santos, A. (2023) summarize the definition of RPA citing multiple papers as “an emerging technology, with advanced capabilities, which allows, through software mechanisms, the automation of routine and quite standardized tasks that would previously be performed by humans”.

Key parallels can be drawn from the above definitions of RPA. It is an emerging technology; its purpose is to automate repetitive rules-based tasks. It allows the user to do this using visual tools as opposed to coding, its application ranges from

basic tasks to complex automation using a basket of technologies, and it is done using the existing graphical interfaces of other software applications.

High level benefits of RPA

According to IBM (2021), there are four key benefits associated with using RPA: reduced labour costs, improved productivity, increased accuracy, and improved customer experience. Additionally, operational efficiency, quality of service, cost, and ease of implementation are cited as key benefits of RPA (Syed et al., 2020). The literature review unpacks this in more detail.

The Insurance Industry

RPA is most effective in industries where there is a high reliance on multiple legacy systems which are labour (and manual task) intensive and where the cost of automating using straight through processing (STP) is costly, time-consuming, and creates technical debt (IBM, 2021). According to IBM, the insurance industry is one where RPA is applicable due to the need to process claims, withdrawals, communication, and underwriting processes. RPA is also relevant across other areas of financial services and is used as chatbots and, more recently, robo-advice (Hyun et al., 2021).

Insurer X

Insurer X is a well-established life insurance company based in South Africa. Insurer X began its RPA journey in 2017 and, over two years, developed a mature RPA centre of excellence with more than 100 robots automating over forty processes, returning over five million minutes in 2019 alone and twenty-two million minutes to date. Insurer X has cited a significant reduction in operating costs and improved customer experience due to its implementation and has received various awards for its RPA implementation.

This paper examines the direct and indirect impacts of RPA at Insurer X. It synthesizes the results and key learnings into a roadmap for successful implementation to benefit other South African organisations and industries. It also

aims to contribute to the RPA body of knowledge and to provide a platform for other researchers to build on.

1.3 Research problem

This study of the direct and indirect impacts of RPA on a large South African Insurer is to understand the full extent of the impact and benefits of implementing RPA in the insurance industry in South Africa. Additionally, it is to create a roadmap for successful implementation to benefit others wanting to follow a similar path.

This research aims to build on existing studies by developing and measuring impact against a complete set of variables and using the case study to develop an implementation roadmap.

1.4 Research objectives

The overall objective of this research is to study impacts of RPA in a case study format to understand the full extent of the impact and benefits of implementation. Additionally, it is to create a roadmap for successful implementation to benefit others wanting to follow a similar path to help address these challenges. Specific objectives:

1. Assess the direct impacts of RPA on a long term insurance organisation
2. Assess the indirect impacts of RPA on a long term insurance organisation
3. Develop a roadmap for implementation of RPA in a long term insurance organisation

1.5 Rationale

Interest in this topic stems from involvement in the RPA team at Insurer X at the infancy stages (2018 – 2019) and understanding the potential benefits and

challenges of bringing automation technology into an established organisation and making it successful.

As described previously, the use of technology, particularly BPA, is accelerating due to increasing information flow, and the use of mobile financial services is rapidly increasing. RPA, a subset of BPA, is most effective in industries with high technical debt and aged processes (like the Insurance Industry).

The technology has wide-ranging benefits and key learnings that could improve the success rate of future implementations.

Multiple key studies were reviewed, including “Robotic Process Automation: Contemporary themes and challenges” by Syed et al. (2020), “The strategic impacts of Intelligent Automation for knowledge and service work: An interdisciplinary review” by Coombs et al. (2020), and “Improvement of business productivity by applying robotic process automation” by Hyun et al. (2021).

Syed et al. and Hyun et al. address the direct benefits associated with RPA. In the paper “Robotics Process Automation: Contemporary themes and challenges” Syed et al. researched only the direct benefits and did not consider the indirect benefits of RPA. This study also did not translate the financial impact associated with RPA.

In “Improvement of Business Productivity by Applying Robotic Process Automation” Hyun et al. (2021) highlights the increases in productivity and accuracy as a result of RPA but again fails to take into account any indirect benefits, and there is no translation into financial benefit and return on investment.

In summary, this research describes the direct impacts of RPA against a limited number of variables and provides learnings in a developed country context. There are indirect impacts of RPA that have been articulated but not studied and measured, as well as learnings in a developing country context, that need to be studied and will add value to the field. Also, there needs to be more research into how these impacts translate into financial benefits, which presents a key challenge in investment decision-making (Syed et al., 2020). Another key

challenge cited in the literature is the lack of comprehensive variables for benefits (Syed et al., 2020). This study will provide a unique perspective on the impacts of RPA in the South African Insurance context. This study is important because South African organisations (all sectors) are beginning to see the potential value in RPA, and the technology is widely adopted. However, there are unique challenges faced in this industry, such as skills availability and staff displacement concerns (Burrows, 2021).

1.6 Delimitations of the study

i. This study focuses on RPA and excludes other areas of intelligent automation, like ML and AI.
ii. The research is based on a single (however successful and mature) case study in the South African insurance industry.
iii. Impacts are estimates of average ranges across different process types based on participant recollection.

1.7 Definition of terms

Term	Definition	Reference
Robotics Process Automation	The technology is defined as a rules based solution that is applied to compatible front end applications and in some cases described as adaptable to change. The purpose of RPA is to mimic rules-based human tasks performed on front end applications to complete business processes.	Syed et al. 2020
Financial Services	The financial services sector is comprised of banking, mortgages, credit cards, payment services, tax preparation and planning, accounting, and investing. Financial services are often limited to the activity of firms and professionals, while financial products are the financial instruments these professionals provide to their clients.	The Investopedia Team, 2023
Insurance	Insurance services are available for protection against death or injury (e.g., life insurance, disability income insurance, health insurance), against property loss or damage (e.g., homeowners insurance, car insurance), or against liability or lawsuit.	The Investopedia Team, 2023
Service Operations	The processing of claims, withdrawals, communication and underwriting processes	IBM, 2021

1.8 Assumptions

The research uses in-depth interviews as the main instrument. It, therefore, assumes that the participants will answer truthfully to the best of their knowledge and that their responses will be unbiased. The sensitivity of this assumption is high.

The individuals interviewed include those who were part of the RPA implementation. It is assumed that this does not affect the answers in the interviews. The sensitivity of this assumption is high.

In instances where there is no direct link between cause and effect but where this is reasonably deductive, this will be assumed. The sensitivity of this assumption is high.

1.9 Chapter Outline

This study aims to examine the benefits of RPA at Insurer X and develop a roadmap for successful implementation for South African organizations pursuing the benefits of automation technology.

Chapter two provides a literature review of the topic and discusses the background. It outlines the examined propositions. It also provides an analytical framework that forms the basis for assessing the impacts of RPA.

Chapter three describes the applied research methodology. It also includes the approach, design, data collection, and population and sampling methods. It provides a summary of the main research instrument and outlines procedures that followed regarding collecting and analysing data.

Chapter four presents the findings of the paper post data collection and analysis per proposition to make it easy for the reader to connect to previous chapters' contents.

Lastly, chapter five discusses the paper's findings and draws conclusions based on these findings per proposition. It also provides recommendations based on these findings and suggestions for further research.

CHAPTER 2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

This literature review summarises the definition of RPA and reviews studies on prior implementations, the context of these studies, and the impacts these studies have surfaced. It also explores how these impacts have been measured and translated into benefit and overall financial impact and in what context, and assesses any existing roadmaps to successful implementation.

2.2 Definition of topic and background discussion

Definition of RPA

Syed et al. (2020) reviewed papers that attempted to define RPA explicitly and in comparison to other fields and noted that RPA is sometimes defined from a technology perspective and sometimes from a purpose perspective. He also notes that in the definition from a technology perspective, the scope of RPA could be more consistent between the definitions. The technology is defined as a rules-based solution applied to compatible front-end applications and, in some cases, described as adaptable to change. The purpose of RPA is to mimic rules-based human tasks performed on front-end applications to complete business processes.

The Adoption of RPA

The RPA technology was developed in the 1990s, with the application becoming popular in the early 2000s. It was born out of the development of ML and AI through the development of Natural Language Processing (NLP) and Workflow Automation tools (Javapoint, 2021). Below is a depiction of the multiple levels of automation and how they progress from Balasundaram & Venkatagiri (2020).

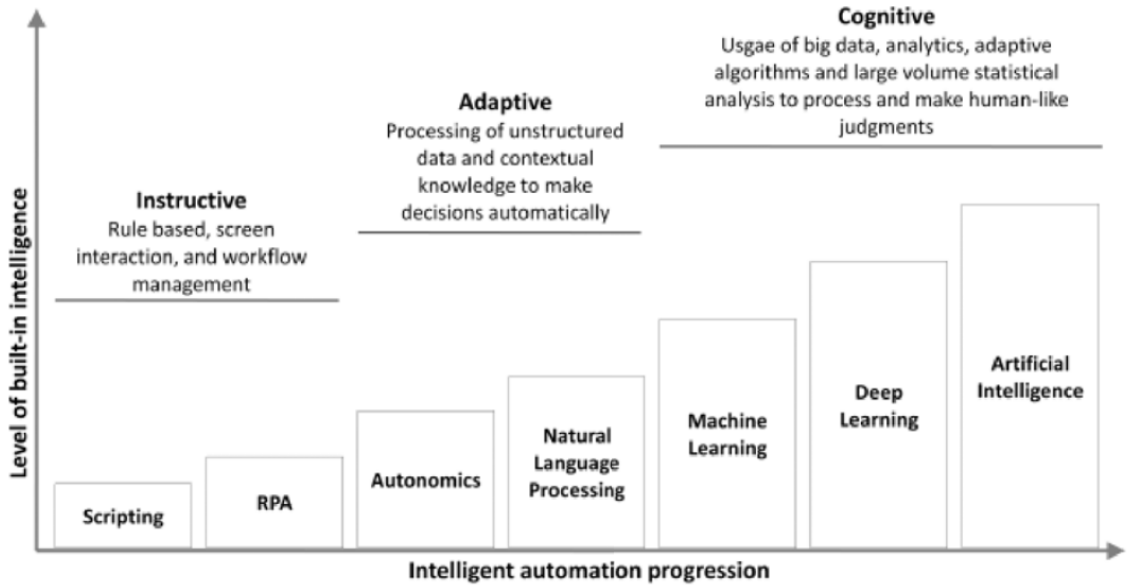

Figure 1: Intelligent Automation Progression (Balasundaram & Venkatagiri, 2020)

RPA is expected to grow 30.9% (calculated average growth rate) from 2021 to 2030 in financial services alone (NASDAQ OMX Corporate Solutions, Inc, 2022). The main drivers of this growth will be transaction processing requirements and the drive to improve customer experience. As described earlier, there is also a high demand for RPA in South Africa.

South African Insurance Industry Challenges and RPA

Section 1.5 briefly discusses the rationale for this study. South African organisations (all sectors) are beginning to see the potential value in RPA, and the technology is widely adopted. It also briefly highlights challenges faced in the insurance industry, such as skills availability and staff displacement concerns.

In the paper Organizational adaptation to Complexity: A study of the South African Insurance Market as a Complex Adaptive System through Statistical Risk Analysis, Paul, S., Twala, B., & Marwala, T. (2012) discuss the significance of the South African Insurance industry in the broader African landscape citing “an annual compound growth rate of ~12% between 2004-08” and “is expected to

grow at a CAGR of 8.3% in between 2009-14" highlighting the importance of the sector in the broader African context. Further to this, there are challenges specific to the South African insurance industry that underline the importance of RPA as a technology solution.

The report "South Africa: Insurance Industry Update" (Millman, 2023) describes additional challenges being faced by the South African insurance industry including pressure on new business and margins because of the Covid 19 pandemic, continued load shedding driving up claims, and increased use of machine learning in the insurance industry. These challenges are putting pressure on South African insurers to compete for market share through improved customer experience, improve operating efficiency and reduce costs, and seeking new ways to increase competitive advantage. It is therefore important to understand the importance of RPA as a key enabling technology thus underlining the relevance and importance of this study. Also discussed in Section 1.5 are prior studies focused on the direct impact of RPA not in the South African context, with limited measurement of the impact.

2.3 Assessing the impacts of RPA

2.3.1 *Variables to measure direct and indirect benefits, and impact as a result of RPA*

A critical question that needs to be answered when embarking on the process automation journey is, "What benefits will RPA bring to my organisation?"

In the paper "The strategic impacts of Intelligent Automation for knowledge and service work: An interdisciplinary review", Coombs et al. (2020) comprehensively reviews 1581 papers that attempt to answer this question. One of the questions posed in this paper is, "How have Intelligent Automation investments influenced business process performance or organisational performance?" In his paper, Coombs et al. cites two case studies. The first one, by Lacity & Willcocks (2016a), was done on RPA implementation by Telifonica O2 (a British telecommunications service provider). This organisation developed 160 robots and automated 15

processes. The impacts cited as a result of this implementation are reduced FTEs, process cycle times, and improved customer experience. The second case study, also by Lacity & Willcocks (2016a), was done on an implementation by Xchanging (a British business process and technology service provider). This organisation developed 27 robots, and automated 14 processes, and the impacts cited were improved cycle times. In both these cases, overall organisation performance was not directly linked to implementing RPA (Coombs et al., 2020). Coombs et al. also eludes to indirect benefits in the redeployment of people to more productive work and benefits associated with humans working together with automation. These benefits were not measured as part of the study.

As it relates to suitability, Coombs et al. discusses contextual factors and how they impact automation and concludes that the literature suggests that several factors affect the success of automation implementations. These factors include employees' acceptance of the technology (Davenport et al., 2012) and the nature of the industry (Balram et al., 2016). No other factors were discussed. Coombs et al. concluded that there are significant research gaps to help organisations determine the right approach to RPA implementation (business selection, process selection, level of automation, benefit levers, and impact on organisational performance).

Syed et al. (2020) reviewed 42 papers exploring the impact and benefits of RPA. The key themes highlighted were increased operational efficiency, improved quality of work (accuracy) and service, faster implementation timelines, and improved risk management and compliance.

Table 1 summarizes the benefit themes and measures based on the papers reviewed.

Theme	**Variable/Metric**	**Impact**	**Paper**
Operational efficiency	Reduction in time	Not measured	Syed et al. (2020)

Theme	Variable/Metric	Impact	Paper
	Reduction in cost of human resources	“Hundreds”	Lacity & Willcocks (2016a)
	Reduction of manual tasks and workload	30 – 70% reduction in cycle time	Lacity & Willcocks (2016a)
		“Days to minutes”	
		“several days to 30 mins”	Lacity & Willcocks (2016b)
	Increased productivity (robots can work 24/7 and redeployed people to value-adding tasks)	Not measured	Syed et al. (2020)
	Number of full time equivalent employees replaced by robots	20 – 50% reduction	Syed et al. (2020)
	Cost of transaction processing	30 – 60% reduction	Syed et al. (2020)
Quality	Decreased errors	Not measured	Syed et al. (2020)
	Increased availability of systems	Not measured	Syed et al. (2020)
	Increased availability of services	Not measured	Syed et al. (2020)
Implementation and Integration	Cheaper to implement and maintain	Not measured	Syed et al. (2020)
	Easier to implement	Not measured	Syed et al. (2020)
	Quicker to implement	Not measured	Syed et al. (2020)
	Non-intrusive technology	Not measured	Syed et al. (2020)

Theme	Variable/Metric	Impact	Paper
Risk management and compliance	Reducing risk	Not measured	Syed et al. (2020)
Financial Benefit	Return on Investment	600-800%	Lacity & Willcocks (2016a)

Table 1: Summary of Variables Used to Measure Impact of RPA

There are important things to note regarding the suitability and benefits of RPA. Firstly, there is no direct correlation between the implementation of RPA and benefit realisation as there are contextual factors such as type of organisation, type of workforce, nature of legacy applications, quality of implementation, and maintenance that all impact benefit realisation (Syed et al., 2020).

