



**The Perception of Bookkeepers on the Adoption of
robotic process automation in the automotive industry
in Gauteng**

A **research report** presented to the

Faculty of Commerce, Law and Management

Wits Business School

By

Nozipho Dlamini

Supervisor: Robert Venter

It is a partial fulfillment of the Master of Business Administration degree
requirements.

04 July 2024



DECLARATION

Student details	
Student Number: 2135464	Student name: Nozipho Dlamini
Email address: 2135464@Students.wits.ac.za	

Student Declaration

I am aware that plagiarism (the use of someone else's work without their permission and/or without adequately acknowledging the original source) is wrong and is a violation of both the General Rules for Student Conduct and the Plagiarism Policy of the University of the Witwatersrand.

I am aware that it is wrong and is a violation of both the General Rules for Student Conduct and the rules of the Wits Business School for a student to submit for a course, unit, or programme of study, without the written approval of the course instructor or the programme director, all or a substantial portion of any work for which credit has previously been obtained by the student or which has been or is being submitted by the student in another course, unit, or programme of study in the University or elsewhere.

I confirm that this assignment my own unaided work except where I have explicitly indicated otherwise.

I confirm that this assignment has not been nor will be submitted in whole or in substantial part in another course, unit, or programme of study in the University or elsewhere without the written approval of the course or unit instructor or the programme coordinator.

I confirm that I have followed the required conventions in referencing the words and ideas of others in this assignment.

I confirm that I understand that this assignment may at any time be submitted to an electronic plagiarism detection system, and may be stored electronically for that purpose.

I confirm that I have received a copy of the University's Plagiarism Policy S2003/351B and a copy of the General Rules for Student Conduct and Code of Conduct C2010/27.

I confirm that I understand that any and all applicable policies, procedures, and rules of the University and of the School may be applied if there is a belief that this assignment is not my own new and unaided work, or that have failed to follow the required conventions in referencing the words and ideas of others, and I understand that application of the policies, procedures, and rules may lead to the University taking disciplinary action against me.

Note: The attachment of this statement on any electronically submitted assignments will be deemed to have the same authority as a signed statement.

Student Signature

NT Dlamini

Date: 04 July 2024

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my supervisor Dr Robert Venter for his invaluable guidance and support throughout my research project. His expertise and encouragement helped me to complete this research and write this research project.

I would also like to thank Prof. Nixon Ochara and Prof. Pius Oba for serving on my research project committee and providing helpful feedback and suggestions.

I am grateful to my employer for providing me with the opportunity to conduct my research at the organization and for all of the resources and support they provided.

I would also like to thank my friends and family for their love and support during this process. Without them, this journey would not have been possible. I cannot leave out my late brother and grandfather for their support before they departed.

Finally, I would like to thank all of the participants in my study for their time, sacrifices, and willingness to share their experiences. This work would not have been possible without their contribution.

Abstract

Background: The automotive industry in Gauteng, South Africa, stands at the cusp of transformative technological integration, with Robotic Process Automation (RPA) emerging as a key driver of efficiency and innovation. However, the successful adoption of RPA hinges not only on technological prowess but also on the perceptions and attitudes of the Bookkeepers tasked with its implementation and utilization.

Objective: This study aims to investigate the effects of Robotic Process Automation on bookkeeping staff in Gauteng's automotive industry. By understanding their perspectives, this study aims to investigate the effects of Robotic Process Automation on bookkeeping staff in Gauteng's automotive industry.

Method: In the study, a qualitative method approach was employed to comprehensively capture employee perceptions. Semi-structured interviews were conducted with key stakeholders across the finance and controlling domains within an automotive company. Data analysis involved thematic coding of interview transcripts and statistical analysis of survey responses to uncover patterns, themes, and correlations.

Results: Preliminary findings suggest a diverse range of attitudes towards RPA adoption among Bookkeepers in the Gauteng automotive industry. While some express enthusiasm for the potential efficiency gains and reduced mundane tasks, others harbor concerns regarding job displacement and skill obsolescence. Additionally, organizational culture, leadership support, and communication emerge as critical factors shaping employee perceptions and readiness for RPA implementation. The synthesis of qualitative data provides a rich understanding of the complex interplay between individual attitudes, organizational dynamics, and technological integration in the automotive sector.

KEYWORDS: RPA, Robots, Bookkeeper, Gauteng, South Africa

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION.....	11
1.1 Statement of purpose	11
1.2 Background of the study.....	11
1.2.1 Background of RPA.....	15
1.2.3 Context of the study	20
1.2 Research problem	21
1.4 Justification/Rationale of the Study	23
1.5 Delimitations of the Study.....	24
1.6 Operational Definitions	25
1.6.1 RPA	25
1.6.2 ROBOTS	25
1.6.3 BOOKKEEPING STAFF	26
1.6.4 AUTOMOTIVE	26
1.6.5 GAUTENG	26
1.7 Structure of the Paper	27
CHAPTER 2: LITERATURE REVIEW.....	28
2.1 INTRODUCTION	28

2.2 Literature Review Approach	28
2.3. Literature review themes	29
2.3.1 The future of work and occupations	29
2.3.2 Redefining productivity in the digital era.....	30
2.3.3 Investing in AI and RPA for an improved business in future.....	31
2.3.4 Effects of evolving technologies on the job market.....	32
2.3.5 Adopting to the digital future.....	33
2.3.6 The criticism associated with RPA adoption in organisations.....	35
2.4 THEORETICAL UNDERPINNINGS	36
2.4.2 THEORY OF CHANGE (TOC) AND THE MANUFACTURING SECTOR	38
CHAPTER 3: RESEARCH METHODOLOGY	41
3.1 INTRODUCTION	41
3.2 Research paradigm	42
3.4 Research design	44
3.5 Data collection methods.....	45
3.6 Population and sample.....	46
3.7 Sample and sampling method.....	46
3.8 The research instrument	47
3.9 Procedure for data collection.....	48
3.10. DATA ANALYSIS STRATEGIES AND INTERPRETATION	48
3.11 Possible Limitations and Challenges of the Study.....	48
3.12 Quality Assurance	48
3.12.1 TRANSFERABILITY	49

3.12.2 CREDIBILITY	49
3.12.3 CONFIRMABILITY	49
3.13 ETHICAL CONSIDERATIONS	49
3.14 Conclusion	50
CHAPTER 4: RESEARCH FINDINGS AND INTERPRETATION	51
4.1 INTRODUCTION	51
4.2 PARTICIPANT DEMOGRAPHICS DATA.....	51
4.3 USAGE OF THEMATIC ANALYSIS FRAMEWORK	52
4.4 UNDERSTANDING THE CONCEPT OF RPA’S IMPACT ON JOBS.....	56
4.5 RPA TOOL ADOPTED BY SA AUTOMOTIVE COMPANIES.....	57
4.6 CONCLUSION	59
CHAPTER 5: DISCUSSION OF RESULTS	59
5.1 DISCUSSION OF FINDINGS AND INTERPRETATION OF RESULTS	59
5.2 Practical implications.....	61
5.3 Theoretical implications of the study	64
Negative Perceptions and Job Security Concerns	64
Adaptation and Upskilling.....	65
Role of Management and Organizational Support	65
5.4 Conclusion	65
CHAPTER 6: CONCLUSION	66
6.1 INTRODUCTION	66

6.2 Summary of key findings	66
6.3 Recommendations	68
6.4 Limitations of the Study	68
6.5 Future Research Considerations.....	69
6.6 Conclusion	70
References	73
APPENDICES	85
Appendix 1: Information letter to participants	85
Appendix 2: Participant consent form.....	87
Appendix 3: Questions for semi-structured interviews.....	89
Appendix 4: Interview schedule.....	93
Appendix 5: Authorization letter	94
Appendix 6: Clearance certificate from WBS	95

List of tables

1. Table 1: Participant demographics data - Source: Researcher.....	52
2. Table 2: Authors analysis (2024).....	53
3. Table 3 : Source: Researcher's analysis (2023).....	58

List of Figures

4. Figure 1: Theory of change framework for this study	39
5. Figure 2: Participant demographics data - Source: Researcher	52

List of acronyms

Artificial Intelligence	AI
Digital transformation	DT
Higher learning Institutions	HLI
Human Resources	HR
Information Technology	IT
Machine learning	ML
Research question	RQ
Robotic process automation	RPA
South Africa	SA
Thematic Analysis	TA

CHAPTER 1: INTRODUCTION

1.1 Statement of purpose

A theoretical with practical implications study, this qualitative study would investigate the effects of Robotic Process Automation on Bookkeeping staff in the automotive industry in Gauteng.

1.2 Background of the study

Companies invest in digital transformation (DT) in order to stay in business and be competitive (Bexiga et al., 2020). DT is used by Information Technology (IT) to deliver value propositions or to emphasize IT's identity in an organization (Wessel et al., 2021, p. 37 as cited in Siemon & Kedziora, 2023). DT introduces changes on employee tasks, anticipated or unanticipated changes in the type of work, and the way work is shaped and lately, the organizational structures are changed in organizations. Globally, a study reported that in 2020 the RPA (RPA) market was going to be valued at \$20.1 billion in 2030 and was up from \$4.8 billion in 2021 (Business Wire, 2023). RPA is one of the tools used when DT initiatives are introduced, and it is seen slowly taking over the human workforce's work and even replacing some Bookkeeping (Siemon & Kedziora (2023). According to Johansson (2020), the previous researchers have already covered the history of automation steps which they have claimed that automation started by improving efficiency, automation introduces tools that replace Bookkeeping staff physical and lately automation shows a potential of replacing human thinking abilities by mimicking their thought processes.