Secondly, the above describes the benefits of RPA measuring direct impacts. It excludes the impact of indirect benefits, i.e., the benefit as a result of redeploying workers replaced by RPA to more value-adding tasks or the increased utilisation of systems as well as an overall benefit to the organisation over a period of time (financial benefits, reputational benefit). Syed et al. notes this as an area worth studying further.

Thirdly, this research is mainly European based, with the two case studies referenced both being British.

2.3.2 *Proposition 1*

The direct impact of RPA positively benefits long term insurance organisations and these benefits to a large extent are known and measured. It would be beneficial to extend this framework to a South African context.

2.3.3 *Proposition 2*

The indirect impact of RPA positively benefits long term insurance organisations and these benefits to a large extent are unknown and not measured. It would be

beneficial to assess the indirect impacts and benefits of RPA in a South African context.

2.4 Develop a roadmap for successful implementation

The Implementation of RPA

Liévano-Martínez & Fernández-ledesma, (2022) proposes a methodology for implementing RPA to maximise organisational benefits. Table 2 summarizes the methodology proposed by Liévano-Martínez & Fernández-ledesma, (2022) and defines crucial analysis phases for successful implementation.

Analysis phase
Define company strategy
Analysis of potential areas for automation
Process identification and analysis
Benefits and economic assessment
RPA implementation • Process mining • Process design • Architecture • Development and testing • Deployment and sustain

Table 2: Analysis Phases for Successful Implementation (Liévano-Martínez & Fernández-ledesma, 2022)

While this study is notable, it is based on experiments in Columbian industries and not on a mature implementation. This factor is important because key challenges in RPA implementation are benefits realisation over the longer term and stability and sustainability of the solution. This study plans to use the framework as a basis and build on it using a mature South African case in the insurance industry.

2.4.1 *Proposition 3*

A roadmap for successful implementation of RPA specific to South African long term insurance would add value to the industry and aid in developing the implementation of this technology and achieving benefits.

Features of this study

This study will build on the above frameworks for measuring the benefits of RPA. It will expand on previous studies by adding variables, assessing overall financial impact, and creating a roadmap for successful implementation using a specific case study in the South African insurance industry. It is, therefore, justified as it will provide a more comprehensive, unique perspective (South African insurance context). This point is important because of the aforementioned adoption of RPA technology in South Africa and the unique challenges faced (load shedding, skills, economy).

2.5 Analytical Framework

As described earlier in this report, the adoption of digital technology is rapidly increasing due to the increase in the flow of digital information, and the covid pandemic accelerated growth. There is also an increase in the number of people utilising mobile financial services. This point highlights the need for BPA. We have also established that there is demand for RPA in South Africa. However, there are also key challenges faced.

2.5.1 *Theoretical Framework*

There are predominantly three theories that discuss technology adoption at an organisational level. They are the Diffusion of Innovation Theory (DOI), the Technology-Organisation-Environment Theory (TOE), and Institutional Theory (IT) (Molinillo & Japutra, 2017). Table 3 summarises how these theories describe drivers of technological adoption.

Theory	Drivers of adoption	Source
Diffusion of Innovation Theory	Adoption driven by innovation: advantage, compatibility, complexity, trialability and observability (Molinillo & Japutra, 2017)	Rogers (1995)
Technology-Organisation-Environment Theory	Technological context, organisational context and environmental context (Molinillo & Japutra, 2017)	Tornatzky & Fleischer (1990)
Institutional Theory	Coercive, mimetic, and normative (institutional factors) (Molinillo & Japutra, 2017)	Scott & Christensen (1995)

Table 3: Summary of Technology Adoption Theories

Molinillo & Japutra (2017), in the paper "Organisational Adoption of Digital Information and Technology: A Theoretical Review", argue that these three theories overlap and are aligned to some extent in how technology adoption is analysed. Based on these theories, multiple researchers have proposed a combination of characteristics that drive technology adoption (Grant et al., 2014; Johnson, 2010; Levy et al., 2005; Kulatilaka & Venkatraman, 2001). These characteristics fall into three categories: innovation, firm, and environment (Molinillo & Japutra, 2017). This research will be based on these characteristics.

Andresen et al. (2000), in the paper "A framework for measuring IT innovation benefits", produces a benefit measurement framework developed and tested for IT innovation in construction. The paper highlights the importance of alignment between technology and business strategy in realising benefits. The paper discusses three aspects of benefits realisation. The first aspect is a process for measuring benefits (Figure 2). It is a structured, sequential process that considers the link between strategy, benefits, techniques, and benefits realisation against targets.

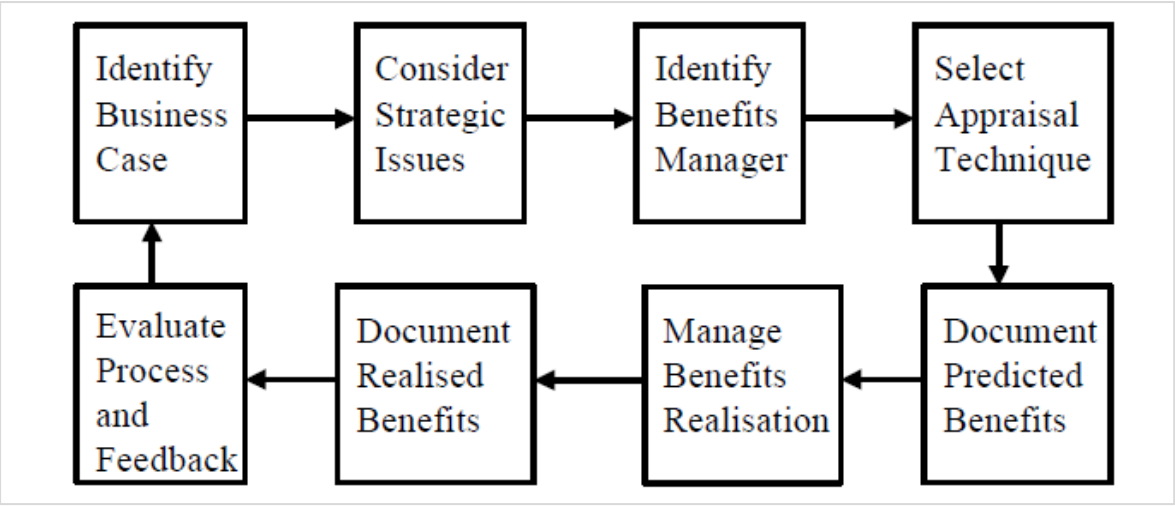

Figure 2: Process for Measuring Benefits (Andresen et al., 2000)

The second aspect is a framework for measuring benefits (Table 4). It aligns benefit factors to business processes and allows tracking of forecasted vs. achieved benefits.

Business Process	Specific Benefits	Implications to this benefit of not making innovation	Means by which benefits will be measured	Monetary value	Likelihood	Expected Benefit	Result	Monetary value
Business Planning								
Marketing								
Information Management								
Procurement								
Finance								
Client Management								
Design								
Construction								
Operations and Maintenance								
Human Resources								

Table 4: Framework for Measuring Benefits (Andresen et al., 2000)

The third aspect is the types of benefits to measure (Table 5). This provides a summary of the benefits across all efficiency, effectiveness, and business performance and distinguishes between quantifiable and non-quantifiable benefits.

Types of Benefits	Expected Benefits	Measured Benefits
Efficiency Benefits – Quantifiable and Valuable	Total forecast monetary value	Total realised monetary value
Effectiveness Benefits – Quantifiable but non-valuable	Total forecast score	Total realised score
Business Performance Benefits – Non-quantifiable and non-valuable		

Table 5: Types of Benefits (Andresen et al., 2000)

The framework for successful implementation proposed by Liévano-Martínez & Fernández-ledesma (2022), as per Table 2, will be used as a basis for objective 3 of this study.

The above theories and frameworks will form the basis for assessing the impacts of RPA and developing a roadmap for successful implementation.

2.5.2 *Conceptual Framework*

The variables noted in Table 1 will be built on through external and internal expert interviews to create a comprehensive set of variables to measure direct and indirect impact. These variables will be baselined for a specific area, and impact will be measured as the change in these variables after the implementation of RPA.

Andresen et al.'s (2000) framework for measuring benefit of IT innovation (Table 5) will be built on accounting for insurance-specific factors, which will be used to measure the impact of these variables and translate into financial benefit for the organisation. Lastly, the roadmap for successful implementation will be an

extended version of Liévano-Martínez & Fernández-ledesma's (2022) framework.

2.6 Conclusion of Literature Review

RPA has been shown to have a positive impact (directly and indirectly) on organisations, and this impact has been measured to a certain extent but has yet to be comprehensive. Additionally, there is evidence of guidance for the successful implementation of the technology broadly, but not specific to the insurance industry where the technology is highly applicable and not in a comprehensive manner. There is, therefore, significant justification for this study.

CHAPTER 3. RESEARCH METHODOLOGY

The literature review discussed the variables that RPA directly impacts, the extent to which these variables are impacted, and in some instances, the financial impact (Syed et al., 2020; Coombs et al., 2020). This study aims to create frameworks for impact and successful implementation by expanding on these variables to include additional direct and indirect variables and measuring how they were impacted in this case study and incorporating key learnings.

3.1 Research approach

This study uses a qualitative approach to identify the factors to assess the direct and indirect impact and how these factors were impacted due to the implementation of RPA. It also synthesizes the learnings from this implementation into a roadmap for successful implementation. The primary data collection method was via interviews with experts and employees, including executives, managers, engineers, implementation partners, and software partners.

A qualitative approach was selected and is applicable because of the complex nature of the research problem this paper is discussing. Multiple areas of impact were investigated, incorporating experiences from individuals with different roles at different levels with different involvement, and investigating the impacts in a specific context (point in time, at a specific organization, and addressing specific challenges). This study collects data from people involved in the case study (employees and experts).

Qualitative methods are suited to research problems that are complex with multiple components and addressing specific contexts (Busetto, L., Wick, W., & Gumbinger, C. 2020). Qualitative research is used to help researchers understand a specific issue or phenomenon at a detailed level and to develop learnings to inform future decisions and actions (Lester et al., 2020). A qualitative research approach's key benefits are that it allows for a broader context, a more

comprehensive scope and dimensions, and more flexibility in the process. Possible limitations are that the theoretical framework and hypothesis need to be more structured (Almeida et al., 2017). A qualitative approach is appropriate for this research, given the broad scope of the phenomenon in question and the flexibility required in the data collection process.

3.2 Research design

The research involves assessing the impact of RPA in a specific context and developing a roadmap for successful implementation using the learnings from this context/reality. In-depth data was collected from various wide-ranging sources (observations, interviews, and audio-visual materials). The research required flexibility as additional variables and phenomena are uncovered in the research process.

With this context, the overall research design followed is a qualitative Case Study design. It is defined as “a contemporary phenomenon in its real-life context, especially when the boundaries between the phenomenon and context are not clearly evident” (Bonoma et al., 1981).

A Case Study design is appropriate because (Case Study Design Advantages and Disadvantages, 2022):

- It allows for the collection of data from multiple sources
- It gives the ability to capture context
- It allows for flexibility
- It will help guide the study within the bounds of this specific case

Potential disadvantages of using the Case Study Design (Case Study Design Advantages and Disadvantages, 2022):

- Risk of researcher bias
- Not easy to generalize to other organisations, contexts

Due to the in-depth nature of the interviews required to investigate the impact of RPA, as well as the importance of context of Insurer X to the research, the Case

Study design is well suited to the research. Additionally, RPA is investigated in a real-life context which further justifies the Case Study design.

3.3 Data collection methods

Critical data collection was in the form of interviews (industry experts and employees) via teams and in person, where possible. Supplementary data was requested directly from participants (MS Word, Excel and PowerPoint). The participants consist of employees (executives, managers, specialists, and third-party delivery and implementation partners). Refer to Appendix A for the high-level interview guide that will be utilised. The instrument was adapted from (Eval Academy, 2022), and the areas are formulated based on the literature review and personal knowledge.

The interview questions were adapted to the individual participant as well as how the interview progressed to ensure maximum productivity. Where possible, interviews were conducted in person. Alternatively, they were conducted via Microsoft Teams and recorded as well as transcribed.

3.4 Population and sample

3.4.1 *Case Site*

The case study was done at Insurer X in South Africa. The population for the case study was limited to employees and third party implementation and software partners who worked in the RPA CoE for the period in question.

As noted in chapter 2, Insurer X has developed a mature and robust RPA capability that won two awards and delivered significant operational and customer experience benefits.

3.4.2 *Sample and sampling method*

A combination of purposive, stratified, convenience, and snowballing sampling was used. Purposive sampling is when judgement is exercised in selecting

participants. Stratified sampling is when participants are selected based on specific categories. In this instance the stratification is based on areas of the business as well as role types (i.e., Operations, RPA CoE and managers and specialists) (Scribbr, 2023). Convenience Sampling is when participants are selected based on availability and willingness. Snowball sampling is when participants are selected based on referral (Masters in Digital Business, 2022). This is because participants need to be specifically selected based on their knowledge and involvement in the project. This is a defined list of individuals and cannot be random. Not all of these individuals were readily available, so convenience sampling was used. Also, depending on what was uncovered in the initial interviews and if certain phenomena needed to be investigated further, snowballing sampling was used where additional participants were referred.

A pre-selected list of 10 individuals were identified as the target population. This number of participants has been chosen because it is believed that the point of theoretical saturation will be reached within this number. Theoretical saturation is the point at which data is considered saturated, and the addition of sources adds no new information (Nascimento et al., 2018). One interview per individual was conducted. Each interview was made up of 6 areas of interest, with 11 questions.

Role/Cadre	Count
Executive Head	1
Operations Business Leaders	3
RPA Delivery Manager	4
RPA Subject Matter Expert	1
Senior Business Analyst	1

Table 6: Participant Roles

The target list of ten participants were initially identified based on purposive, stratified and convenience sampling across five cadres (refer to table 6). One additional candidate was identified based on snowball sampling in the Finance cadre.

3.5 The research instrument

The main research instrument was in-depth interviews in person and via MS Teams. A high-level interview guide can be found in Appendix A. As mentioned, the questions are pre-defined and unstructured to semi-structured (with room for adaptation based on individual participants and how the interview progresses). This approach allows the researcher to collect dense information, allows follow ups, and enables the researcher to make connections across topics and themes. Potential limitations are that it requires significant time from participants and it is not generalizable (Almeida et al., 2017).

3.6 Procedure for data collection

The Insurer X Customer Experience Director was approached for approval prior to data collection. Individual participants were directly approached to determine willingness, schedule and conduct interviews where possible face to face, alternatively by video call (MS Teams). Signed consent was obtained from the list of individuals in Table 6 prior to scheduling.