Regardless of the shift towards RPA from performing repetitive tasks for Bookkeeping staff, RPA adoption continues to be very slow in developing countries; downplaying the investments done by organizations automating repetitive tasks (Fernandez et al., 2023).

Merriam-Webster, Incorporated (2024) defines a bookkeeper as an individual responsible for maintaining financial records for a company or organization. The Bookkeeping process includes recording financial transactions frequently for an organization or institution. According to Okridu and Miller (2021) Bookkeeping is important as it gives the internal and external users of

financial statements like financial institutions, investors, and government including people or companies with an interest in reliable financial information to make informed lending and investment decisions (Okridu & Miller, 2021). Companies implement RPA to benefit from cost-effective, flexible business processes with no need for programming skills, and from the employee's point of view, RPA can boost the employee's work morale as non-value add and repetitive tasks can be eliminated.

RPA cuts Information Technology's workload and it does not distract the legacy systems already in place for organizations (Kosonen, 2020). Studies that were conducted in Bulgaria and the US reported that the fear of losing jobs because of automation technologies was not that severe (Ivanov et al., 2020) but uncertainties that jobs would be lost affected employee morale and eventually impacted on RPA adaption and demotivated Bookkeeping (Kosonen, 2020).

The automotive industry, a cornerstone of South Africa's economy, has witnessed a transformational shift in recent years with the adoption of advanced technologies. An example of a technological advancement that has become increasingly popular in this industry is Robotic Process Automation (RPA). RPA entails employing software robots or bots to automate routine, rule-based duties within business operations (Davenport et al., 2018). In Gauteng, the heart of South Africa's automotive industry, RPA has emerged as a significant force driving operational efficiency and productivity gains.

The adoption of RPA in the Gauteng automotive industry has sparked significant interest and debate. While RPA promises substantial benefits such as cost reduction, improved accuracy, and enhanced operational speed (Brauer & Wollersheim, 2020), its implementation also raises questions and concerns among Bookkeeping. Bookkeeping are integral stakeholders in the RPA adoption process, as they are often the ones directly affected by the introduction of automation technologies (Chui et al., 2016).

This study seeks to explore the perceptions of Bookkeeping working in the Gauteng automotive industry regarding the adoption of RPA. Understanding how Bookkeepers perceive RPA adoption is essential because these perceptions can significantly influence the success or failure of RPA initiatives (Pulijala et al., 2018). Bookkeeping buy-in, resistance, or indifference can shape the pace and extent of RPA implementation, ultimately impacting the industry's competitiveness and sustainability.

Several key factors may influence employee perceptions of RPA adoption in the Gauteng automotive industry. These factors include the nature of their job roles, their familiarity with automation technologies, their expectations of the technology's impact on their work, and their overall attitudes toward automation and innovation (Foss et al., 2020). Additionally, organizational factors, such as communication strategies, training programs, and leadership support, play a crucial role in shaping employee perceptions of RPA (Raghavan et al., 2019).

The significance of this study lies in its potential to provide valuable insights for automotive industry leaders, policymakers, and practitioners. By understanding employee perceptions, organizations can design more effective RPA implementation strategies, address employee concerns, and promote a smoother transition to a more automated future. Moreover, this research contributes to the broader literature on technology adoption, automation, and employee attitudes, offering a context-specific perspective within the unique industrial landscape of Gauteng.

RPA is defined by Perdana et al. (2023) as a business process software that replicates repetitive tasks that human beings perform using Robots. The Robots that are mentioned in the definition are not physical Robots but it is a computerized process that mimics human beings (Perdana, 2023). An example of a purchase order use case outlined that before RPA was introduced, an employee needed to log into the system frequently to verify and confirm orders to apply prices and apply discounts but post implementation of RPA the employee only confirms orders against the contracts and all other tasks are done by RPA (Perdana et al., 2023).

According to Egiyi and Chukwuani (2021), RPA has been used across industries such as HealthCare, HR (Human Resources), Telecommunications, Insurance, Retail Industries, and Travel and Logistics Accounting Firms. A number of studies have been conducted in various domains including Information and Communication Technology (ICT), financial services firms, the South African tax system, the Banking sector, and Automotive (Taşdoğan, 2021; Turzyńska, 2022; Wallace, 2022; The studies that were conducted in the automotive industry mostly focused on the engineering contexts, outside of South African borders hence the need for this study to explore the Bookkeeping staff RPA effect aspect in the South African context. In SA, studies that contextualized the problem include financial services firms, the Banking sector, and financial institutions.

Robotic Process Automation (RPA) has rapidly gained momentum across industries worldwide due to its potential to transform business processes and streamline operations. The South African

automotive industry, centered in Gauteng, has also started to explore, and implement RPA to optimize its operations and gain a competitive edge.

RPA use cases within the context of the South African automotive sector.

1. Supply Chain Management: In the automotive industry, efficient supply chain management is paramount. RPA can be used to automate order processing, demand forecasting, and inventory management (Kamal et al., 2024). By automating these processes, automotive companies in Gauteng can ensure timely delivery of parts and reduce the risk of production delays.
2. Production Line Monitoring: RPA can monitor and control various aspects of the production line, including quality control and defect detection. Automated visual inspection systems powered by RPA can improve product quality and reduce defects (Chui et al., 2016). This is crucial in maintaining the high standards demanded by the automotive industry.
3. In the realm of finance and accounting, RPA can be utilized to automate tasks like invoice processing, accounts payable, and accounts receivable (Pereira & Romero, 2017). This not only reduces manual errors but also speeds up financial transactions, benefiting both automotive manufacturers and suppliers.
4. Customer Relationship Management (CRM): RPA can enhance CRM systems by automating routine customer inquiries, order tracking, and feedback collection (Kumar et al., 2019). For automotive firms in Gauteng, this implies enhancing customer service while allowing human Bookkeeping to concentrate on more intricate customer interactions.
5. Human Resources: RPA can streamline HR processes such as payroll management, employee onboarding, and leave requests (Davenport et al., 2018). This leads to improved HR efficiency and ensures that Bookkeeping' needs are met promptly.
6. Regulatory Compliance: Ensuring compliance with local and international regulations is vital in the automotive industry. RPA can assist in monitoring regulatory changes, automating compliance checks, and generating audit reports (Ovum, 2017). This decreases the likelihood of non-compliance and the resulting penalties.

These RPA use cases represent only a fraction of the possibilities within the South African automotive industry. As organizations in Gauteng continue to explore and embrace RPA, the technology's potential to revolutionize business processes becomes increasingly evident. However, it's essential to recognize that RPA adoption is not solely a technological endeavor but also a transformational one, impacting the workforce and organizational culture.

Understanding how Bookkeepers perceive and adapt to these changes is critical, as their perspectives can significantly influence the success of RPA initiatives (Pulijala et al., 2018). This dissertation aims to investigate these perceptions among Bookkeeping in the Gauteng automotive industry, providing valuable insights into the human aspect of RPA adoption in this vital economic sector.

1.2.1 Background of RPA

RPA made its first appearance beginning of the year 2000 and it was not a standalone but was dependent on Artificial intelligence (AI), automatic workflows, and screen scraping (Adaptive Growth, 2022). The usage of RPA spreads across different industries such as telecommunications, retail, manufacturing, and finance to (mention but a few, the departments includes, Accounting, Information Technology (IT), Human Resources (HR), and all other areas in the business (Adaptive Growth, 2022).

The previous studies samples, case studies, and systematic reviews seem to have not spread across different industries. The departments did not have adequate interviews done; few case studies show the impact on individuals in South African organizations that are facing the DT impact with the introduction of RPA and other digital tools (Tew, 2020). This study seeks to interview Bookkeeping in SA who have gone through implementations of RPA to gather what impact have they observed or experienced.

It has been reported by other researchers that past research done on RPA human effect perspective, does not cover the specific effects reported by individuals, a study by Ruiz et al. (2022) found a gap that the psychological and socio-ethical part of the method has not been studied. Siemon and Kedziora (2023) also concluded by including in the gaps that the concern about Bookkeeping losing jobs to the intelligent tools needs to be investigated. The limitations on evidence provided by the adopter of the automation tool remain a concern and to be considered in future research (Kaniadakis & Linturn (2022).

South Africa is a country that struggles with unemployment and that includes the youth, the study aims to add value by clarifying the effect of RPA on office job Bookkeeping staff. There is a fear factor associated with RPA implementations in terms of Bookkeeping staff losing their

office jobs to Robots, Bookkeeping staff therefore shy away from supporting RPA initiatives (Siemon et al., 2023). There is a lack of studies that investigate the sources of fear about RPA causing unemployment and what companies can do to promote the adoption of RPA (Lakay & Mlambo, 2020). This study investigated this gap using the qualitative method on the basis of the theory of change framework analysis. The theory of change assisted in identifying the causes of certain changes based on available evidence (Rice et al., 2020).