3.7 Data analysis strategies and interpretation

An inductive approach to data analysis was taken in this research. In this approach, the researcher analyses data, looks for patterns, and develops themes and theories after data collection (Inductive or Deductive? Two Different Approaches, 2022). This approach is appropriate because it will allow themes to develop based on data collection. Qualitative data will be analysed using various forms of analysis. Thematic analysis was used to analyse data as Lester et al. (2020) argues that it forms the basis for other forms of analysis and is easy to learn and apply.

Steps followed in analysis adapted from Lester et al. (2020) are as follows.

Phase	Action
Prepare and organise data	Co-locate, digitise, index and catalogue data in preparation for analysis. This includes transferring written notes into word or PDF, putting all files in a single location with an understandable file structure.
Transcribe data	Convert any video conference meetings into notes (fortunately this is automated in MS teams). Do the same for any videos.
Understand the data	Conduct a high level scan of the data to get an idea of what has been collected and create a mind map for reference.
Interpret and internalise the data	This serves as an early analysis period whereby early reflections of data are written down and internalised.
Coding	Assign meaning to the data in the form of codes using one of the many coding methods available (coding done in Microsoft Excel and Microsoft Word).
Creating themes	Develop categories and themes as a result of the coding process. Identify relationships between categories and themes.

Table 7: Conducting a Thematic Analysis (Lester et al., 2020)

3.8 Possible limitations and challenges of the study

- Potential researcher bias given case study methodology. A technique known as epoche can be used to sustain objectivity (Morley, 2014).
- Ability to generalise as it relates to one insurance company in the industry

Suspension of judgement has been applied in conducting this research, and the challenges, impacts and roadmap for successful implementation have been generalised as far as possible to ensure findings are valuable despite the above identified limitations.

3.9 Quality Assurance

Quality assurance is essential in qualitative research, achieved mainly through transparency and ensuring verifiability (Lester et al., 2020). Lester et al. (2020) notes that in a study of 52 Strategic Management Journal qualitative articles review, not one was sufficiently transparent. There is extensive literature debating the best criteria to measure quality in Anderson (2017) and Storberg-Walker's (2012). These papers list multiple criteria to assess the quality and include factors like communication of method, triangulation, and peer debriefing (Storberg-Walker's, 2012) as well as article detail and analysis process transparency and logic (Anderson, 2017). For this study, the approach noted by Lincoln & Guba (1985), and lectured about in the 2022 MMDB Research Methodology Course at Wits Business School, will be used, which includes three criteria, i.e., transferability, dependability, and credibility.

3.9.1 *Transferability*

Transferability refers to how transferable the research results are to other contexts or participants. (Korstjens et al., 2018). To achieve transferability, this research will include a detailed description of participants, how they are related to the topic being researched, and what process was followed in the research process. This will help potential readers determine how applicable the research is to their context (Korstjens et al., 2018).

3.9.2 *Credibility*

Credibility refers to the believability of the data, results and interpretation thereof (Korstjens et al., 2018). Strategies such as triangulation, deep interviews and logical observation will be used to show credibility (Korstjens et al., 2018).

3.9.3 *Dependability*

Dependability ensures that the research process end to end is standardised as possible so as to reflect dependability (Korstjens et al., 2018). This will be

ensured by conforming to tried-and-tested data analysis, interpretation and recommendations techniques as detailed in this chapter (Korstjens et al., 2018).

3.9.4 *Ethical considerations*

Steps to ensure ethical standards are met will include signed (physically or digitally) consent forms from participants and keeping these records safe, obtaining research permission from Insurer X, obtaining ethical clearance from Wits Business School, ensuring secure data storage, usage, and destruction post research, adhering to the universities plagiarism policy, and ensuring as far as possible confidentiality and anonymity for participants.

CHAPTER 4. PRESENTATION OF FINDINGS

4.1 Introduction

This chapter presents the research findings per the stated objectives and propositions. The key objectives are to assess the direct and indirect impacts of RPA at Insurer X and synthesize feedback into a roadmap for successful implementation. In addition to presenting additional background to Insurer X, this chapter provides an outline of participants and a selection and demographic summary. It also describes the approach to analysis and coding in greater detail. Findings are then described and presented for proposition one or direct impacts of RPA, proposition two or indirect impacts of RPA, and proposition three or key success factors, learnings, and noteworthy barriers.

4.2 Background

Insurer X began its RPA implementation journey in 2017. The RPA CoE was founded under the guidance of the then Chief Operating Officer and is organizationally located in the operations area of the organization. The CoE organically grew with the help of an implementation partner and technology provider. The implementation partner subsequently rolled off the program, and the CoE is now fully internally run and managed. Based on the age of the organization (more than 75 years old) and first-hand experience, the IT environment at Insurer X is relatively mature and complex, containing multiple product administration, workflow, and CRM systems. As per IBM (2021), RPA is most effective in industries and organizations with a high reliance on multiple legacy systems. These characteristics made Insurer X a good candidate for RPA.

4.3 Outline of participants

4.3.1 *Participant selection*

Research participants include employees (executives, operations and RPA managers, and RPA specialists) and an RPA industry expert. All participants were intimately involved in implementing RPA at Insurer X from a technology implementer and a technology receiver perspective. Participants were selected based on a combination of purposive, convenience, and snowballing sampling (refer to 3.4.2 sample and sampling method). Nine participants were interviewed, at which point theoretical saturation was reached. Data saturation is the point where no additional or new data is collected (Saunders et al., 2018).

4.3.2 *Participant demographics*

The research participants have a combined 145 years of financial services experience, 132 years of organizational knowledge, and 42 years of RPA experience resulting in a rich and experienced sample. More than half of the participants have at least four to ten years of experience in financial services and Insurer X, respectively, and all participants have at least four years of RPA experience. One participant has over thirty years of industry and Insurer X experience (Table 8). Participants span different role levels and areas at Insurer X (Operations, RPA CoE, and Finance). Four participants are at an operational management level, four are at an executive level, and one is an RPA subject matter expert. Participants consist of five males, three females, and one non-binary gender. Eight participants have a degree, four have a postgraduate diploma, and one has a master's degree indicating a diverse sample set from a role, gender, and education perspective. The level of experience and background diversity increases the relevance of the findings of this paper.

Alias	Role	Gender	Years of experience			Education level
			Industry	Insurer X	RPA	
P1	RPA Operations Manager	Male	10+	10+	5	Postgrad diploma
P2	Implementation Manager	Male	6	6	5	Postgrad diploma
P3	RPA Executive	Male	33	33	4	Matric
P4	Business Executive	Non-binary	19	8	5	Masters
P5	Finance Executive	Female	30	30	5	Degree
P6	Engineer	Female	6	6	4	Postgrad diploma
P7	Business Executive	Female	27	25	4	Degree
P8	Head of RPA	Male	7	7	6	Postgrad diploma
P9	Implementation Manager	Male	7	7	4	Degree

Table 8: Participant Demographic Information

4.4 Approach to analysis

This section outlines the approach and steps performed in the analysis phase adapted from Lester et al. 2020. Data was collected through in-depth semi-structured interviews via MS Teams meetings was the primary data collection method (refer to Appendix A: Research Instrument). The approach followed was an inductive thematic analysis to allow the themes to surface from the data, particularly in the study of propositions two and three, where success factors, top learnings, and noteworthy barriers were examined. (Inductive or Deductive? Two Different Approaches, 2022).

4.4.1 *Prepare, organise transcribe data*

Microsoft Teams transcription functionality was used to create interview scripts. These transcripts were stored in a file structure organized by participant name in Microsoft Word format. Each file was held in a folder with the file name reflecting the date and version. Three versions of each transcript were created. The “raw” version is the original transcript from MS Teams. Each transcript was then organised to aid analysis. Given certain inaccuracies in the MS Teams transcription technology, the organization process included grouping the text by the question, removing filler and repeated words (like “umm” and “ah”), and reviewing and updating text in conjunction with video recordings where something was unclear. These versions were created and saved as “cleaned” and “edited.” This process resulted in 149 pages of transcripts available for analysis.

4.4.2 *Understand, interpret, and internalise the data*

For familiarity and reflection purposes, the transcripts were reviewed. The responses were internalized, and where anything was unclear, interview videos were reviewed for clarification and to aid analysis.

4.4.3 *Coding and creating themes*

The interview transcripts were coded in MS Word using the comments function. The coding structure combines adaptation from the interview questions script (Appendix A) and an inductive thematic approach.

For demographic questions, responses were transferred to a table in MS Excel with themes created for gender, role, years of experience, and level of education.

For proposition one, which examines the direct impact of RPA, responses were grouped per category and then variable. The following themes emerged from the data; “Yes” (there was an impact), “No” (there was no impact), “No feedback” (the participant did not address this variable), or “Unknown” (the effect is unknown). Themes then emerged per category and variable relating to the extent of the

impact as follows; “< 25%” (or minimal), “25 to 50%” (or medium), “50 to 75%”, “>75%” (or high), and “Not sure” (the extent of the impact is unknown).

For proposition two, which examines the indirect benefits of RPA, responses were coded and grouped into the emerging theme.

For proposition three, which addresses the factors most important for implementation, responses were coded per implementation step. Each step was assigned a one to ten score based on the answer, and the scores were added. Factors with the highest scores are deemed the most critical. Additional factors followed a similar process, each receiving a score of ten. Top learning and noteworthy barrier responses were coded thematically. All data has been de-identified, meaning each participant an alias has been assigned to each participant (P1 to P9) to aid analysis and protect identities (Stuckley HL, 2014).

4.5 Research propositions and questions

4.5.1 *Results pertaining to proposition one*

Proposition one examines the direct impacts of RPA and to what extent these impacts benefited Insurer X. Participants were presented with a summarized list of impact categories and variables from the literature review (Syed et al. 2020, Lacity & Willcocks 2016a and 2016b) and asked if, in their experience, RPA impacted these variables at Insurer X and if so to what extent. Their responses produced 252 data points to analyse (nine participants, fourteen variables, five categories, and two outcomes, i.e., 1) the direct impact of RPA at Insurer X, and 2) the extent of direct impact at Insurer X).

Direct Impact of RPA at Insurer X

The first 126 data points/responses were analysed to determine if there was a direct impact due to RPA at Insurer X. These responses were examined at three levels, i.e., overall, per category, and then per variable. The five categories assessed are Operational Efficiency, Quality, Implementation and Integration, Risk, and Financial. Responses were grouped into themes of “Yes”, “No”, and “No feedback/Unknown.”

Overall, ninety-four (75%) responses were “Yes”, fifteen (12%) were “No”, and seventeen (13%) were not sure or did not address the variable. These responses indicate that most participants believe RPA had an overall positive impact.

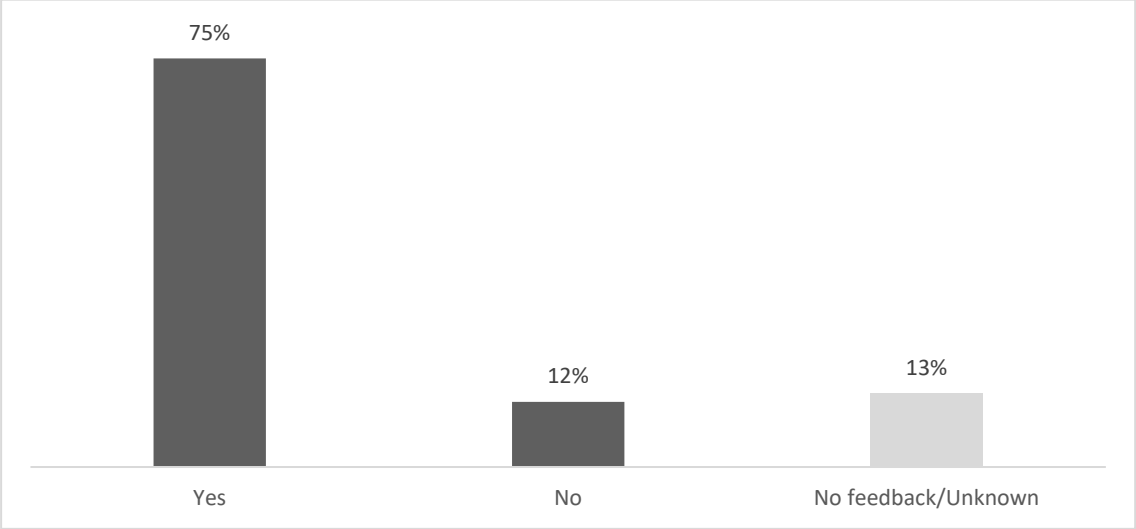

Figure 3: Percentage of Responses per Theme

From highest to lowest at a category level, Risk had an 89% “Yes” response rate, followed by Operational Efficiency at 85%, Implementation and Integration at 69%, Quality at 61%, and Financial at 44%. Each category is analysed deeper to understand the variables driving these impacts. These responses indicate that most participants believe RPA impacted all categories except Financial.

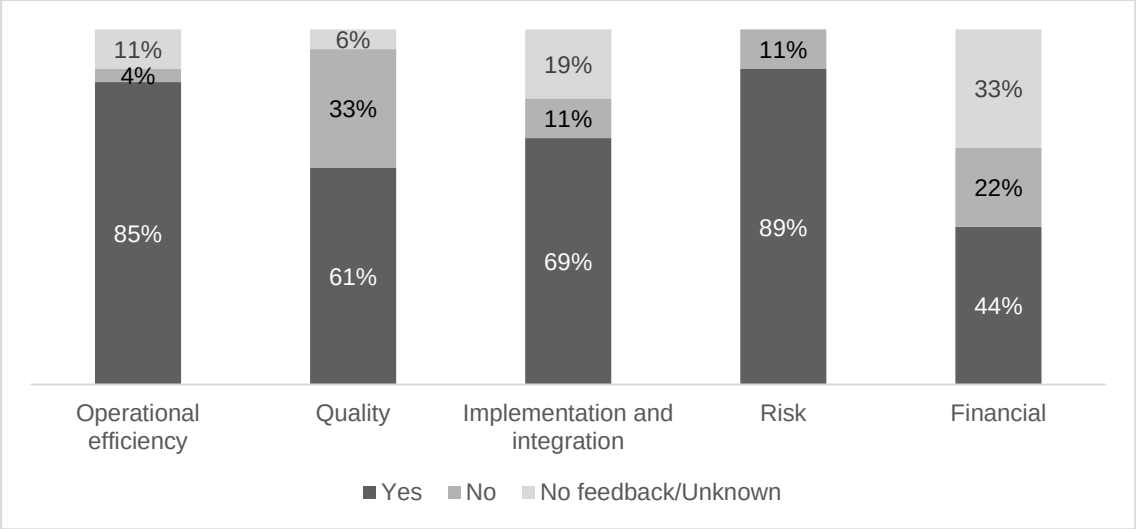

Figure 4: Percentage of Responses per Theme and per Category

Operational efficiency

Six variables were analysed in the Operational efficiency category. Reduction in time had a 100% “Yes” response rate indicating that all participants believe that RPA reduced processing time. The Number of FTEs replaced by robots, Reduction in manual tasks and workload, and Reduction in cost of HR all had an 89% “Yes” response rate. These responses indicate that most participants believe that RPA reduced the number and costs of people and the number of manual tasks and workload. Reduction in cost of transaction processing had a 78% “Yes” response rate indicating that most participants believe that RPA reduced transaction processing cost too. Increased productivity had a 67% “Yes” response rate indicating that RPA also increased productivity. It is worth noting that 11% of participants indicated that they didn’t believe there was an impact on Reduction in cost of HR and Increased productivity; however, this is a relatively small percentage. The findings indicate that most participants believe that RPA improved operational efficiency and all variables in this category.

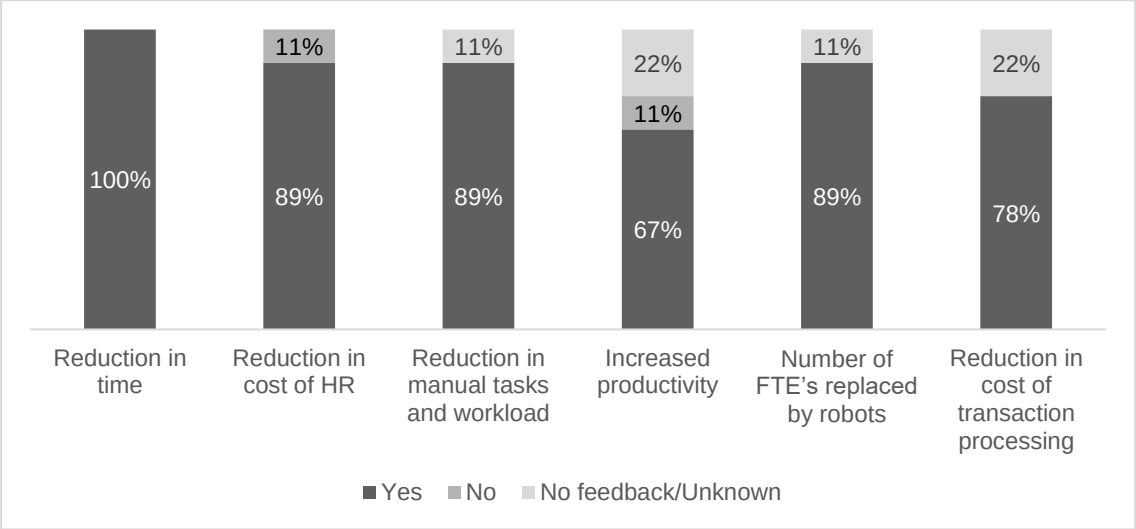

Figure 5: Percentage of Responses per Theme and per Operational Efficiency variable

Quality

Two variables were analysed in the Quality category. Decreased errors had an 89% “Yes” response rate indicating that most participants believe RPA reduced processing errors. Availability of systems had a 56% “No” response rate meaning

that most participants believe that RPA did not impact the system availability. The findings indicate that most participants believe that RPA improved processing quality but only in terms of processing error reduction and not system availability.

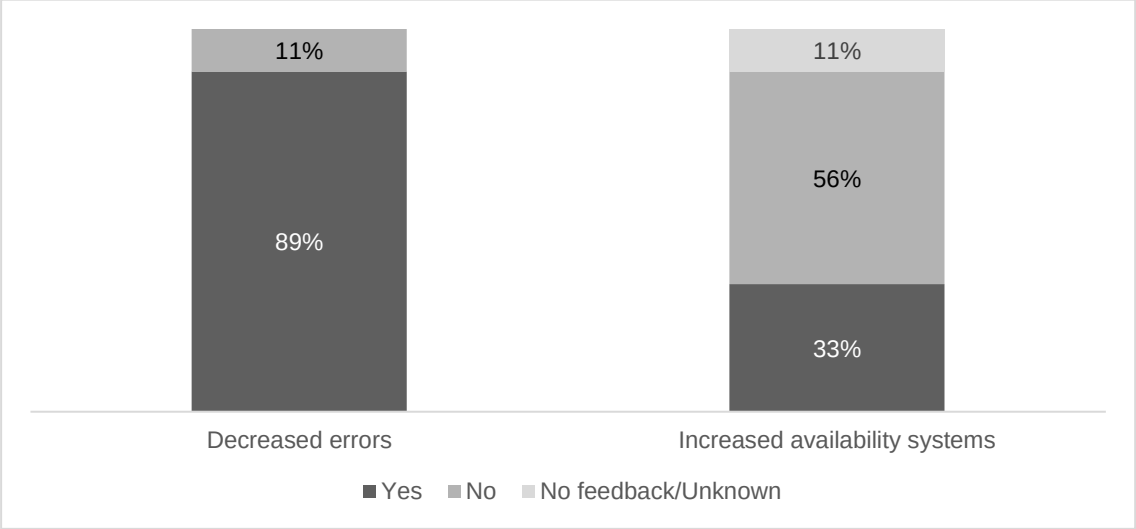

Figure 6: Percentage of Responses per Theme and per Quality Variable

Implementation and Integration

Four variables were analysed in the Implementation and Integration category. “Cheaper to implement and maintain” had a 78% “Yes” response rate indicating that most participants believe RPA is a relatively cheaper automation technology. “Easier” and “Quicker” had 67% and 78% “Yes” response rates, respectively, indicating that the majority of participants believe that RPA is easier and quicker to implement than other automation technologies. “Non-intrusive had a 56% “Yes” response rate indicating that slightly more than half of participants believe that RPA is less intrusive. The findings suggest that most participants believe that RPA positively impacts Implementation and Integration and all variables in this category, i.e., it is cheaper, easier, quicker, and less intrusive to implement than other automation solutions.

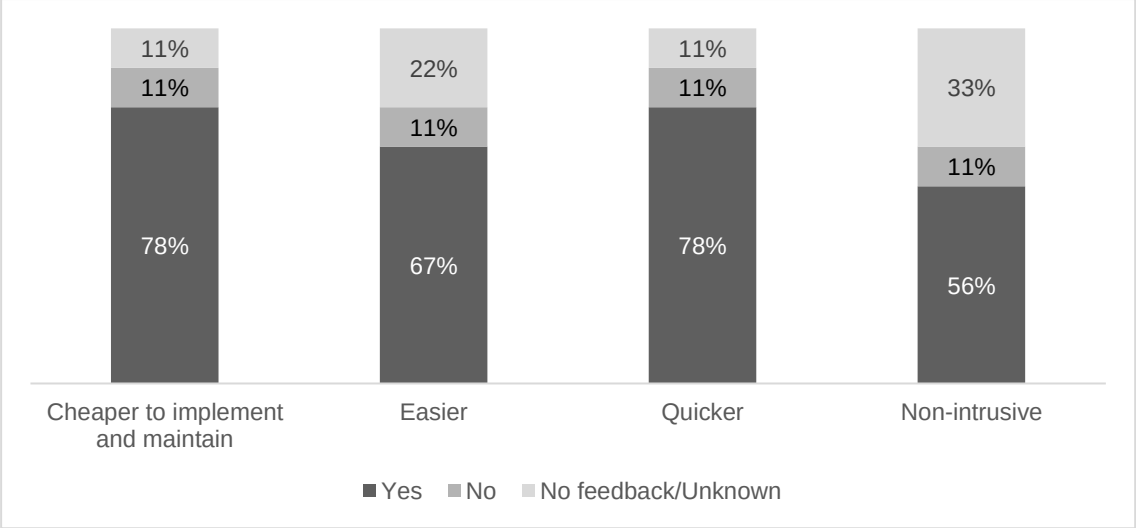

Figure 7: Percentage of Responses per Theme and per Implementation and Integration Variable

Risk

The only variable analysed in the Risk category is Risk reduction which had an 89% “Yes” response rate indicating that most participants believe there was a risk reduction due to RPA.

Financial

The only variable analysed in the Financial category is Return on investment which had a 44% “Yes” response rate, a 22% “No” response rate, and a 33% “Unknown/No Feedback” response rate. The 22% who didn’t believe that RPA had a positive return on investment think it’s due to the inflexibility in the funding model, the erosion of value over time through increasing license and maintenance costs and automation degradation, and that RPA was not attributed all the benefits it delivered.

These findings indicate that participants had mixed beliefs regarding RPA’s overall Return on investment. A potential area for future research is to empirically examine the Return on investment of RPA over a period long enough to account for maintenance and licenses cost (more than five year time horizon).

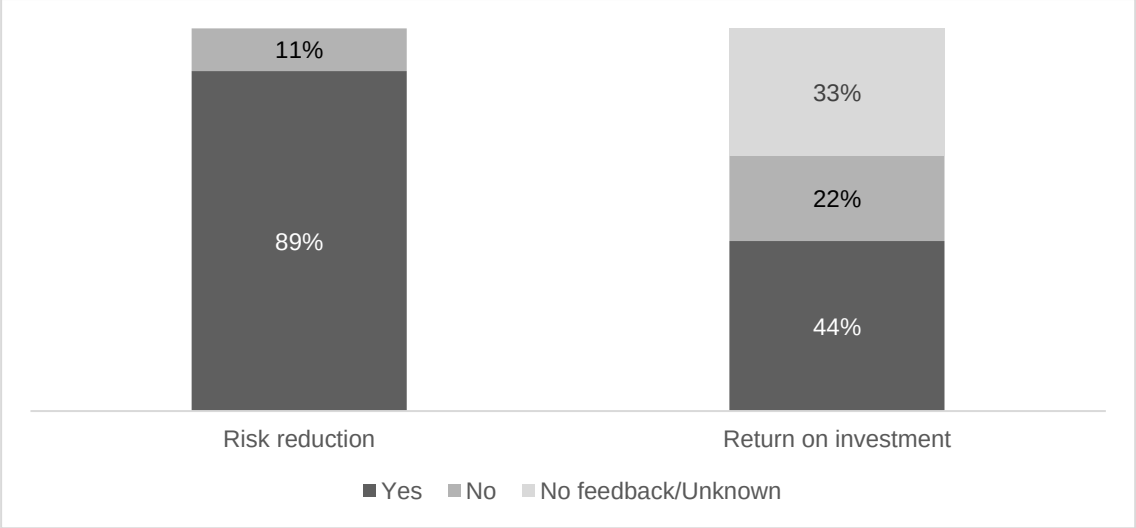

Figure 8: Percentage of Responses per Theme and per Risk and Financial Variables

Overall, based on the emerging themes from the analysis, the findings indicate that RPA directly impacted Insurer X from an operational efficiency, risk, quality, and implementation and integration perspective. Risk and Operational Efficiency were the categories most affected (based on the percentage of “Yes” responses), with Quality, implementation, and Integration also significantly impacted. The results indicate that the impact to return on investment is inconclusive for the Finance category. Refer to Table 9 for participant feedback.

Theme	Selected and edited participant feedback to support findings
Operational efficiency	“We definitely saw a reduction in time and the time there is the processing time.”
Quality	“We had a decrease in errors however the opposite is also true, especially if you have the rest of the organization not aligned with your RPA thinking. And what I mean by that is if somebody makes a mistake on a system where RPA is involved, it also breaks the process wholesale. If you've got a robot doing 10 people's work, when that robot is impacted by a system issue, it's 10 people.”

Implementation and Integration	“from a process implementation perspective. If an operational area has their process clearly documented and articulated, they understand the data inputs, they understand the data, they understand the other inputs to their processes. It is very easy and quick for us to kick start the process literally hours.”
Risk	“When the authorizers decline payment because the payment wasn't captured correctly, etcetera, I remember the quality error I took about 17% and the other one being most 17 and one was 14%. That disappeared.”
Financial	“because of the funding model that we had, there was less flexibility – it became a fixed cost. This erodes quite a bit of the return on investment. Over time the RPA efficiency drops. You’re introducing new transactions for the customer that don't go via RPA and it becomes an exception. It erodes it quite a bit. Each year, the cost per bot kept going up and we were also struggling to offload bots where we didn't need them.”

Table 9: Selected and Edited Participant Feedback to Support Direct Impact

Extent of direct impact at Insurer X

The second 126 data points/responses were analysed to determine the extent of the direct impact as a result of RPA at Insurer X. Twenty-two of these responses were excluded as they relate to variables that, based on what has been established so far, had no impact or are inconclusive. This exclusion leaves ninety-four responses examined at an overall category and variable level, with the categories and variables remaining consistent. Participants estimated the extent to which variables were impacted by % or by indicating a high, medium, or low impact. These responses were grouped into themes as follows to aid analysis:

- <25% impact (includes responses minimal and insignificant)
- 25 – 50% impact (includes medium)
- 50 – 75% impact
- >75% impact (includes high)
- Not sure (of impact)

Overall (Figure 9), 26% indicated that the impact was 50-75%, 24% indicated that the impact was >75%, 17% indicated that the impact was 25 – 50%, 9% indicated that the impact was <25% and 24% were inconclusive (participants were not sure of the extent of the effect).

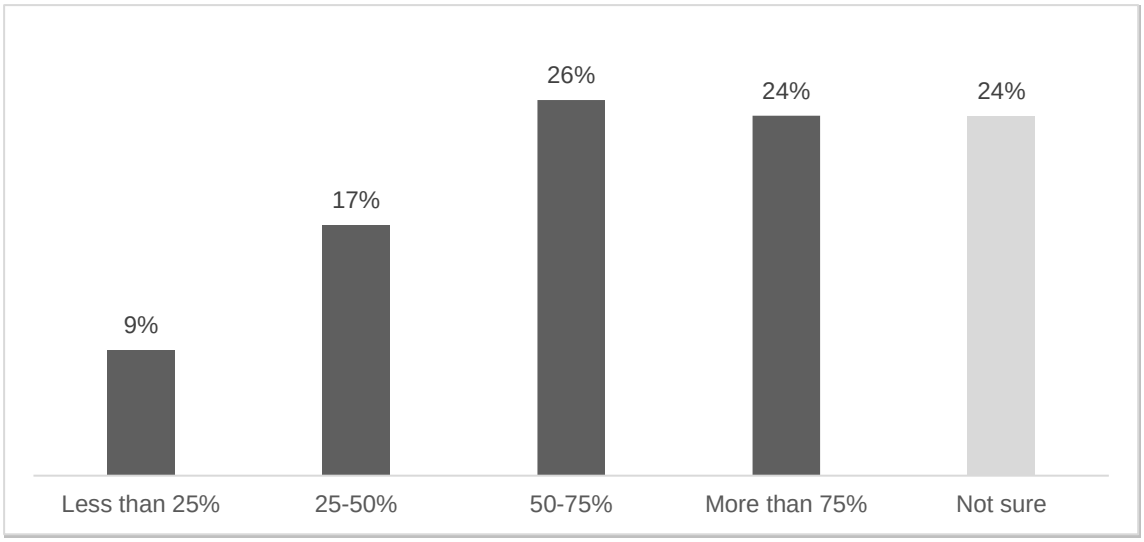

Figure 9: Percentage of Responses per Theme Overall

At a category level (Figure 10), more than 60% of responses in Operational Efficiency indicate that the impact was 25 – 75%, with 35% of participants indicating the impact could be as high as 50 – 75%. 55% of responses in Quality indicate that the impact was 25 – 75%+, with 36% indicating that the impact was >75%. 52% of the responses in Implementation and Integration indicate that the impact was <25 – >75%, with 24% indicating the impact was >75%. 76% of the responses in Risk indicate that the impact was 50 – >75%+, with 63% indicating the impact was >75% (Figure 12). The impact of return on investment in Finance is inconclusive, and therefore the findings exclude the impact of this category.