RPA has emerged as a significant driver of change in the business and industrial landscape. It embodies an innovative technology utilizing software robots or bots to automate recurring, rule-based activities, processes, and workflows within enterprises (Davenport et al., 2018). This technology has attracted considerable interest and implementation in numerous sectors, such as finance, healthcare, logistics, and notably, the automotive sector. RPA systems are designed to mimic human actions by interacting with digital systems, applications, and data sources, thereby streamlining operations, reducing errors, and improving efficiency (Kumar et al., 2019). RPA is characterized by its ability to handle routine, mundane, and time-consuming tasks, freeing human Bookkeeping to focus on higher-value activities that require creativity, critical thinking, and complex decision-making.

The adoption of RPA in industries like manufacturing and automotive holds the promise of revolutionizing operational processes. In the context of the Gauteng automotive industry, which is renowned for its significant contribution to South Africa's economy, RPA has the potential to drive substantial improvements in production, supply chain management, and customer service. The technology offers advantages such as enhanced productivity, cost savings, increased accuracy, and the ability to adapt quickly to changing market demands (Pereira & Romero, 2017).

As RPA continues to gain momentum in the automotive sector, it is essential to recognize the diverse applications it can encompass. These applications include automating data entry and processing, quality control, inventory management, and even customer relationship management. Moreover, RPA can provide valuable insights through data analytics and reporting, enabling organizations to make data-driven decisions and optimize their operations (Ovum, 2017). This

capability is especially relevant in the context of the Gauteng automotive industry, where data-driven decision-making can lead to enhanced competitiveness and sustainable growth.

However, as RPA becomes more integrated into automotive processes, it raises complex questions and challenges, particularly concerning its impact on the workforce. Bookkeeping in the Gauteng automotive industry may have varying perceptions of RPA adoption, driven by factors such as job security, job roles, and the perceived role of automation in their daily tasks (Chui et al., 2016).

Understanding the perception of Bookkeeping regarding RPA adoption is critical because it can significantly influence the technology's successful integration. Employee attitudes, acceptance, and concerns may shape the industry's approach to automation, training programs, and the development of supportive policies (Pulijala et al., 2018). Therefore, this study aims to delve into the perceptions of Gauteng automotive industry Bookkeeping regarding the adoption of RPA, offering valuable insights into the human dimension of technological innovation within this crucial sector.

In a quest to contribute to the body of knowledge about the impact of RPA, this paper is intending to find more information about the impact on Bookkeeping for the organisations that implemented RPA. The study is more focused on the human aspect, about the effect of the introduction of the digital employee in the organisation. The uncertainty of what could happen if the tasks performed by a Bookkeeping staff get automated and the Robots takes over have been mitigated by findings by Wangui (2020). The findings include that top management support plays a critical role in motivating Bookkeeping to adopt RPA. Management need to reward the Bookkeeping that adopt RPA (Wang & Wang (2016 as cited in Wangui, 2020)). In this paper, we show that an effort by management to show appreciation of adoption by paying incentives to those Bookkeeping participating builds management trust. This is built into the performance management system to show the Bookkeeping the importance of embarking on the journey of protecting jobs at all costs. The primary research question is What are the perceptions of Bookkeepers within the automotive industry in Gauteng regarding the adoption of robotic process automation (RPA), and how do these perceptions impact job roles, responsibilities, and organizational dynamics?

1.2.2 The automotive industry in South Africa and Gauteng

1.2.2.1 Overview of the Global Automotive Industry

The automotive industry is a cornerstone of the global economy, playing a critical role in manufacturing, employment, and technological innovation (OICA, 2023). This industry encompasses a wide range of companies and organizations involved in the design, development, manufacturing, marketing, and selling of motor vehicles. It is one of the world's largest industries by revenue, with significant contributions to the gross domestic product (GDP) of many countries (Statista, 2023).

The automotive industry has its roots in the late 19th century with the advent of the internal combustion engine and the production of the first automobiles (Toma, 2023). The mass production techniques pioneered by Henry Ford in the early 20th century revolutionized the industry, leading to the proliferation of affordable cars and the establishment of a global market (Ford Motor Company, 2022).

Today, the automotive industry is characterized by a high degree of consolidation, with major global players such as Toyota, Volkswagen, General Motors, and Ford dominating the market (McKinsey & Company, 2023). These companies operate extensive supply chains and have a global manufacturing presence. The industry is also witnessing significant technological advancements, including the development of electric vehicles (EVs), autonomous driving technology, and connected car systems (Deloitte, 2023).

1.2.2.2 The Automotive Industry in South Africa

South Africa's automotive industry is a vital sector of the national economy, contributing significantly to the country's GDP, employment, and exports (NAAMSA, 2023). The industry is the largest manufacturing sector in South Africa, known for its robust vehicle manufacturing and assembly operations (Automotive Industry Export Council, 2023).

The South African automotive industry has a long history, dating back to the early 20th century. It has evolved through various phases, from import substitution policies to the current export-oriented strategies (NAAMSA, 2023). The establishment of local manufacturing plants by global automotive giants has been a key driver of growth (NAAMSA, 2023).

Today, South Africa is home to several major automotive manufacturing plants, including those operated by Toyota, Volkswagen, BMW, Ford, and Mercedes-Benz. These plants produce vehicles not only for the domestic market but also for export to various regions, including Europe, Asia, and Africa (NAAMSA, 2023). The automotive industry contributes approximately 7% to South Africa's GDP and employs around 112,000 people directly in manufacturing. The broader automotive value chain, including suppliers and dealerships, supports additional jobs and economic activity (NAAMSA, 2023).

1.2.2.3 The Automotive Industry in Gauteng

Gauteng, the economic hub of South Africa, plays a pivotal role in the country's automotive industry. The province is home to a significant concentration of automotive manufacturing, assembly, and component production facilities (South African Government News Agency, 2024).

Key Features

Manufacturing Facilities: Gauteng hosts major manufacturing plants, including those of Nissan, Ford, and BMW. These facilities are crucial for both domestic vehicle production and exports (Provincial Government, 2023).

Supplier Network and logistics and infrastructure

The province has a well-developed network of automotive suppliers and component manufacturers, supporting the production needs of the major OEMs (Original Equipment Manufacturers) (AIEC, 2023). Gauteng's strategic location and advanced infrastructure make it a key logistics hub for the automotive industry. The province's road, rail, and air transport networks facilitate the efficient movement of goods and components (Transnet, 2023).

1.2.2.4 Technological Advancements and RPA in the Automotive Industry

The automotive industry is at the forefront of technological innovation, with advancements in electric vehicles, autonomous driving, and connected car technologies (PwC, 2023). One of the significant technological trends impacting the industry is the adoption of Robotic Process Automation (RPA) (Forrester, 2023).

RPA in Automotive

RPA refers to the use of software robots to automate repetitive, rule-based tasks that were previously performed by humans. In the automotive industry, RPA is being utilized in various areas, including such as Manufacturing and Production Automating assembly line processes, quality control, and inventory management (KPMG, 2023). Supply Chain Management: Enhancing efficiency in order processing, logistics, and supplier coordination (Accenture, 2023). Back-office Operations: Streamlining administrative tasks such as payroll processing, compliance reporting, and customer service (Deloitte, 2023).

1.2.3 Context of the study

The problem to be researched is related to RPA implementations done in South Africa by companies in any setting. The scope would be limited by the type of position that the employee is occupying. The problem of slow adoption of RPA by Bookkeepers because of resistance to the implementation of intelligent tools which are assumed to be taking their jobs away affects the Bookkeepers in South Africa.

The manufacturing industry or sector organizations are targeted for this study in the South African context. The study by Eikebrokk and Olsen (2020) revealed that studies for RPA in South Africa have been conducted in both the private and public sector which includes manufacturing, financial, gas and oil. Madakam et al, 2019 listed other industries such as banking, financial services, banking sector (Naidoo, 2021). The South African was chosen because it is a developing country with challenges of unemployment, literacy and inequalities, technological automations can have a positive or negative impact to Bookkeeping. This phenomenon has to be understood in order to discover the actual impact that RPA has in a country like South Africa with chronic struggles of poverty, youth unemployment and also for a country that was hit hard by the Covid 19 pandemic in year 2020. Parker and Appel (2021) found in their study that the industry experts view about the introduction of automation which, is a probability of 60-70% of job losses and posing risks to those Bookkeepers who could be negatively affected by technological automation (Parker & Appel, 2021).

1.2 Research problem

Problem Statement

The adoption of Robotic Process Automation (RPA) in the automotive industry's bookkeeping sector in Gauteng is perceived by employees as a threat to job security, leading to anxiety, reduced motivation, and resistance (Waizenegger & Techatassanasoontorn, 2022). Despite the significant benefits of RPA, such as increased efficiency and reduced errors (Royhan et al., 2022; Harjumaaskola, 2022), employees often view RPA as a threat to their job security. This perception creates a barrier to the successful integration of RPA within organizations, hindering the potential for operational improvements and cost savings.

In the context of this study, the primary stakeholders affected by this problem are the employees within the automotive industry in Gauteng. This group includes the accounts department Bookkeeping staff who may see their roles and responsibilities altered or diminished by the introduction of RPA. Additionally, management teams are impacted as they face challenges in achieving buy-in from their workforce and in realizing the full benefits of RPA due to employee resistance.

The consequences could be severe if nothing is done about these challenges. Continued resistance to RPA could lead to decreased productivity, higher operational costs, and diminished employee morale. Organizations might struggle to remain competitive in an industry that is increasingly relying on automation technologies. Furthermore, the psychological impact on employees, including stress and job insecurity, could result in higher turnover rates and a loss of skilled workers.

Several studies highlight the need for further research on this issue. Harjumaaskola (2022) examined the psychological effects of RPA on employees and recommended exploring strategies to mitigate job security fears. Siemon and Kedziora (2023) studied employee resistance to automation and suggested more research on effective communication and change management practices. Nella et al. (2015) focused on the broader organizational impacts of automation and called for an investigation into the long-term effects on employee motivation and organizational culture. Addressing these research gaps is crucial for developing strategies that facilitate the successful adoption of RPA while addressing employee concerns. By investigating the

perceptions of employees regarding RPA adoption in the automotive industry in Gauteng, study aims to investigate the effects of Robotic Process Automation on bookkeeping staff in Gauteng's automotive industry. The findings will inform strategies to promote RPA adoption while mitigating its negative psychological and operational impacts on employees. This study addresses the below sub-problems components:

1. Employee Perceptions: Understanding Bookkeeping' attitudes, beliefs, and concerns about RPA is crucial for anticipating potential barriers and facilitating a smooth transition (Pulijala et al., 2018).
2. Employee Adaptation: Investigating how Bookkeepers adapt to changes in job roles, responsibilities, and workflows due to RPA integration (Chui et al., 2016).
3. Workforce Implications: Examining the impact of RPA on job security, skill development, and the potential for job displacement or augmentation (Kumar et al., 2019).

1.3 Research Questions and Objectives

The primary objective of this study is to investigate the effects of RPA on Bookkeepers in the automobile industry in Gauteng. A further objective was to develop an understanding of the mechanisms that the automotive industry might adopt in promoting the adoption of RPA. The focus of the study is on the automotive, office environment, industry operating within South Africa in the Gauteng Province. The automotive industry is classified as very dynamic in the global arena (Ahmad & Dukhan (2022)). The studies that have been conducted include the automotive engineering environment (Wewerka & Reichert, 2021; Kempers, 2023). This study is focused on investigating the effects of RPA on Bookkeeping personnel within the manufacturing sector, specifically targeting automotive companies. The preference for the South African context is due to the country's significant challenges with high unemployment rates and disparities in education, race, and wealth (Adam). Adam expands further by stating that job creation, education, and skills improvement seem to be the only solution for combating inequalities and economical fears. The long-term goal of the study is to identify causes that identified factors which contributed to the success or failure of RPA implementation in achieving harmony between automation and Bookkeeping staff. This goal was going to be accomplished when the objectives below were met:

1. To understand and document Bookkeeping' perceptions of RPA in terms of its impact on job security and employment opportunities.
2. To explore and propose management practices that support harmonious integration of RPA with existing Bookkeeping roles.
3. To identify and recommend actions that can mitigate job loss fears, thereby enhancing the acceptance and implementation of RPA among Bookkeepers.
4. To evaluate how Bookkeepers' views on RPA influence organizational strategy, operational processes, and the competitive landscape of the automotive industry in Gauteng.

1.4 Justification/Rationale of the Study

Addressing the research questions would enhance the value and deepen the understanding of the factors that influence the adoption of RPA among Bookkeeping staff in Gauteng, as viewed by stakeholders. Bookkeeping tasks often involve repetitive and rule-based processes, making them suitable candidates for automation through RPA. The adoption of RPA is likely to have a significant impact on the job roles and responsibilities of Bookkeeping staff. Bookkeeping staff are a key segment of Bookkeeping within the finance and controlling domains, making their perceptions indicative of broader trends within these departments. Studying their perceptions can provide valuable insights into the broader implications of RPA adoption in these domains. By studying their perceptions, the study can explore how RPA is reshaping their roles and how they are adapting to these changes. Understanding Bookkeeping staff's perceptions can provide valuable insights into the challenges and benefits of RPA adoption in this specific area. On the policy point of view, this study can contribute in drafting policies that talk to harmonizing Robots and humans in organizations for Bookkeeping staff positions and embrace the change management for RPA implementation. These policies can put emphasis on promoting technological automation with proper change management procedures observation at all organizational levels. Additionally, the study can be of a benefit to the automotive Chief Information officers in the manufacturing sector when implementing robotics in their environments. With a focus on the change theory, the study helped in understanding of the most

important change management aspects needed for the slow adoption of RPA in the automotive industry in Gauteng.

Siderska (2020) claimed that there is inadequate RPA literature even though RPA is a developing technology but there is a lack of scientific research available. According to Okoye et al. (2022) fear of losing jobs depends on whether Bookkeepers are higher and lower skilled or entry level job opportunities. In Mlambo (2022) literature suggests that the fear of job losses for Bookkeeping stems from the insufficient knowledge on the organization's side about RPA. This research would contribute to the theoretical aspects of the knowledge by unfolding the effects of RPA on. This study tackled a problem of Bookkeeping staff fear of adopting RPA because of fearing RPA taking over their jobs. The research questions helped addressing the issue of fear of the workload reduction by Robots for office job Bookkeeping in companies operating in South Africa. This study sought to help integrate RPA into the company's HR processes by incorporating it into the performance management system. This integration aims to enhance adoption rates, leading to cost savings and operational efficiency, as motivated Bookkeeping tends to deliver higher-quality output. Additionally, this research would benefit HR practitioners with structuring competitive remuneration packages which could increase job satisfaction and improve job performance. The company could also achieve a balanced business continuity by having repetitive tasks automated and free Bookkeeping time for doing other activities that require more focus.

From the application of the theory of change viewpoint, this study clarified the causes of effects and underlying causes of challenges experienced by Bookkeeping together with how factors influencing the adoption of RPA. The Bookkeeping staff would benefit from a balanced workload which could improve their psychological safety. In applying the theory of change in the context of slow adoption of RPA for automotive companies, this study delved into the technological automation usage in the automotive industry and its effects on Bookkeeping staff in Gauteng based companies.

1.5 Delimitations of the Study

This study was driven the theory of change framework which reduces the scope to the change management analysis perspective. The scope is limited to the South African organizations

office job Bookkeeping staff for organizations that adopted the RPA tool. The theory of change's key development elements include:

- Consultation – understanding the stakeholders is imperative and it must be the basis of engagement.
- Evidence – testing should be built into all the stages.
- Continuous learning – supporting continuous learning is mandatory.

The study is going to focus on the effects of RPA to Bookkeeping from the human impact perspective and not on the RPA implementation tool.

1.6 Operational Definitions

1.6.1 RPA

The literature provides various definitions of RPA, also referred to as BOT, which is used interchangeably in this study. Two features makes RPA unique compared to other software, inclusive of including Business Process Management (BPM). The first feature is no programming abilities required to configure and dragging and dropping is used to configure (Tew, 2020). Secondly, RPA need no integration with the applications it extracts the data from because it processes information in the front end by impersonating the user (Willcocks et al., 2015). Eikebrokk and Olsen (2020) defined RPA as a pre-defined instance that utilizes business rules with a pre-reordered sequence to produce output without a human being. The definitions are based on the independent processing yet for this study it could be a BOT that needs human input to finish the process even though the other steps are pre-configured. This study considers RPA as a tool to eliminate repetitive work. The definitions above do not include the end results for Bookkeeping after their tasks have been automated therefore the definitions are not fit for this exploratory study which is concerned about the effects of RPA on Bookkeeping staff (Eikebrokk and Olsen, 2020).

1.6.2 Robots

Willcocks et al. (2015c as cited in Tew, 2020) stated that Robots are defined as single license software in RPA terms. Robots provide support to human users by executing pre-configured tasks. The BOT relieves the Bookkeeping by taking over repetitive tasks and let Bookkeeping

focus on tasks of high volumes and save time for Bookkeeping (Wallace, 2022). There is a link between Robots and RPA, Robots are the job executors which is aligned with this study as Robots execute pre-defined tasks for Bookkeeping in the front end.

1.6.3 Bookkeeping staff

Bookkeeping staff – these are human beings in the context of the study, which are impacted by the automation in their job positions. Bookkeeping staff in the context of the study. Bookkeeping is impacted by automation due to that its nature is based on routine, repetitive tasks (Mohadeo, 2021). RPA can record the pre-defined steps of recording the transactions using a double-entry principle (Nechiporenko, 2022).

This study aims to investigate the effects of Robotic Process Automation on bookkeeping staff in Gauteng's automotive industry. This study applied the change theory in order to align with the change management perspective of the study. This unfolded the factors that would clarify how bookkeepers' staff experience technological automation which were introduced into their responsibilities.