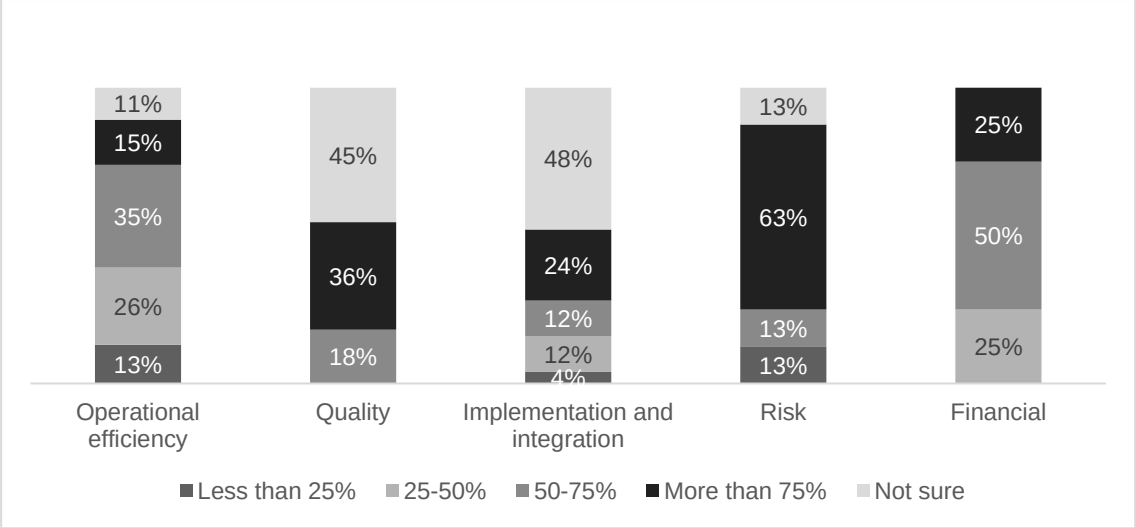

Figure 10: Percentage of Responses per Theme and per Category

Operational Efficiency

Of the six variables analysed (Figure 11), Reduction in time was impacted the most (88% of responses in the 25 – 75% range). The impact on the Cost of human resources and Reduction in workload is 50 – 75%. RPA increased productivity and replaced FTEs is >75%, and reduced cost of transaction processing is <25% – 75%. The majority of participants believe that the impact on operational efficiency variables was impacted in the range of 25 – 75%.

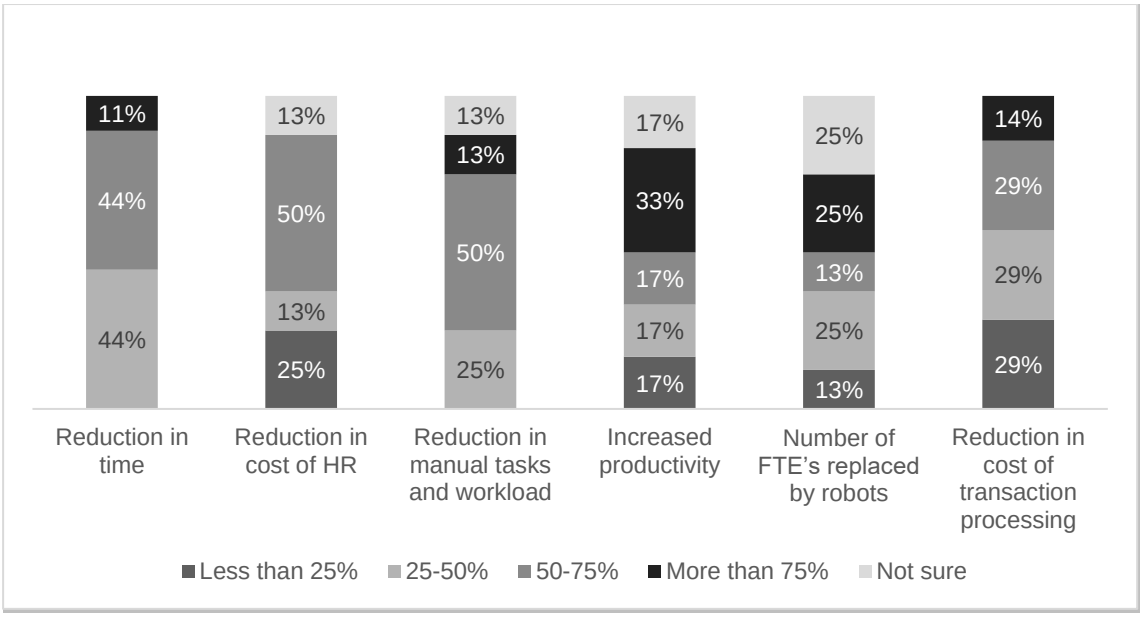

Figure 11: Percentage of Responses per Theme and per Operational Efficiency Variable

Quality

Participants believe that RPA *Decreased errors* by 50 – 75%+. The impact to Increased system availability is unknown.

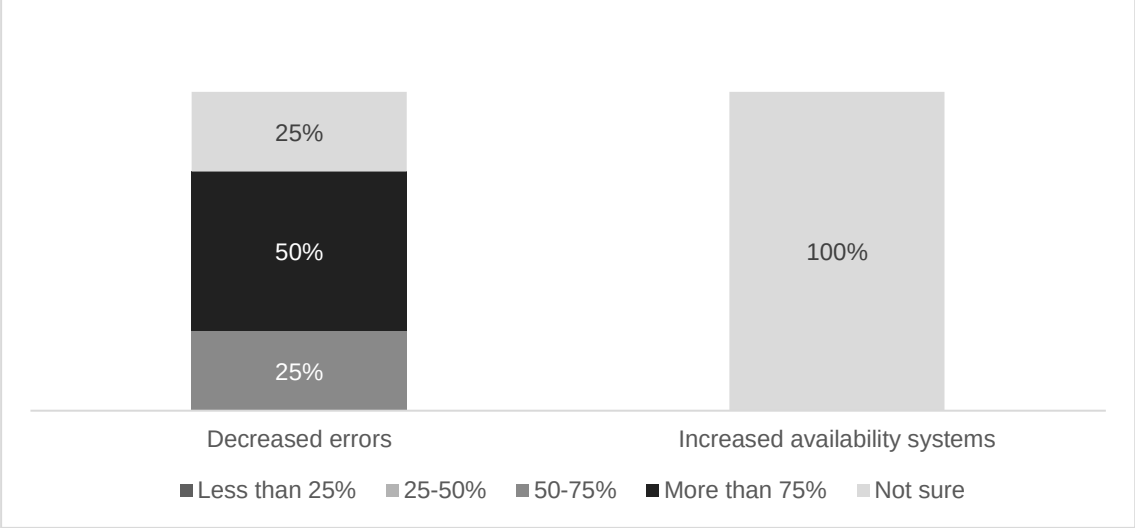

Figure 12: Percentage of Responses per Theme and per Quality Variable

Implementation and Integration

There is a high percentage of unknowns spread across all variables in this category (Figure 13). Only two variables had a less than 50% “Not sure” response rate; Easier and Quicker. The impact on the Easier variable ranges from <25% to >75%, while the impact on Quicker is mainly in the >75% range.

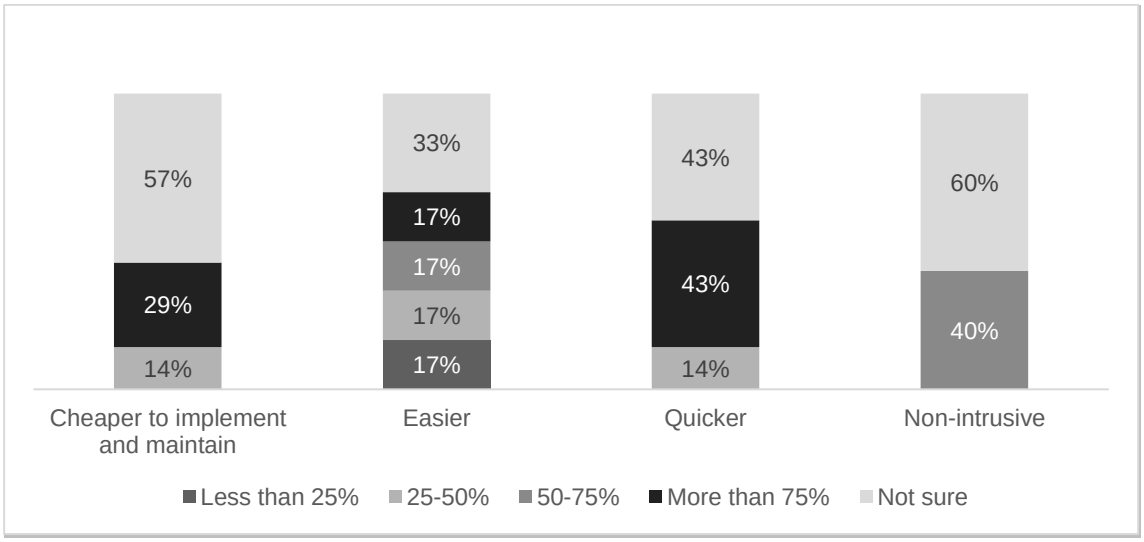

Figure 13: Percentage of Responses per Theme and per Implementation and Integration Variable

Risk

Most participants believe that risk was reduced by 50 to >75%, with 63% indicating the impact was more than 75% (Figure 10).

Theme	Selected and edited participant feedback to support findings
Operational efficiency	“I would say efficiency in terms of cycle time reduction, we went from key transactions 15 days to the minimum days which is three to four days, which is just depending on pricing and bank disbursement runs.”
Quality	“The extent is from an autopay point of view, there haven't been any errors, but because of a lot of our automations are still initiated by humans or some of our automations are initiated by humans. I'll say by 80 to 90%”
Implementation and Integration	“Definitely faster than alternative solutions. Just because, and I'm gonna touch on the 4th point there as well, just because it is non-intrusive. I'm combining them a little bit and we can touch on the increase the nonintrusive part separately as well. But I think just that it is easier and faster just because you are not necessarily reliant or dependent on back end systems, other teams. But red tape effort from other teams, so you can work in, I wouldn't say isolation, but you can work independent of other IT applications and their teams. It is faster and easier and less intrusive.” “I would probably say about 30 to 40%.”
Risk	“There definitely has been a reduction in the risk through the implementation of RPA. The extent from a purely RPA point of view and looking at what we've automated our probably say that reduction in risk is, I don't know if it's fair to say 100%, but I would probably say very close because exactly like you mentioned the additional checks and balances that have been implemented. In the automations.”
Financial	“I personally believe if you throw all of this together, we did not deliver the return on investment that we were seeking to achieve. Hindsight is always easy, but I think we could have delivered a fantastic return on investment had we implemented it smartly. I think we went in very early in the time, so we probably paid our school fees for that, which is another lesson.”

Table 10: Selected and Edited Participant Feedback to Support Extent of Impact

Table 11 summarizes the results of the findings for proposition one. Table 10 provides participant feedback to support these findings. The emerging themes establish that the direct impact of RPA did positively benefit Insurer X and these

benefits are known and measured to a large extent. In extending the existing framework to the South African context, we have reiterated the framework's validity and expanded our understanding of the extent of the impact across these variables.

Category	**Variable**	**Impact at Insurer X**	
		Yes/No	**Extent (%)**
Operational efficiency	Reduction in time	Yes	25 – 75
	Increased productivity		
	Reduction in cost of HR	Yes	<25 – 75
	Reduction in manual tasks and workload	Yes	25 – >75
	Number of FTE's replaced by robots	Yes	<25 – >75
	Reduction in cost of transaction processing	Yes	<25 – >75
	Overall	Yes	25 – 75
Quality	Decreased errors	Yes	50 – >75
	Increased system availability	No	Not applicable
	Overall	Yes	25 - >75
Implementation and Integration	Cheaper	Yes	Inconclusive
	Easier	Yes	<25 – >75
	Quicker	Yes	25 – >75
	Non-intrusive	Yes	Inconclusive
	Overall	Yes	<25 – >75
Risk	Risk reduction	Yes	50 – >75

Category	Variable	Impact at Insurer X	
		Yes/No	Extent (%)
Finance	Return on investment	Inconclusive	Not applicable

Table 11: Summary of RPA Impact at Insurer X

4.5.2 *Results pertaining to proposition two*

Proposition two examines the indirect impact of RPA at Insurer X. Participants were asked what indirect impacts and benefits were observed at Insurer X and, if so, to what extent. Thirty indirect impacts were recorded, coded, and grouped into themes.

Indirect benefits observed as a result of the implementation of RPA

As per Figure 14, the top three emerging themes were *Improved customer experience*, *Skills development*, and *RPA as a change catalyst* receiving eight, five and four responses respectively.

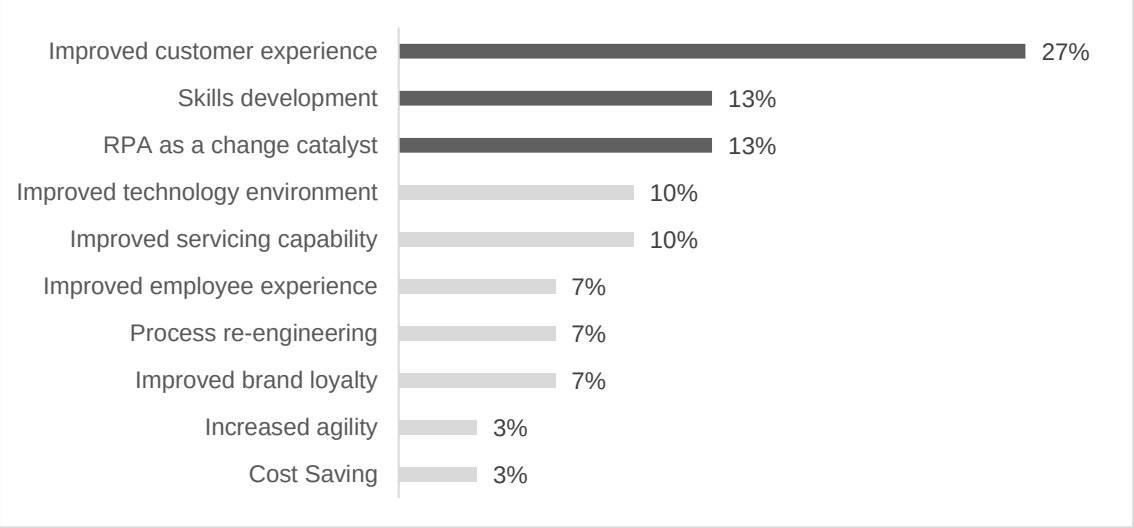

Figure 14: Percentage of Responses per Indirect Benefit Theme

Within Improved customer experience, three participants believe RPA resulted in quicker turnaround times and improved NPS and NES scores for Insurer X. Within skills development, two respondents believe RPA created opportunities

for existing employees and forced the organisation to bring in engineering skills, which later benefited the organization as a whole. Within the RPA as a change catalyst theme, participants believe RPA instilled a cultural shift to improve processes continuously, build new processes with digital in mind, i.e., building digital triggers, and focus on process efficiency and continuous process improvement.