1.6.4 Automotive

Companies that embark on motor vehicles, components, tyres, batteries, fuel, engines and bodies to mention but the few (Britannica, 2023). This industry is huge, In the United states it's the largest manufacturing by value added product, manufacturer added value and wage earners employed in the industry (Britannica, 2023). South Africa participated in the industry since 1924 by assembling motor vehicles together with light trucks (Zuidafrika, 2021). This study focused on the Automotive industry by utilizing the Change theory framework following the change management approach. The context for the study is best suitable to provide the factors that drive slow RPA adoption through change management using the change theory framework.

1.6.5 Gauteng

The meaning of Gauteng is place of gold in the Sotho language and it dates back to the 1800s when Cape settlers conquered Chief Mzilikazi and created townships that are nowadays called Gauteng in South Africa. Post the 1886 gold rush, post gold discovery, people flooded the region in thousands and Johannesburg became the largest producer of gold in the world (South Africa, 2023). This study followed the change theory framework which put emphasis on creating shared

ideas of anticipated outcomes and activities that are related to the underlying expectations between players (Rice et al, 2020). The players in this study are Bookkeeping staff working in companies in Gauteng who are impacted by the RPA implementation and expressed their experiences through the change theory framework.

1.7 Structure of the Paper

The next section will entail the literature review which will be driven by change theory framework. Literature review investigates at a detailed level on the research questions in order to investigate the problem for this research. The next milestone is the design or methodology which is the theoretical framework chosen in line with the context of this study's research methodology. The standpoint to be used in approaching the study was from a positivist point of view. The discussion, results would report the analysis and interpretation of the results. The conclusion will follow which included the insights and implications of the research. This section synthesizes the findings from the study in order to align with the policies. The limitations and recommendations highlight the gaps and recommendations for future research.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The literature review aims to review the history of adopting Robotic Process Automation and its effects on Bookkeeping personnel in Gauteng's automotive industry. There is another focus on exploring and proposing management practices that support harmonious integration of RPA with existing Bookkeeping roles, identifying and recommending actions that can mitigate job loss fears, thereby enhancing the acceptance, and lastly the implementation of RPA among Bookkeepers.

2.2 Literature Review Approach

In searching for relevant literature three lists were used in terms of keywords and they were used throughout the search. They included a) RPA and its effects on office Bookkeeping, b) RPA's impact on administrative staff in South Africa. RPA adoption in South Africa AND job losses. c) How adopting RPA in the office affected Bookkeeping. Google Scholar was used to search for 'RPA and its effects on office Bookkeeping'. This search keywords search of 'RPA and its effects on office Bookkeeping' resulted in 21000 results and 17500 resulted from the second key words search of 'RPA's impact on Bookkeeping staff in South Africa'. 'How adopting RPA in the office affected Bookkeeping' returned 16200 hits. Using a date from 'since 2019 to date in 2023' with combined searches of 'RPA and its effects on office Bookkeeping AND RPA's impact on Bookkeeping staff in South Africa' resulted in 2420 results. All three key words 'RPA AND Effects AND office' returned 13100 search results while 'RPA AND Effects AND office AND South Africa' produced 3260 results. 'RPA AND Effects AND office AND South Africa AND South African corporate policy' search resulted in 1300 results. Literature review was assembled from these articles and the updated search that included new keywords within the 'since 2019' search which was used in this research and this kept recent articles, books and policy. The total of 80 review results included scholarly journals, books, educational reports and one policy document (Communications and Digital Technologies, 2021). The policy document was found on the Parliamentary Monitoring Group (PMG) website. The website tips recommended the search to be '''Robotic process automation''' so that the only relevant policy

can be found. This policy is relevant to the study and it appeared on the monitoring from 2009 until 2023 (see Communications and Digital Technologies, 2021).

2.3. Literature review themes

Various themes from the literature include a) The future of work and occupations b) Redefining productivity in the digital era c) Investing in AI and RPA for an improved business future d) Effects of evolving Technologies on the Job Market: Robotics, AI, and No-Code/Low-Code e) Adopting to the digital future. The literature highlights the themes that drove the concepts found from the literature which are pointing out on the challenges of job losses, lack of resources to support 4IR initiatives and lack of knowledge and skills in relation to the tools that are associated with 4IR. The higher education institutions seem to not have led this topic enough to put pressure on the policy makers and businesses to set policies and pass rules and regulations around technology adoption.

2.3.1 The future of work and occupations

According to Seiffer et al. (2021), RPA can have results that are in favor or can be against Bookkeeping staff. Robots are capable of taking over the tasks that human beings performed in the past with or without help from Bookkeeping staff. Lacity and Wilcocks (2016 as cited in/ Mahadeo, 2020) in a case where a robot cannot handle some tasks then they get forwarded to Bookkeeping staff to handle them as exceptions. In this scenario it is demonstrated that collaboratively the Bookkeeping staff and the robot work jointly to complete a task and evidently the robot processes the repetitive tasks; the Bookkeeping staff only checks for exceptions. Le Clair (2019) claims that Bookkeeping staff can either choose to work together with Robots and enjoy benefits or they may choose to be scared of Robots replacing them in the workplace. Giving a robot a chance to save time one spends performing repetitive tasks can free up time and save money for Bookkeeping staff but if Bookkeeping staff do not embrace Robots in this manner then no collaboration can be achieved.

In the last decade between the year 2010 and 2020, we have seen new terms being introduced as a result of innovation and disruptive technologies. Hyperautomation includes knowledge of work automation, with the widely integrated scope of business and technology joined with interested

Bookkeeping and moreover with a combination functionalities of AI, RPA with ML (Lasso-Rodriguez & Winkle, 2020). Hyperautomation is a new technological term that Gartner named as the number one on the top ten technology strategies that would drive opportunities in the next five to ten years (Cearley et al., (2019 as cited in Lasso-Rodriguez and Winkle, 2020). It has been highlighted that hyper-automation forms part of three prominent traits namely compelling of companies to re-strategize on management practices, highly literate Bookkeeping and highly informed customer. In a collaborative environment like RPA and Bookkeeping staff, AI automates work scenarios and adaptation into business processes and RPA enables flexibility and seamless decision making (vom Brocke et al., 2018 as cited in Lasso-Rodriguez & Winkle, 2020).

The extent at which digitalisation would impacts on jobs but not replace Bookkeeping staff was under estimated in the literature. These types of change effects digitisation could change the way human beings work in their jobs job content which tend to be beneficial for Bookkeeping staff (Fossen & Sorgner, 2019). It could be a pure lie to say there is no transformative impact on jobs to date due to digitalization, but rather we can say the degree of impact and risks may differ from one occupation to the other (Fossen & Sorgner, 2019).

RQ1. What do bookkeeping personnel believe is the future of their profession with the continued integration of RPA?

2.3.2 Redefining productivity in the digital era

Boston Consulting's study discovered that automation tools like Robotics and AI would probably bring an increase of about ten to thirty percent in labor productivity in manufacturing organizations in the next ten years (Olaitan et al., 2021) while in contrast the prevailing economic growth downward slope and SA's productivity might impact on new technologies adoption rates. South Africa is lagging behind due to that most people are illiterate and lack enough skills to participate in high technological innovation initiatives (Putzier 2018; Mngxati & De Haas (2019 as cited by Olaitan et al., 2021). Recently universities are forming partnerships with businesses and the private sector to work on developing a new curriculum in order to be on the same level of understanding and come up with solutions to new problems. In automating the

low-value impact human tasks, RPA can improve productivity, processing productivity scaling, and build reliable quality significantly (Egiyi, 2021).

For the past few decades, we have seen businesses that adapted to new technologies reduce costs, increase productivity, and decrease the number of Bookkeeping (Odeibat, 2021). Meteab et al. (2020) argue that automation brings productivity levels higher, shorter durations of work for labor and time-saving. In manufacturing, it has been found that automation increased employment by improving productivity. The technological history of automation did not only bring about decreases in employment for Bookkeeping staff and if it was the case we would have been stuck in outdated jobs and tasks with ever-declining labour portions nationally (Acemoglu & Restrepo, 2019). The introduction of flexible task allocations, and automation technology tools, also contributes to productivity improvements using a channel called the productivity effect and it plays a role in labour demand for the tasks that are not yet automated. The impact on Bookkeeping staff is based on productivity effects and dislodgement strength against each variable (Acemoglu & Restrepo, 2019). The robot software and automation mix results in a positive effect on company work by reducing processing time, decreasing human errors, decreasing operating costs, and achieving data accuracy (Radke et al.; Brzeziński, 2022).

A number of respondents recommend RPA in terms of decreasing costs and improving efficiency and bringing down staff turnover since it takes away repetitive tasks and leaves Bookkeeping with tasks that matter (Toktar & Coban (2022). Toktar and Coban (2022) highlighted that RPA is a big contributor in enabling companies to achieve internal KPIs such as employee productivity, job satisfaction cost saving, and acceleration of production. RPA is one of the tools that support digitization and automation strategies by increasing productivity (Noppen, 2019).

RQ4. How do bookkeeping personnel view the impact of RPA on their job security?