Theme	Selected and edited participant feedback to support findings
Improved customer experience	"We've got a few processes that are near real time, so the customer submits it at the branch, they get an SMS less than 5 minutes later. That's a fantastic experience. We haven't even quantified the value of impressing that customer."
Skills development	"Another indirect impact is we made a conscious decision to hire people with engineering skills. The positive impact of that is, I would argue, the level of thinking of the organization increased. It had a huge impact on the collective operations area with that level of skill coming in. We also identified that bringing in those engineers wasn't necessarily the panacea of all our problems. It created its own problem in that they never had institutional memory in order to apply that skill. So what we've done of late is augment that with some people with business skill. And when we have the two meeting, that's when we actually see the value more so than before. So the indirect impact of that is we've created opportunities for others within the organization. New careers in process engineering etc."
RPA as a change catalyst	"it's a vehicle for change. Where everything's automated, you get rid of the fires. Now you've got a nice clean process. Then it allows you to do that continuous process improvement because now you're thinking service. You're not thinking how I survive." "If you want a really good process, and I think it makes it easier for the people that were very hesitant to do big changes, because it's a quick, and because you get value from pretty much day one, it makes it very attractive and those barriers just disappear."
Improved technology environment	"…being able to pick up gaps in other systems or in, for example, differences between a pre-prod and production environment, or just that a sudden system needed to be updated in certain ways. That would have been one indirect

Theme	Selected and edited participant feedback to support findings
	impact. There'd be an overall improvement to the system to make it better for manual users and for automated solutions.”
Improved servicing capability	“I don't think that we can kind of quantify this as much, it's the cost of labour that was associated with changing a service model. At that time there were big change programmes and there was legacy, and then obviously the digital workers helped with the legacy world and that helped move people into the new world, to create that service centre. So it enabled another service model which I think was an indirect benefit as a result of the capacity release.”

Table 12: Selected and Edited Participant Feedback to Support Indirect Benefit Themes

Based on these responses, we have established that the indirect impact of RPA did positively benefit Insurer X, and these benefits, to a large extent, are unknown and not measured.

4.5.3 *Results pertaining to proposition three*

Proposition three examines the factors for successful implementation, top learnings, and noteworthy barriers to developing a roadmap for successful implementation of RPA specific to South African long-term insurance that would aid organizations in the industry and across industries pursuing RPA. Participants were asked to rate or rank known critical success factors for implementation, note additional factors they deem essential through their experience at Insurer X, and summarize their top three learnings and significant barriers based on their experience at Insurer X.

Factors key to successful implementation

Respondents were asked to rank known factors from literature in terms of importance on a scale of one to ten, ten being the most important. Where participants gave a range, the analysis took the lower number; where participants said the factor was important, the factor score was ten; where participants rated

a factor as not critical, the factor score was one; where the participants didn't provide feedback, was given the factor score was zero.

While all factors were rated highly by participants, the top three factors were strategy definition, the implementation process, and process identification for automation (Figure 15).

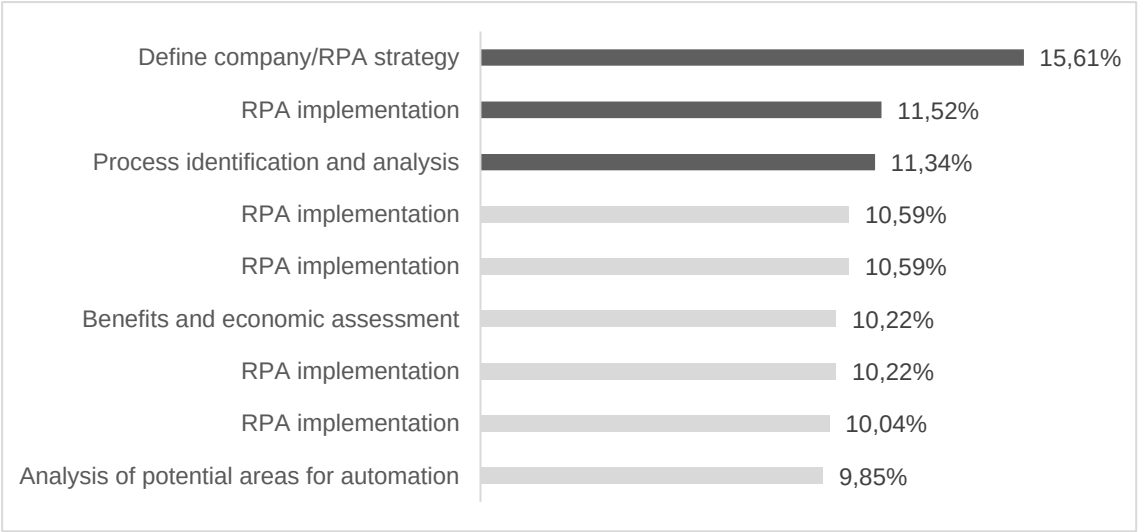

Figure 15: Percentage of Points per Critical Success Factor

Factor	Selected and edited participant feedback to support findings
Define company/RPA strategy	"The strategy defined what you needed RPA for, are you trying to improve customer service, are you trying to cut costs because the two are very different. You can make a fantastic customer service. But if you value that customer service is more, maybe you are still saving money. So I think the metrics are important at that stage. So once you've got your sponsor, then why is that your sponsor? What do they want? What are they trying to do?"
RPA Implementation	"I think from a methodology perspective, to achieve scale and to ensure reduce cost of ownership, which is the whole drive here, your implementation, the whole life cycle of it, it is quite critical. But more so the methodology of your implementation, we call it the RDLC, because we want to follow a standardized approach to these automations. The goal was to try and make it easier for the production team to manage automation so that you sever the tie between the developer and the productionalized process.

Factor	Selected and edited participant feedback to support findings
	I think that is a critical step and it's related to the overall RPA implementation lifecycle of how you go about finding your automation opportunities, how you go about documenting these things, how you have your own peer review and design authority. How you deal with handover into the production environment and whether you have a production team to take over these processes. Then it becomes working with business and developing and sustaining it or managing and sustaining it."
Process identification and analysis	"This idea of process identification analysis is probably the next most important on the list here. Your process identification and analysis, which then leads to demand management. Demand management as a whole I think is quite important. I think it always should be segmented into different buckets. Buckets of "keep the lights on" and "tactical automations" that you are just supporting the business with. Optimize where you know there is really an efficiency gain. For me identifying those and then categorizing your demand into those buckets really does help and it does start with what's your operations model look like. Where do the opportunities lie? This is what my target processes are going to be segmented in, bucketed, and what they're going to look like. I think what is very important here in that I don't think is on this is the alignment between the IT business and the business story."

Table 13: Selected and Edited Participant Feedback to Support Critical Success Factor Themes

Additional factors key to successful implementation literature

Participants were asked to list additional factors based on their experience. Each factor mentioned scored 10, and these factors were grouped into themes. The top three themes were Executive sponsorship, Level of business involvement, and Technology readiness.

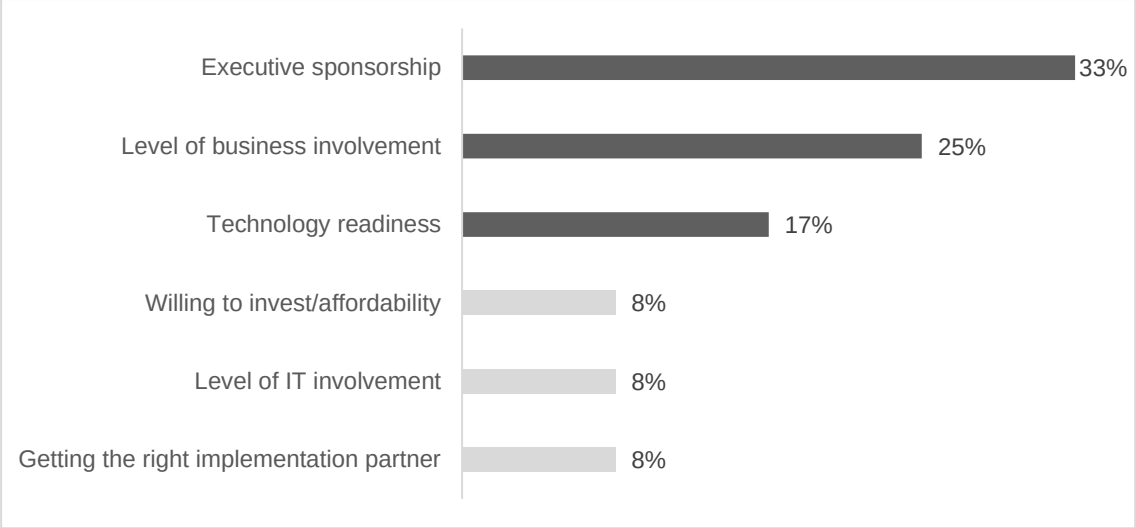

Figure 16: Percentage of Points per Additional Success Factor

Factor	Selected and edited participant feedback to support findings
Executive sponsorship	"I would say the 10 point rating is your executive sponsorship. That would be #1 and the reason is you need a specific person or function to drive the solution. If you don't have that, it doesn't matter that you have a good strategy, you have everything else, you can have everything other than that and you will not be as successful if you had that. I think for our implementation it was the foundation upon making the area work, you needed someone with a very strong vision of what you want to do with the solution. You might not have the details, but you need that person to remove the blocker. So for me, 10 is executive sponsorship." "You need someone that understands the solution firstly, they need to be knowledgeable enough to know that it's not a silver bullet and that it is not going to fix all your problems, but know where to focus it. And then the other one is to tell people that are sceptical to do it even though they are sceptical. It's the person with enough cohesion to make sure that it's going to happen. Someone, when I say drive it, they literally need to position it in your organization as "this is going to be done". I think that if you don't do that, people won't give it the time it deserves. And if it doesn't get the time it deserves, it's not going to work even though you are following the steps, you are doing the motions. That's the most important thing in our example for this to work."

Factor	Selected and edited participant feedback to support findings
Level of business involvement	“I definitely think business architecture is a big one. I assume, as part of sustain, you talk about how you monitor, your monitoring, those kind of things. I think that's critical. Because it's also a function of how we set up. It is DevOps, but not really DevOps. So you have a separate team monitoring. The monitoring function is extremely critical to your success.”
Technology readiness	“So your dev, your QA and you're prod especially for RPA. Any difference in environments, we create a difference in other robotics solution to respond. Training a robot in dev and training it in prod gives different results. And you need to understand that when you are implementing. I think we have learned that the hard way. We put in gates to ensure that the way that you train it in development and the environments that need to be tweaked to be able to adjust the production environment. And I like to talk to it in terms of binary code. We have your ones and zeros, if those ones and zeros don't line up in dev, QA, prod then it's not going to work. So you need to know where those variances are and how to make the correct changes so that what you developing in Dev would work in production.”

Table 14: Selected and Edited Participant Feedback to Support Additional Success Factor Themes

Key learnings

Participants were asked to list their top learnings based on their experience of RPA at Insurer X. A total of eighteen responses were recorded and grouped into six themes with some correlations to factors for successful implementations in the previous section.

The first emerging theme was that RPA should be treated and communicated as an organization-wide program with a clear strategy.

The second emerging theme is that organizations must invest appropriately in RPA and adopt best practices to prevent stagnation and ensure scalability.

Another essential and emerging theme is that strategic and operational continuous improvement is critical to extract value from RPA.

Learning	Selected and edited participant feedback to support findings
RPA communicated as an organizational wide program with a clear strategy	"…don't underestimate the power of marketing, in selling your solution, showing people what you're doing. I think it was probably two years in before people really knew what we were doing. You've got to constantly show how you've improved the business. It's not enough just to save money, make a process really great, and for everyone in that area to be happy. You need to show all the other areas that need to be doing the same, what you've done there."
	"You need to have an RPA program, not a project. You have to have the resources to deploy this thing. And then you have to have the understanding of the ownership and the resources that are required to maintain it in order to continue to get your benefits out of it."
Proper investment and best practice	"I kick myself for not being very obstinate and insisting that we do things in the best practice way from the start. So the quick way actually makes things more expensive down the road."
	"In an ideal world, don't be afraid to put the initial investment in. By that I mean, if you're looking at your IT architecture, you're looking at your infrastructure, you're looking at the skills, don't be afraid to spend on it. And hindsight is 20/20 vision, so it's easy for me to stand here now and say we should have pump more money into certain things, certain skills."
Continuous improvement	"I think if we look at it more at an operational level, definitely reviewing past automations, why certain things were done because they definitely degrade over time for no reason. But I also think from a structure and a strategic point of view because when you first implement RPA, there's obviously a strategy on why you want to implement it and as time goes on the company's strategy and the companies' objectives change. And I think review, your automation strategy in line with that."

Table 15: Selected and Edited Participant Feedback to Support Top Learning Themes

Noteworthy barriers

Participants were asked to list noteworthy barriers based on their experience of RPA at Insurer X. Twenty-five responses were recorded, out of which three themes emerged with correlations to previous sections.

The first theme that emerged, and the most prominent, is change management. Participants described fear of job losses as a significant barrier that resulted in subject matter experts needing to be more cooperative.

The next theme is IT infrastructure and collaboration. Participants described the partnership with IT regarding roles and responsibilities and setting up the infrastructure and environments as a significant barrier.

The third theme is skills and knowledge scarcity, particularly RPA software skills and intimate business process knowledge.

Barrier	**Selected and edited participant feedback to support findings**
Change management	"We could have done a better job of explaining that this is to help you not to replace you. If we went in and we actually sat them down and said we will automate 90% of the work in your day and that 10% we expect you to focus on dealing with the customers and that customer must now get 50% better experience. That's definitely something that was a barrier." "I think how it's received by business people, that's very difficult. So it's the whole HR IR element of it. And how you need to go about preparing for that, I think that we did pretty well in managing that barrier."
IT infrastructure and collaboration	"Another barrier was the IT versus business, the ownership. Who controls the technology, should be IT be doing those contracts? Who's overseeing those suppliers? So there was a lot of back and forth about who must do what. Again, first time we're doing it, we didn't know how to position the engagement. There was a lot of learning that was needed. Going over to other companies that were automating for 10 years and working with implementation partners helped that barrier. But, definitely, just our understanding of the solution was not as fantastic as we thought and that's why it was slow also to pick up our scaling. The very first year was slow scaling. Once we had that foundation there was an explosion of robots more than anyone in Africa in less time than anyone." "your IT environments or your actual application environments are not the same. So how do you work around implementing an automation when you don't follow the software development lifecycle. We had to design what the robotic development life cycle and sort of endorse that while still maintaining. Structure or controls the correct IT controls."

Barrier	Selected and edited participant feedback to support findings
Skills and knowledge scarcity	“When we started, it was the scarcity of skills within the organization. Yes there are partners and vendors that provide the skills, but I think definitely one of the barriers were a scarcity of skills. RPA skills. Not just dev skills, but the technology RPA as a whole, things like, if I were to be specific, understanding the application, how the application works. That deeper understanding of it as opposed to just building automations. I think that's something we still lack today, but we're getting better at it.”

Table 16: Selected and Edited Participant Feedback to Support Noteworthy Barrier Themes

Eight out of nine participants believe that RPA was an overall success at Insurer X. The findings indicate that there are vital factors, learnings, and barriers that, if applied, would increase the likelihood of successful implementation of RPA at Insurer X.

4.6 Summary of the results/findings

The findings indicate that participants believe that RPA had a positive direct impact at Insurer X. The impact was most significant in the Operational Efficiency (50 – 75% impact), Risk (50 – >75%), Implementation and Integration (50 – >75%) and Quality (>75%) categories. RPA significantly improved productivity, costs, processing time, manual tasks, and workload while significantly reducing Risk to the organization. RPA also considerably impacted on Quality and Implementation and Integration categories as it reduced the number of processing errors and is cheaper, easier, quicker, and less intrusive than traditional technologies. The return on investment from RPA is inconclusive.