2.3.3 Investing in AI and RPA for an improved business in future

As of recent decades, we have seen RPA and AI trending for the right and wrong reasons whereby those who think they know about it actually know less about it, and those who do not know think it is a threat to human beings. The earlier revolutions focused on a smaller scope

which was the development of IT, steam and electricity and the 4IR era continues, with its focus on a wider scope as it covers the revolution of IT while it incorporates human and advanced technology competencies (Sifile et al., 2020). 4IR is not coming with no shortcomings but it has both advantages and disadvantages.

Mhlanga and Moloi (2020) stated that the 4IR touches on all aspects of our lives and that is both personal and work lives. 4IR goes beyond technology but it impacts daily decision making and these technologies disrupted the way business is conducted and using data and information in a smart way (Sifile et al., 2020). RPA enables repetitive business processes to flow and achieve accuracy and effective alignment with the business strategy and making decisions (Pennington et al., 2020). Writer (n.d) reported that SA companies were investing in AI tools like RPA, Chat Robots, and data analytics. Businesses are exploring various technologies such as Chatbots, Robotic Process Automation, and Advanced Analytics. In South Africa, 67% of organizations identified machine learning as the most beneficial AI technology, followed by smart robotics and biometrics (Writer, n.d)

Companies invest in establishing the Center of Excellence (COE) that all business units benefit from. Business units then log requests to the COE and follow the specified business processes for implementation. COEs help maintain standards and prevent Business units from going wild using various tools, which is good for business continuity (Noppen, 2019).

RPA is able to improve the business's agility and flexibility because it can accommodate most of the business scenarios while meeting custom business needs (Hofmann et al., 2020).

RQ5. What strategies have management implemented to facilitate the co-existence of RPA and bookkeeping staff?

2.3.4 Effects of evolving technologies on the job market

Frey & Osborne (2017) conducted a study on the US labor market about the impact of technology on jobs and the results suggested that non-repetitive jobs were prone to be automated sooner than expected. Bookkeeper jobs are likely to be affected by automation however there is an opportunity of teaming up a bit and a Bookkeeping staff, and bot would perform repetitive tasks and the human being with analyzing the processing that the bot completed. On the other

hand in Japan, authors conducted a study about the effects of computerization which revealed that in the next coming five years half of the jobs were going to be affected by computerization (David 2017). In the study it was further revealed that university qualifications like science and engineering blended well with RPA and AI (Taha, 2021). In the contrary, the professional jobs from occupational-proficiency jobs obtained from occupancy schools were not in scope for being automated.

In the 4IR era, the best tactic for mitigating the risks of losing jobs is that companies need to be proactive by re-training, upskilling, and transforming Bookkeeping (Marwala, 2019). The paradox associated with the adoption of technologies is that some Bookkeepers lose jobs and some Bookkeepers seize job opportunities and gain employment. The new ways of working open job opportunities as the repetitive jobs get automated (Naidoo, 2021). Managerial and expert positions are less prone to automation as opposed to manual jobs (Novakova, 2020).

RQ3. What kind of training or support have bookkeeping personnel received to adapt to RPA technologies?

2.3.5 Adopting to the digital future

South Africa has been struggling to come out of the situation that was created by the Apartheid era, whereby issues of inequalities, poverty, and high unemployment are still a challenge for the country (Shivdasani 2019). South Africa seemed to be wanting to lead the 4IR revolution in order to address the challenges mentioned above however that is contradicting the claims that 4IR is not going to be a solution given that SA does not have the resources to take advantage of the 4IR opportunities (Olaitan, 2021). The resources include IT infrastructure, digital technologies and digital know-how and a lack of these resources could actually worsen the situation (Olaitan, 2021). The policymakers in SA have the assignment to work on IT Infrastructure, sound energy resources, and education policies (Marwala 2019) in order to plan for the risks that might come with the adoption of 4IR (Adendorff & Putzier 2018 as cited in Olaitan, 2021).

Post 1980, a number of jobs came into the market as a result of computerized tasks (Novakova, 2020). The adoption of technologies proved to have transformed workers' roles and organizational structures which negatively affected bookkeeping jobs; bookkeeping jobs became

obsolete. Automation differs by profession and the impact is on manual jobs as opposed to professional jobs (Novakova, 2020). Policymakers have an ongoing task of investigating the impact of adopting technologies and draft rules and policies that would safeguard the workforce. Companies in collaboration with workers should prepare for the worst as they might not be prepared enough for the impact of technologies (Odeibat, 2021). Technology adoption and employment can be beneficial however careful consideration has to be exercised because of the negative effects post-adoption.

Adoption of 4IR is pressurized by lack of resources and education functions, together with educational processes; institutions of education need to revise the teaching methods to incorporate 4IR (Lubinga et al., 2023). South African universities have not yet examined the adoption drivers (Lubinga et al., 2023). Adoption needs one to be educated on the technology in question, be skilled and be fit to cope with ever-changing social instabilities. Higher education institutions need to make sure they produce graduates who understand and are skilled on 4IR and invest in change management and educate staff about 4IR this can improve productivity and reduce time wastage on (Lubinga et al., 2023).

The review suggested that there could be value for countries including South Africa if the government, corporate business, and the education sector work together to mitigate the risks that are impeding the adoption of technologies. The studies that were done shown that in South Africa alone there were two million jobs that could be lost due to automation by 2030 (Manyika, et al. (2017). The policymakers already should have sleepless nights strategizing on what planning is required going beyond that era (Kolokytha, 2018). These challenges need collaboration, prioritization, and leaders to be held accountable for putting mitigation measures in place. There are also opportunities that are missed as well due to the slow adoption of technologies and they need leaders to get their hands dirty and strategies. This paper argues that RPA adoption in South Africa is slow due to fearing job losses and there is not enough effort put into driving dealing with the factors that contribute to the slow adoption. Maybe we might need higher education leadership to put pressure on all stakeholders so that everyone can pull their weight.

RQ2. In what ways has the introduction of RPA changed the daily responsibilities of bookkeeping personnel?

2.3.6 The criticism associated with RPA adoption in organisations

The adoption of RPA in the automotive industry's bookkeeping sector in Gauteng presents a multifaceted challenge. While RPA offers significant benefits such as increased efficiency, accuracy, and cost savings, etc. it also raises several critical concerns that must be addressed to ensure successful implementation and acceptance by employees. The challenges include job displacement and workforce anxiety. Willcocks et.al (2015) highlighted that employees often fear job redundancy due to automation, leading to anxiety and decreased morale. In the bookkeeping sector, where tasks are predominantly repetitive and manual, the introduction of RPA can exacerbate these fears. Employees may worry about their future roles and livelihoods, resulting in resistance to RPA adoption. The limited scope and inflexibility of RPA is highly criticised. According to Syed (2020) RPA systems are typically designed to handle specific, rule-based tasks and may not be suitable for processes requiring human judgment or complex decision-making.

In the context of bookkeeping, while RPA can automate routine data entry and reconciliation tasks, it may not effectively handle more complex financial analyses or decision-making processes. This limitation necessitates a hybrid approach, where RPA is used to augment human capabilities rather than replace them entirely.

Muro et al. (2019) highlighted the ethical and social implications of RPA adoption aspects in relation, his argument questions the role of management whereby job losses and the impact on employee well-being raise important ethical questions about organizational responsibility. In the bookkeeping sector, being ethical involve not only mitigating job displacement through retraining programs but also ensuring that employees are treated fairly and their contributions are valued. Organizations should balance the drive for efficiency with a commitment to their workforce's well-being (Muro et al. (2019).

The adoption of RPA introduces new data privacy and security risks. Stanton (2019) highlights that automated processes often require access to sensitive information, making them potential targets for cyberattacks. Ensuring robust security measures and compliance with data protection regulations is essential but can be challenging and costly. For the bookkeeping sector, where data

integrity is paramount, any security breach can have severe implications due to that Bookkeepers work with customer, suppliers, employee data to mention few stakeholders' s data they process.

2.4 Theoretical underpinnings

2.4.1 TAM

It has been highlighted over the years that businesses have to implement Robots and RPA technology tools that are essential in doing business (Madakam et al., 2019). Jędrzejka (2019) claims that modern business is driven by disruptive technologies which play a key role in running a business in the modern days, while Taha (2021) found that there is a likelihood that the same technologies can replace Bookkeeping staff, change employee tasks and roles in a form of establishing new job roles whilst nullifying other job roles. For example, previous studies found that there was rise of employment in the manufacturing sector resulting from automation, a study that Koch et al. (2019) conducted in Spain between 1990 and 2016 revealed that, organizations that implemented Robots became big suppliers of employment due to large production output benefits outweighing the reduction of the labor costs portions.

In studying the effects of RPA on Bookkeepers in the automotive industry in Gauteng, several theoretical frameworks can provide valuable insights. The key theories to consider include Technology Acceptance Model (TAM), Diffusion of Innovations Theory, and Job Characteristics Theory. Each of these theories offers a unique perspective on how technology adoption impacts employees and organizational dynamics.

In Masrom (2017) it is outlined how Technology Acceptance Model (TAM), developed by Davis (1989), is a theory that explains how users come to accept and use a technology. The model suggests that two main factors influence technology acceptance: perceived usefulness (PU) and perceived ease of use (PEOU) (Davis, 1989). Perceived usefulness refers to the degree to which a person believes that using a particular system would enhance their job performance (Davis, 1989). Perceived ease of use is the degree to which a person believes that using the system would be free of effort (Davis, 1989). TAM posits that these perceptions directly influence users' attitudes towards using the technology, which in turn affects their behavioral intention to use it and, ultimately, their actual use of the technology (Davis, 1989). This model is particularly relevant for understanding the initial acceptance and adoption of RPA among bookkeepers in the

automotive industry in Gauteng. It highlights how the perceived benefits and ease of integrating RPA into existing workflows can drive its acceptance among employees.

According to Sahin (2006) Diffusion of Innovations Theory, proposed by Miller (2015), provides a broader perspective on how new technologies spread within a social system. According to Rogers, the adoption of an innovation is influenced by five main factors: relative advantage, compatibility, complexity, trialability, and observability (Miller, 2015). Relative advantage is the degree to which an innovation is perceived as better than the idea it supersedes (Miller, 2015). Compatibility refers to how consistent the innovation is with the values, past experiences, and needs of potential adopters (Miller, 2015). Complexity is the degree to which an innovation is perceived as difficult to understand and use (Rogers, 1962). Trialability is the extent to which an innovation can be experimented with on a limited basis (Miller, 2015). Observability is the extent to which the results of an innovation are visible to others (Miller, 2015). This theory helps explain how RPA can be adopted and diffused among bookkeepers by emphasizing the social and organizational context in which the technology is implemented.

In contrast, Job Characteristics Theory, developed by Hackman and Oldham (1976), focuses on how specific job attributes affect employee motivation and satisfaction (Saavedra & Kwun, 2000). The theory identifies five core job dimensions: skill variety, task identity, task significance, autonomy, and feedback (Hackman & Oldham, 1976). Skill variety is the degree to which a job requires a variety of different activities, requiring the use of different skills and talents (Hackman & Oldham, 1976). Task identity is the degree to which a job requires completion of a whole and identifiable piece of work (Hackman & Oldham, 1976). Task significance is the degree to which a job has a substantial impact on the lives of other people (Hackman & Oldham, 1976). Autonomy is the degree to which a job provides the worker with substantial freedom, independence, and discretion in scheduling the work and determining the procedures to be used (Hackman & Oldham, 1976). Feedback is the degree to which carrying out the work activities required by the job results in the individual obtaining direct and clear information about the effectiveness of their performance (Hackman & Oldham, 1976). This theory is particularly useful for understanding how the implementation of RPA affects the job design and motivational aspects of bookkeepers' roles.

While TAM and Diffusion of Innovations Theory focus on the adoption process, Job Characteristics Theory shifts the focus to the impact of RPA on job design and employee motivation (Hackman & Oldham, 1976). It highlights how RPA can change the nature of bookkeepers' work by altering skill variety, task identity, task significance, autonomy, and feedback. This theory is valuable for understanding the longer-term implications of RPA implementation on job satisfaction and motivation among bookkeepers, beyond the initial adoption phase.

In summary, TAM provides a framework for understanding the initial acceptance of RPA based on perceived usefulness and ease of use (Davis, 1989). The Diffusion of Innovations Theory offers insights into the broader adoption process within an organization, considering factors like relative advantage and compatibility (Miller, 2015). Job Characteristics Theory focuses on the changes in job design and the motivational impact of RPA on employees (Hackman & Oldham, 1976). Together, these theories provide a comprehensive understanding of the adoption and impact of RPA on bookkeepers in the automotive industry in Gauteng. These theories are based on individual re-actions being how Bookkeepers perceive RPA, how Bookkeepers can adapt RPA and how they perceive their job designs post-RPA implementations in their organisations therefore it takes more than accepting the technology as a co-helper.

2.4.2 Theory of change (TOC) and the manufacturing sector

Theory of change analysis has been used and it is a strategic instrument. Theory of change logically develops on established assumptions and hypotheses of problem causes, what activities can assist in changing the problem, and the probable results of a change (Luca et al., 2019). TOC method is a process of unfolding the current situation, the aimed future outcome, and action to be taken to move from one particular situation to the other (Anderson, 2005). This study intends to investigate the current bookkeeper's perceptions with an aim to gain outcomes that could inform the future regarding how automotive companies can improve adoption of RPA. This study seeks to investigate the impact of RPA implementation on office job Bookkeeping staff in South Africa and to identify the sources of fear about RPA causing unemployment and what companies can do to promote the adoption of RPA. This study benefited from using the TOC analysis more especially that the study was conducted in the manufacturing sector where through existing literature it came to light that most studies in the manufacturing sector utilized the method with

success in the past studies. The Theory of Change (TOC) is a structured approach used to map out how and why a desired change is expected to happen in a particular context. In the case of this research, we can apply the Theory of Change framework to outline the steps needed to achieve the desired outcome, which is to understand and potentially influence Bookkeeping' perceptions regarding RPA adoption. Incorporating a Theory of Change (ToC) framework in evaluation entails assessing indicators throughout all phases of implementation, not solely the primary and secondary outcomes of an intervention. This encompasses a broader spectrum of input, process, output, and outcome indicators than typically monitored, with a specific emphasis on evaluating the attainment of critical milestones along the causal pathway (De Silva et al., 2014).

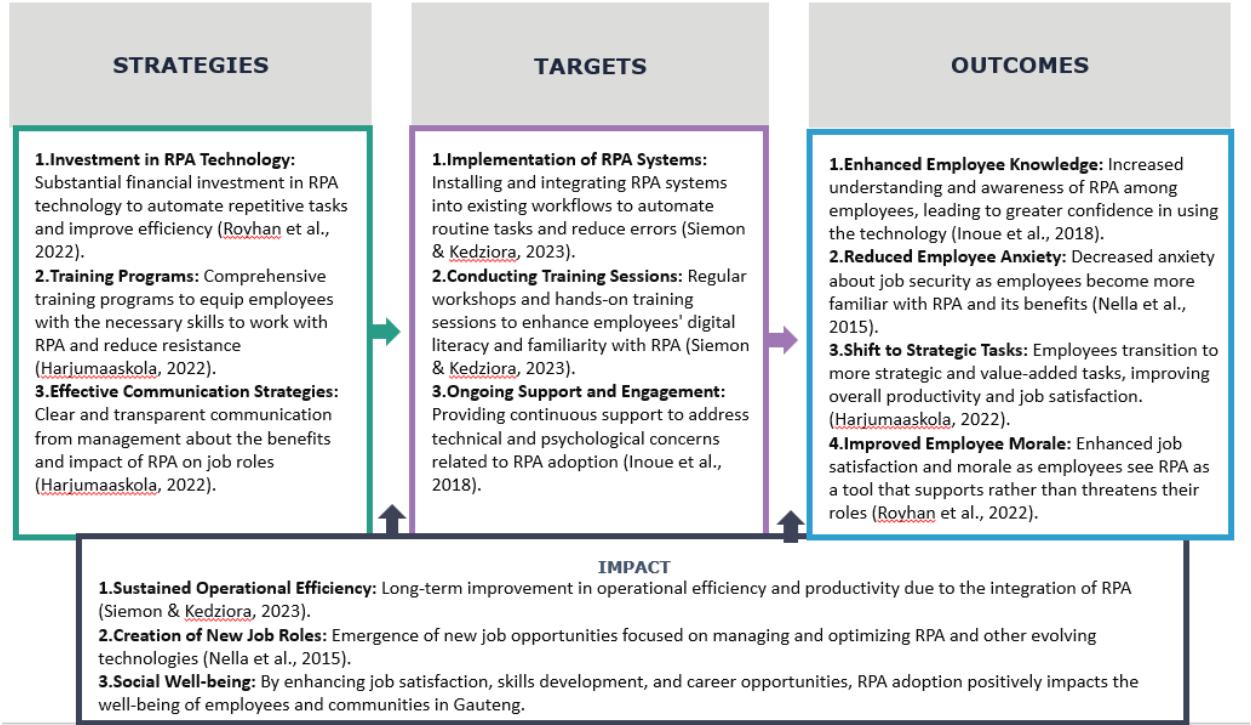


Figure 1: Theory of change framework for this study

The Theory of Change (ToC) outlines a structured approach encompassing strategies, targets, outcomes, and impact. Strategies involve specific actions and interventions designed to address identified issues or opportunities. Targets refer to the specific, measurable goals that these strategies aim to achieve within a defined timeframe. Outcomes are the short- to medium-term changes resulting from these strategies, reflecting improvements or progress towards the targets. Finally, impact denotes the long-term, significant changes that occur as a result of the cumulative

outcomes, indicating the broader, sustained effects on the community, organization, or system (Anderson, 2005).

Conclusion

RPA adoption offers several advantages for organizations, including enhanced efficiency, reduced errors, and cost savings. It is regarded as a tool to boost competitiveness in the automotive sector. Bookkeeping staff expressed concerns about potential job displacement and the need for retraining. However, there is also recognition of RPA's potential to reduce mundane tasks, enabling employees to engage in more strategic work.

In conclusion, understanding employee perceptions is essential for the successful adoption of RPA in the automotive industry. By addressing employee concerns and implementing effective change management strategies, organizations can maximize the benefits of RPA adoption and ensure a smooth transition to a more automated work environment. The next section will explore the research methodology.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The chosen research approach for this study was qualitative research. The literature revealed that when a study's purpose is exploratory in nature meant to discover unknown findings and allow a researcher to tell the story based on the real experiences of participants then qualitative is the suitable methodology (Ahadi & Kasraie, 2020). This led to selecting the qualitative inductive method for gathering data and analyzing data (Ahadi & Kasraie, 2020). In addressing the themes that stemmed from the literature qualitative method was the best suitable tool to unfold the unknown findings.

In this chapter, the process followed in conducting empirical research to answer the research question, starts with a research approach. The research design follows an exploratory study, making use of qualitative analysis and an interpretive paradigm which is a researcher's standing point. Choosing an appropriate research paradigm and methodology is crucial for ensuring the validity and reliability of the research findings. The choice depends on several factors, including the nature of the research problem, the research questions, the researcher's philosophical beliefs, and the practical considerations of the study (Muzari et al., 2022). In the context of the research on the perception of employees on the adoption of RPA in the automotive industry in Gauteng, a few arguments for selecting an appropriate research paradigm and methodology were considered.

A qualitative methodology was appropriate for this study because it focuses on exploring in-depth insights, understanding complex phenomena, and capturing the tones of human experiences (Flick, 2014). In light of this study's focus aims to investigate the effects of Robotic Process Automation on bookkeeping staff in Gauteng's automotive industry. An interviewing qualitative method chosen for this study provided detailed data that allowed for a thorough exploration of the issues faced by the Bookkeepers. The adoption of RPA and its impact on employees is a complex and dynamic phenomenon. Interpretivism is well-suited for studying such complexities because it does not seek to generalize findings universally but rather to understand the specificities and particularities of each case. This approach allows a researcher to capture the evolving nature of Bokkeeper's perceptions and the various factors influencing them (Zireva, 2013).

The next section consists of interview data collection methods to be utilized in the study. The research aims to investigate the effects of Robotic Process Automation on bookkeeping staff in Gauteng's automotive industry. The following section includes the non-probability sampling method, snowballing whereby the Bookkeepers were referring other Bookkeepers who work with RPA in their positions. This was an overwhelming exercise however the most important part for assuring participants their views are safe and the methods of doing that are included in this section. The next section is the possible boundaries and challenges of the study and lastly the quality assurance whereby careful analysis were done to ensure the views are indeed the participants and not the researchers.

3.2 Research paradigm

Interpretivism is a qualitative research paradigm emphasizing understanding complex aspects of human experience and the social world. This approach contradicts positivism because positivism seeks to find objectivity and generalisability truths through quantitative methods (Moroi, 2021; Scheib, 2020; Schwandt, 2023).

Epistemological, ontological, and axiological concerns are outlined as that, epistemology deals with the nature and scope of knowledge; how we know what we know. In interpretivism, the epistemological stance is subjectivist, meaning that knowledge is constructed by human beings. Interpretivists believe that the researcher and the researched are interdependent and co-create understandings (Ormston et al., 2014). This then implies that knowledge is contextual. Interpretivists assert that knowledge is not universal but is context-specific. It is shaped by the social, cultural, and historical contexts within which individuals operate (Crotty, 1998). The researcher plays an active role in the process of understanding by engaging deeply with the participants and interpreting their meanings and experiences.

Ontology is concerned with the nature of reality and what can be known about it. In interpretivism, the ontological stance is relativist, meaning that, there are multiple realities. There is no single, objective reality. Instead, there are multiple realities that are socially and experientially constructed. Each individual or group may perceive and experience reality differently (Al-Ababneh, 2020).

Axiology involves the study of values and ethics in research. In interpretivism, the axiological perspective acknowledges that the values and biases of the researcher are inherent in the research process. Rather than attempting to eliminate these biases, interpretivists recognize and reflect upon them, making the research process more transparent (Alharahsheh & Pius, 2020). Ethical issues such as respect, consent, and confidentiality are central. The relational nature of interpretive research requires ongoing ethical reflexivity and responsiveness to the needs and rights of the participants (Alharahsheh & Pius, 2020).

3.3 Qualitative approach

This study employed a qualitative approach because it is exploratory in nature. Qualitative research is recommended when researchers engage in informal discussions with participants such as Bookkeeping, customers, and managers (Bougie & Sekaran, 2019). Literature suggested the qualitative research method where study is based on the personal experiences of participants (Naidoo, 2021). Usually, qualitative research aims to study human behavior in cultural, social, and political settings (Van Niekerk, 2019, p. 11). The tools suggested for qualitative research are namely interviews, case studies, and historical methods to mention but a few (Van Niekerk, 2019, p. 11).

This study aims to investigate the effects of Robotic Process Automation on bookkeeping staff in Gauteng's automotive industry, utilizing a change management perspective. This methodology is well-suited as it incorporated individuals' experiences to derive the study findings. Queirós et al. (2017) purported that the qualitative research method aims to understand the very difficult realities and the meanings of activities within a certain context.

Qualitative research is a methodological approach that prioritizes flexibility and adaptability, allowing researchers to customize their strategies to meet the specific requirements of their study. Unlike more rigid qualitative methods such as grounded theory or phenomenology, generic qualitative research does not follow a strict set of procedural steps. Instead, it focuses on understanding and describing the experiences, perceptions, and meanings that individuals attribute to their social world. This flexibility makes it particularly valuable for studies with broad or exploratory research questions (Caelli et.al, 2003).

A notable feature of qualitative research is its focus on capturing the richness of participants' experiences. Researchers using this approach aim to provide detailed descriptions and insights into the complexities of human behavior and social interactions. This involves collecting data through various methods such as semi-structured interviews, focus groups, and participant observations, which allow for an in-depth exploration of participants' perspectives (Percy, Kostere, & Kostere, 2015). The data collection process is designed to be open-ended and iterative, enabling researchers to adjust their focus as new insights emerge.

Data analysis in qualitative research typically involves thematic analysis, where researchers identify and interpret patterns or themes within the data. This process starts with coding the data, followed by organizing these codes into broader themes that capture the essence of the participants' experiences. Thematic analysis allows researchers to systematically analyze qualitative data while maintaining the flexibility to explore unexpected findings (Nowell, Norris, White, & Moules, 2017). The ultimate goal is to provide a coherent and comprehensive understanding of the phenomena under study, grounded in the participants' own words and experiences.

One of the strengths of qualitative research is its applicability across various fields and research questions. It is particularly useful in healthcare research, where it can provide valuable insights into patient experiences, healthcare practices, and the implementation of interventions (Bradshaw, Atkinson, & Doody, 2017). By not being tied to a specific theoretical framework, generic qualitative research allows researchers to adapt their methods to the unique context of their study, making it a versatile and practical choice for many qualitative inquiries.

3.4 Research design

For studying "The perception of employees regarding the adoption of RPA in the automotive industry in Gauteng," a generic qualitative research design was suitable. This approach allows for a comprehensive understanding of the employees' perspectives without being confined to the strict frameworks of other qualitative methodologies like phenomenology or case studies (Ellis & Hart, 2023). This design is particularly suited for studies aiming to capture a broad range of perspectives and insights, allowing researchers to use various data collection methods, such as interviews, focus groups, and observations, to gather rich, detailed information. It emphasizes a

descriptive and interpretative analysis, focusing on identifying patterns and themes within the data to provide a comprehensive understanding of the research topic (Caelli et al., 2003).

By not being confined to specific theoretical frameworks, generic qualitative research enables a more open-ended inquiry, making it ideal for exploratory studies in under-researched areas (Caelli et al., 2003). Participant selection used was snowballing strategy, which involved participants directly involved or impacted by the adoption of RPA in company X. Participants included a diverse group of employees from finance and controlling departments and position levels varied from junior to very senior Bookkeepers. This ensured a comprehensive understanding of the perceptions across different role levels and perspectives.

The primary purpose of this study was to explore and understand the perceptions of employees in the automotive industry in Gauteng regarding the adoption of RPA. The study aims to identify common themes, attitudes, and potential concerns or benefits as perceived by the employees.

3.5 Data collection methods

The recording of the interviews was an integral part of the data collection process. Participants were asked for their consent to record the sessions, ensuring that they were fully aware of the purpose and use of the recordings. The recordings were essential for capturing the detailed and subtle aspects of the participant's responses, which might be lost with notetaking alone. The interviews were conducted in a manner that respected the participants' confidentiality and anonymity. Identifiable information was removed from the transcripts to protect the identities of the interviewees.

In maintaining data security, the recordings were stored securely in an encrypted format to prevent unauthorized access. Each recorded interview was then transcribed verbatim to ensure an accurate representation of the participant's responses. This meticulous approach to recording and transcribing the interviews ensured that the data collected was reliable and comprehensive, providing a solid foundation for subsequent analysis