We have also established that, based on the findings, RPA had an indirect positive impact at Insurer X, and this impact is, to a large extent, not measured; however, it is significant. The key themes indicate that the impact was mostly in improving customer experience, skills development, RPA as a change catalyst, improved technology environment, and improved servicing capability.

We have also established that while all the implementation factors are critical, the top three are strategy definition, the RPA implementation process, and process identification and analysis. Additional factors not contained in the literature but also essential are executive sponsorship, level of business involvement, and technology readiness.

We have also established key learnings and noteworthy barriers based on participant experience, which provides future implementers with critical guidance to increase the likelihood of success. The top three learning themes across participants are RPA communicated as an organisational-wide program with a clear strategy, Proper investment and best practice, and Continuous improvement. The noteworthy barrier themes are Change management, IT infrastructure and collaboration, and Skills and knowledge scarcity.

CHAPTER 5. DISCUSSION OF THE FINDINGS AND CONCLUSION

5.1 Introduction

This chapter discusses the results in the context of the literature review in Chapter 2, per proposition. It highlights similarities and differences between the findings of this study and previous studies and proposes conclusions and recommendations. The literature review has shown that RPA has had positive direct and indirect impacts on European organisations and that this is measured to a certain extent. There is also evidence of guidance for successful implementation; however, this is not specific to South Africa or the insurance industry, where the technology is highly impactful.

5.2 Discussion and conclusion pertaining to Proposition 1

Table 1 in the literature review in chapter two summarizes the benefit themes and measures noted to have been impacted by RPA in previous implementations in Europe. These themes formed the basis for examining proposition one in this study. We will discuss each theme and highlight the similarities and differences per theme and variable as it relates to the results of this study.

5.2.1 *Operational efficiency*

Syed et al. (2020), in the review of forty-two papers, highlighted the impact RPA had on operational efficiency, specifically an unknown reduction in time, an unknown increase in productivity, a 20 to 50% reduction in FTE and a 30 to 60% reduction in the cost of transaction processing. There are similarities in this study. At insurer X, we have established that there was a reduction in time and the impact was 25 – >75%, there was an increase in productivity of 25 – 75%, there was <25 – 75% reduction in FTE, and <25 – >75% reduction in the cost of transaction processing. Lacity & Willcocks (2016a) noted a reduction in human resource cost in the “hundreds” and a reduction in manual tasks and workloads

of between 30 to 70%. An Insurer X, RPA impacted both these variables. There was a 25 – >75% reduction in manual tasks and workload and a <25 to 75% reduction in the cost of human resources. In assessing the direct impact of RPA on operational efficiency at Insurer X, we have established that the impact was positive and significant overall.

5.2.2 *Quality*

Syed et al. (2020) noted three quality impacts, all not measured. These were a decrease in errors, increased availability of systems, and increased availability of services. At Insurer X, we have established a similar decrease in errors, and the extent of the impact was 50 – >75%. There was also an impact on system availability; however, the impact is unknown. In assessing the direct impact of RPA on quality at Insurer X, we have established that the impact was positive and significant; however, the impact on system availability is unknown.

5.2.3 *Implementation and integration*

Syed et al. (2020) noted that RPA was easier, cheaper, quicker to implement, and less intrusive than traditional solutions. However, the extent of these impacts is unknown. We have established at Insurer X that there are apparent similarities in that these were seen as impacted by RPA; however, a significant portion of the responses indicated that the impact was unknown. More than 50% of responses indicated that RPA was between <25% and >75% easier to implement and between 25 and >75% quicker to implement. In assessing the direct impact of RPA on implementation and integration at Insurer X, we have established that RPA was easier and quicker to implement.

5.2.4 *Risk and Financial*

Syed et al. (2020) noted that RPA reduced risk to organizations. However, this was not measured. We have established that at Insurer X, RPA did reduce risk, with 63% of the responses noting a >75% impact.

Lacity & Willcocks (2016a) noted a 600% to 800% return on investment. At Insurer X, we have established that the return on investment was inconclusive, which differs from the literature.

5.2.5 *Conclusion*

There are clear similarities between this study and previous studies, with the key difference being the return on investment RPA generates. Additionally, this study gives a better indication of the extent of the impact across all variables, with a large portion of the impact in previous studies unknown or not measured. In conclusion, we have established that RPA directly benefited Insurer X, and these benefits are measured to a greater extent than in studies conducted on European-based organizations. In extending this framework to the South African context, we provide insight into what potential South African implementations at other organizations can produce.

5.3 Discussion and conclusions pertaining to Proposition 2

Syed et al. noted that an area for potential further studying is the indirect impacts of RPA. Proposition 2 states that the indirect benefits of RPA are mainly unknown. The research explored this at Insurer X and uncovered these benefits. We have established significant indirect benefits of RPA, with the critical benefit themes being improved customer experience, skills development, and RPA as a change catalyst. These benefits, although not measured, did have a significant impact.

5.3.1 *Improved Customer Experience*

Within the customer experience theme, participants noted quicker turnaround times and quicker first contact resolution due to implementing RPA. They noted measurable improvements to key experience variables on specific processes, such as improved NES and NPS; however, since other initiatives and factors are aimed at driving these variables, attribution directly to RPA is problematic. Participants also noted a reduction in complaints. Again, because this is a key experience measure for Insurer X, many initiatives and factors drive this variable,

and it is, therefore, difficult to attribute RPA to its improvement. Overall, the value of impressing the customer has not been measured and attributed to the implementation of RPA; however, it is a crucial indirect benefit of the implementation of it.

5.3.2 *Skills development*

Within the theme of skills development, participants noted an increased overall organisational skill level due to bringing in engineers to implement RPA. This increase, in turn, improved the level of thinking within the organization. Additionally, augmenting this skill in the operations area impacted the level of thinking across the entire area in how processes were analysed and improved. Additionally, RPA freed up time for process workers to upskill themselves and do more value-adding work. This upskilling created more opportunities for these individuals.

5.3.3 *RPA as a Change Catalyst*

Within the theme of RPA as a change catalyst, because digital triggers had to be built into existing and new processes to support RPA, this opened up avenues for further innovation and automation using other technologies. Additionally, the process of analysis and implementation of RPA influenced behaviours within the operations area. All procedures were continuously reviewed and improved independent of RPA implementations.

5.3.4 *Conclusion*

We have established the indirect impact of RPA, as noted above and based on participant feedback, is significant and was observed within the sample set; however, to a large extent is not measured and attributed to RPA. This lack of measurement is either because measures were not put in place upfront, the purpose of RPA was not to drive these measures, or the attribution to RPA is problematic due to competing initiatives or the ability to quantify the variable or impact. It is also noted that this negatively impacts the business case for and

impact of RPA and that if one were able to measure and attribute these benefits, the perception of RPA would be improved.

5.4 Discussion and conclusion pertaining to Proposition 3

The methodology proposed by Liévano-Martínez & Fernández-Ledesma, (2022) in Table 2 is based on experiments in South America in relatively immature implementations. Using this framework as a basis, the factors for successful implementation and Insurer X were assessed. There were apparent similarities in that the relative importance of these factors was consistent at Insure X. While participants rated all factors relatively highly, three factors stood out above the rest. These were Define Company/RPA Strategy, RPA implementation, and Process Identification and Analysis.

Participants noted that there were also factors not contained in this methodology that are critical to succeeding, and these factors, in most cases, only become apparent with the benefit of hindsight. These factors are Executive sponsorship, Level of business involvement, and Technology readiness.

Additionally, participants were asked to list top learnings and noteworthy barriers. The top three learnings were RPA communicated as an organizational-wide program with a clear strategy, Proper investment and best practice, and Continuous improvement. The top three noteworthy barriers were Change management, IT infrastructure and collaboration, and Skills and knowledge scarcity.

The known and additional factors, key learnings, and noteworthy barriers will be discussed in this section as input into a roadmap for successful implementation. All of these factors are discussed in depth in this section.

5.4.1 *Define Company/RPA Strategy*

One of the factors that stood out is the definition of the organizational strategy as it relates to RPA, which scored the highest in the assessment at Insurer X with 16% of the total points. In defining what you are trying to do, you set the tone of

implementing the program upfront. It provides clarity and focus to the implementation and increases the program's chances of success. This clear definition also links to the measurability of the indirect benefits. Suppose you are clear upfront about what you are trying to achieve with RPA. In that case, you can measure the direct and indirect impacts, more specifically, can deliver clear outcomes, improving the chances of success.

5.4.2 *RPA Implementation*

Another factor that stood out was the RPA implementation process, with 12% of the total points. Participants noted that all the sub-steps in the process are critical, and following these steps in a structured manner increases the chances of successful implementation and, in the long run, process maintenance, which is essential for value realization. Following a structured and tested process enables the maintenance team to improve the success rates of automation once they are in production. This approach is necessary because, over time, process degradation occurs due to business process changes.

5.4.3 *Process identification and analysis*

Participants noted that process selection is critical to success. Picking the right processes for automation greatly improves your overall benefit, and conversely, selecting the wrong process adds cost during the implementation and maintenance phases, reducing overall benefit and confidence in the solution.

5.4.4 *Additional Factors One: Executive sponsorship*

The critical factor on top was executive sponsorship, with 33% of the total points. Participants noted that having a strong sponsor is the most critical success factor and that the chances of success are low without it. This sponsor must have a strong vision and the ability to remove organizational blockers rapidly. This person needs to have a broad understanding of the technology and the ability to obtain organization-wide buy-in and time for the solution to succeed.

5.4.5 *Additional Factor Two: Level of Business Involvement*

Level of business involvement was another emerging theme, with 25% of the total points. This includes business involvement throughout the implementation process, from selection to implementation to monitoring and maintenance. It also consists of a clear business architecture with the right business subject matter experts involved in the implementation, which all points to having a business-led implementation instead of a technology or RPA-led one.

5.4.6 *Additional Factor Three: Technology Readiness*

The third emerging theme was technology readiness, with 17% of the total points. This readiness includes consistency across your development, quality assurance, and production environments, which was raised as crucial in the ability to deploy rapidly. Small differences in these environments hamper your ability to test implementations.

5.4.7 *Learning One:* RPA communicated as an organizational wide program with a clear strategy

Here participants noted that the program's communication is critical to its success. This includes education on what the technology is and how it works, what purpose it will serve in the organization, and how it has or will benefit the organization. This not only “sells” the solution but also makes the organization a part of the change and serves as a form of change management.

5.4.8 *Learning Two:* Proper investment and best practice

Participants noted that the investment needs to be substantial so as to not treat RPA as a project. This links to learning one in that the level of investment need to reflect that this is the direction the organization intends to take and will invest significantly in the solution. Also noted is the importance of best practices upfront to ensure downstream success and less maintenance and monitoring costs.

5.4.9 *Learning Three:* Continuous improvement

Continuous improvement at a process/operational and strategic level is also seen as critical to success. This improvement includes a constant review of automation success rates and the automation strategy in line with the organisational, and operational structure of the CoE.

5.4.10 *Barrier One: Change management*

Change management is an obvious one and also links to learning one. Explaining what you are doing, how it impacts the organization, and how it benefits the organization will create buy-in and contribute to the likelihood of success. An important aspect of this is communicating how people will be impacted and that the purpose is not to replace jobs but to improve employees' productivity, removing manual tasks and freeing up time for more valuable activities. This makes process experts more open to information sharing and participation in the implementation process.

5.4.11 *Barrier Two: IT infrastructure and collaboration*

This barrier includes how the RPA team collaborates with the IT team and links to additional factor three. Because you are essentially building automation on top of existing IT systems, ways of work and collaboration with the IT team are critical to success. Also, the IT team will manage the infrastructure upon which your automation solution sits, increasing the need for collaboration. Also, clarity of the role of automation in the broader technology context and toolkit is essential.

5.4.12 *Barrier Three: Skills and knowledge scarcity*

This barrier includes obtaining rare automation skills in the market (as the technology was relatively new in the country at the time of implementation) and an understanding of business processes. Acquiring these skills is critical to success.

5.4.13 *Roadmap for successful implementation*

Combining the themes regarding known and additional factors, key learnings, and noteworthy barriers, this study proposes a roadmap for successful implementation in South Africa, highlighting the most critical factors and key considerations to ensure successful implementation. It also suggests change management activities across all phases to enhance the probability of success. This roadmap is a build on Analysis phases for successful Implementation (Liévano-Martínez & Fernández-Ledesma, 2022).

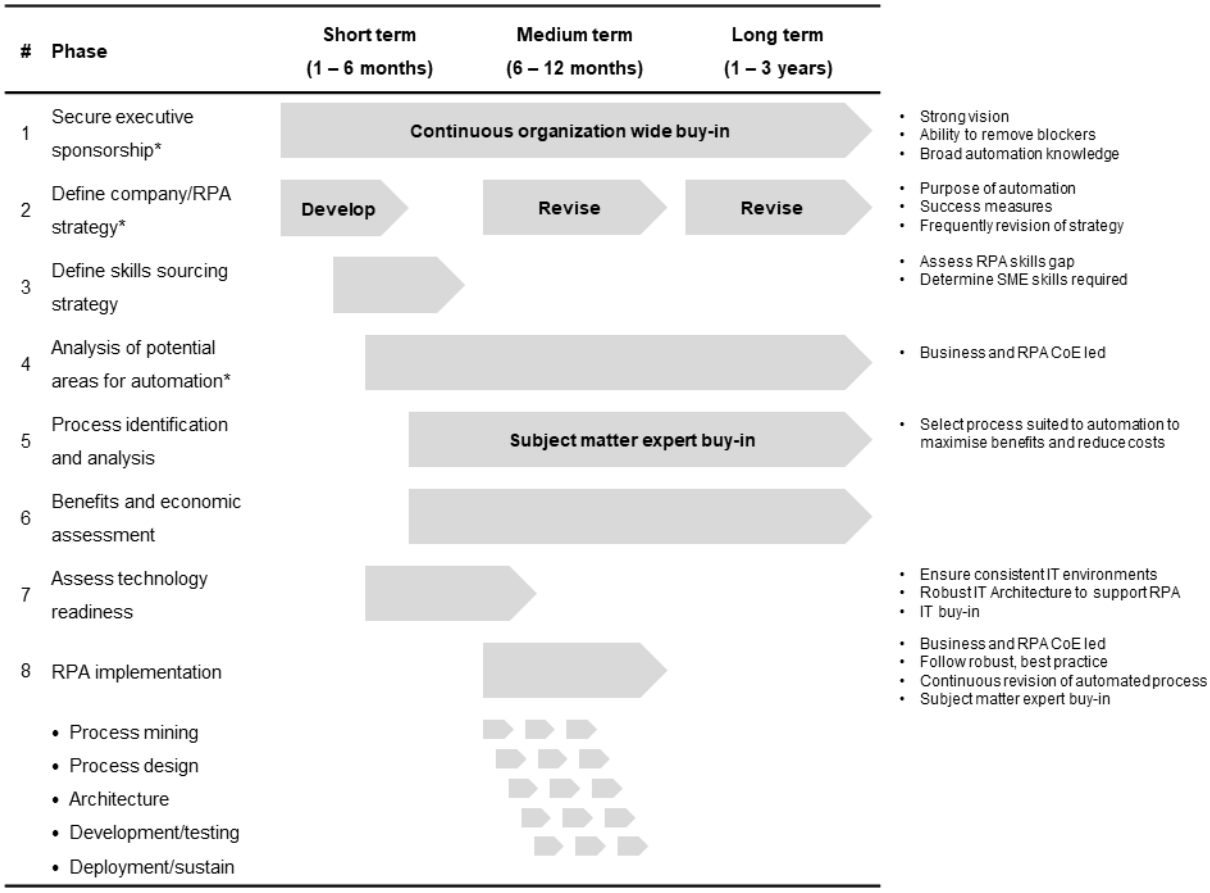

Figure 17: Diagrammatic Roadmap for Successful Implementation

5.5 Conclusion

The results of this study largely support the propositions put forward. The study concludes that overall the direct impact of RPA positively benefited Insurer X, and these benefits are known and measured to a large extent. This impact is across operational efficiency, risk, quality, implementation, and integration. The extent

of the impacts on these areas is significant, and multiple variables within these areas are impacted (Table 11). The study also finds that the return on investment of RPA was inconclusive.

The study also concludes that the indirect impact of RPA did positively benefit Insurer X, and these benefits, to a large extent, are unknown and not measured. These impacts are improved customer experience, skills development, and providing a catalyst for change.

The study has developed a roadmap for successful implementation as an output of key learnings and noteworthy barriers (Figure 17)

By extending the framework from the literature, we can see that, as in the international context, the implementation of RPA in the South African long-term insurance industry positively impacted and benefited Insurer X directly. This impact has been measured and is, to a large extent, known. Insurer X directly benefited the most in the areas of risk, operational efficiency, implementation and integration, and quality to a large extent.

Given the challenges facing South African insurers discussed earlier in the paper, and the subsequent research findings, the results and findings are applicable to practical applications and likely to have a significant impact in addressing these challenges. Furthermore, the roadmap (Figure 17) serves as a practical guide to implementing these findings.

Overall, there are apparent similarities between this study and previous studies, with the critical difference being the extent of the return on investment RPA generates. Additionally, this study gives a better indication of the extent of the impact across all variables, with a large portion of the impact in previous studies unknown or not measured.

5.6 Recommendations

This research highlights that the factors that RPA directly impacts in the broader context are also impacted in the operations area of Insurer X. Furthermore, it highlights that these impacts are measurable and significant. This study

recommends that organisations pursuing this journey understand and consider these impacts when defining their RPA strategy and developing the business case.

This research also highlights that there are unmeasured, significant indirect impacts of RPA that benefited Insurer X. It is recommended that organizations pursuing automation using RPA are aware of these indirect benefits and put in place mechanisms to measure these benefits to increase the likelihood of success.

This research synthesizes participants' experience in a multiyear RPA programme at a large South African insurer into impacts and a roadmap for successful implementation, incorporating key factors for success, key learnings, and noteworthy barriers. Notably, the organization in question is suited to RPA because it is mature and has a complex technology environment. This study is the first done in the South African context. It applies to insurance organisations, the broader financial services industry, and even in other sectors. For organizations that have yet to start their automation journey, this framework can be used to assess the applicability of the RPA technology to their strategy and decide whether to pursue it or not. For organizations already on their journey, this framework can increase their likelihood of success by focusing on key factors, incorporating key learnings, and anticipating and mitigating the potential impacts of barriers. It can also be used as a guideline for measuring the impact of RPA and for continuously improving existing automation which is essential for the longevity of the solution.

This research has extended the work by Syed et al. (2020) and Lacity & Willcocks (2016a and 2016b) by applying the benefit themes and measurement framework to a South African context and additionally by measuring the extent of the impact on specific variables. It has also contributed to the overall body of knowledge by articulating the indirect impacts of RPA however has not measured them.

Additionally, this research has taken Liévano-martínez & Fernández-ledesma’s (2022) paper on the “Roadmap for the implementation of robotic process automation in enterprises” and extended it to highlight the factors critical in the

South African context, as well as including additional factors not mentioned like executive sponsorship, technology readiness, and skills sourcing. It has also incorporated key learnings and barriers to be considered in the implementation process.

5.7 Suggestions for further research

Future research can measure the indirect attribution of benefit to RPA. Future research can also empirically examine the extent of the direct impact findings. Further research is also required to analyse the return on investment of RPA over a period long enough to account for maintenance and licenses cost (more than a 5-year time horizon). Additionally, the roadmap can be tested in other financial services organizations and industries like retail in South Africa.

#	Objective	Proposition	Data collection	Data analysis method
1	Assess the direct impacts of RPA.	The direct impact of RPA positively benefits long term insurance organisations and these benefits to a large extent are known and measured. It would be beneficial to extend this framework to a South African context.	In-depth interviews and historical stored data.	Qualitative. Inductive approach with thematic analysis.
2	Assess the indirect impacts of RPA.	The indirect impact of RPA positively benefits long term insurance organisations and these benefits to a large extent are unknown and not measured. It would be beneficial to assess the indirect impacts and benefits of RPA in a South African insurance context.		
3	Develop a roadmap for successful implementation of RPA.	A roadmap for successful implementation of RPA specific to South African long term insurance would add value to the industry and aid in developing the implementation of this technology and achieving benefits.		

Table 17: Consistency Table - Research Objectives, Propositions, Data Collection and Data Analysis

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APPENDIX A Research Instrument

Interviewer script, structure adapted from Eval Academy, 2022.

Provide and introduction and explanation of the project. Explain the perspective the person needs to answer the question from, which role they are assuming. Explain ethical considerations taken and protection of personal information and confidentiality. Get permission to record.

Interview guide, structure adapted from Eval Academy, 2022.

<u>Questions</u>

1. Optional demographics questions (that will be kept confidential):

    - Name
    - Gender
    - Years of experience in Financial Services
    - Years of experience at Insurer X
    - Years of experience in Robotics Process Automation
    - Education level

Variables that were directly impacted by RPA in previous studies.

Operational efficiency

- Reduction in time
- Reduction in cost of people
- Reduction in manual tasks and workload
- Increased productivity
- Reduction in FTE's on processes
- Reduction in cost of transaction processing

Quality

- Decreased errors
- Increased availability systems

Implementation and integration

- Cheaper to implement and maintain
- Easier
- Quicker
- Non-intrusive

Risk

- Risk reduction

Financial

- Return on investment

2. Which of the variables (identified in previous studies) were impacted at Insurer Xl?

3. To what extent, in your view, were the above variables impacted as a result of implementation of RPA (0-25%, 25 – 50%, 50 – 75%, 75 – 100%, more than 100%)?

4. Which of the variables were not impacted? Why do you think they were not impacted?

5. What indirect benefits have been observed as a result of the implementation of RPA at Insurer X? What metrics did they impact and to what extent?

6. Have these improvements been documented and can they be shared?

Known factors for successful implementation:

- Define company/RPA strategy
- Analysis of potential areas for automation
- Process identification and analysis
- Benefits and economic assessment
- RPA implementation
  - Process mining
  - Process design
  - Architecture
  - Development and testing
  - Deployment and sustain

7. Of the known factors from previous studies, which factors do you believe are key to a successful implementation? On a scale of 1 to 10, how critical is this factor to successful implementation?

8. Are there any additional factors?

9. What are the top 3 learnings that were taken away post implementation?

10. Do you consider the implementation of RPA at OM a success and why?

11. What noteworthy barriers were faced while implementing RPA?

APPENDIX B Organisation Permission Form

University of the Witwatersrand,
School of Management, Digital Business

Insurer X

2023/01/27

Dear Executive,

Re: Permission to conduct research at Insurer X.

My name Is Mohamed Sader

I am studying for a Masters in Digital Business in the Management at the University of the Witwatersrand. I am seeking permission to do research at Insurer X.

I am conducting research on the direct and indirect impacts of Robotics Process Automation, looking to measure these impacts and develop a roadmap to successful implementation using Insurer X as a case study given the success and awards received.

The research will entail collecting data from employees and contractors involved in the project from 2018 – 2020 and access to reporting over that period.

I will invite individuals from your organization to participate in this study. These would be individuals directly involved with implementations and management of the RPA CoE. If they agree, they will be asked to be interviewed for approximately 30 to 60 mins.

Participants will be asked to give their written or verbal consent before the research begins. Their responses will be treated confidentially, and identities (their names and the name of the organisation) will be anonymous unless otherwise expressly indicated. Individual privacy will be maintained in all published and written data resulting from the study.

The research participants will not be advantaged or disadvantaged in any way. They will be reassured that they can withdraw their permission at any time during this project without any penalty. There are no foreseeable risks in participating in this study. The participants will not be paid for this study.

All research data will be destroyed upon completion.

I therefore request permission in writing to conduct my research at your organisation. The permission letter should be on your organisation's headed paper, signed and dated, and specifically referring to myself by name and the title of my study.

Please let me know if you require any further information. I look forward to your response as soon as is convenient.

Yours sincerely,

Mohamed Sader
078 603 5553
2506742@students.wits.ac.za

Michael Sony (Supervisor)
+27 11 717 3817
michael.sony@wits.ac.za

APPENDIX C Participation Consent Form

An assessment of the impact of robotics process automation on a large South African Insurer: A case study

Mohamed Sader

I, ……., agree to participate in this research project. The research has been explained to me and I understand what my participation will involve. I agree to the following:

(Please circle the relevant options below).

I agree that my participation will remain anonymous	YES	NO
I agree that the researcher may use anonymous quotes in his / her research report	YES	NO
I agree that the interview may be audio recorded and transcribed.	YES	NO
I agree that the information I provide may be used anonymously after this project has ended, for academic purposes by other researchers, subject to their own ethics clearance being obtained.	YES	NO

…… (signature)

…… (name of participant)

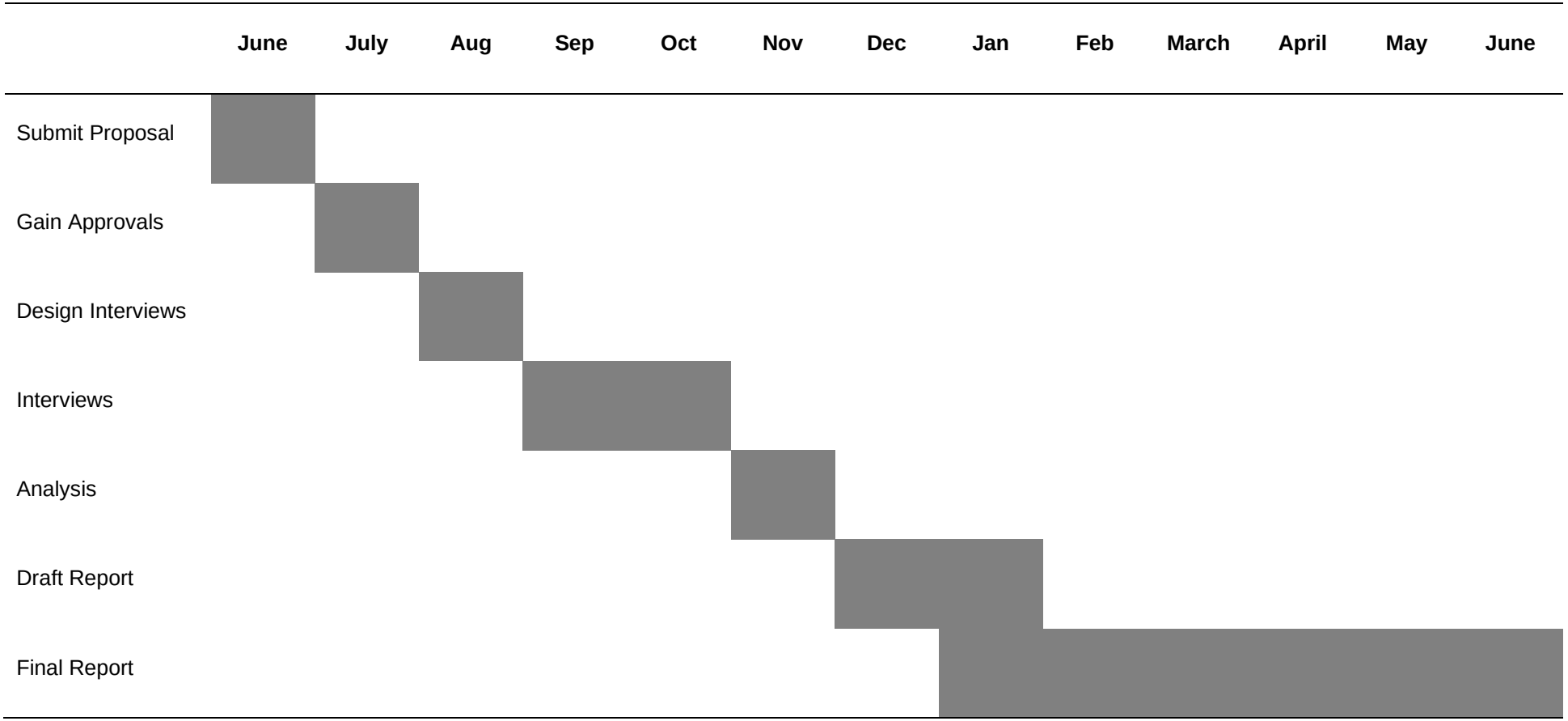
…… (date)

…… (signature)

…… (name of person seeking consent)

…… (date)

APPENDIX D Proposed Schedule and Timelines



APPENDIX E Roadmap for Successful Implementation

Phase	Key considerations	Change management activities
Secure executive sponsorship	• Strong vision • Ability to remove blockers • Broad automation knowledge	• Organisation wide buy-in
Define company/RPA strategy	• Purpose of automation • Success measures • Frequently revision of strategy	• Purpose and benefits of RPA
Define skills sourcing strategy	• Assess RPA skills gap • Determine SME skills required	
Analysis of potential areas for automation	• Business and RPA CoE led	
Process identification and analysis	• Select process suited to automation to maximise benefits and reduce costs	• Subject matter expert buy-in
Benefits and economic assessment		
Assess technology readiness	• Ensure consistent IT environments • Robust IT Architecture to support RPA	• IT buy-in
RPA implementation • Process mining • Process design • Architecture • Development and testing • Deployment and sustain	• Business and RPA CoE led • Follow robust, best practice • Continuous revision of automated process	• IT buy-in • Subject matter expert buy-in

Table A 1: Roadmap for successful implementation

APPENDIX F Ethics Clearance

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg

Wits Business School Ethics Committee
Constituted under the University Human Research Ethics Committee (Non-Medical)

Ethics Clearance Certificate

Ethics protocol number: WBS/DB2506742/748
This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).

This certificate is only valid if accompanied by formal permission from the relevant stakeholder(s).

Project title	Robotics process automation implementation in a large South African insurer
Investigator / Researcher	Mr Mohamed Sader
Nature of Project	MM (Digital Business)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed confidentialty.
Issue Date of Certificate	2023-02-06
Expiry date	Date of submission of the project / research report
Chairperson	Dr Pius Oba +27 11 717 3976 +27 82 733 6587 pius.oba@wits.ac.za

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Declaration by Researcher

One copy must be signed by the Researcher and returned to the Chairperson of the Wits Business School Ethics Committee.

I fully understand the conditions under which I am authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I undertake to resubmit the protocol to the Committee.

Signature

06/02/2023
Date: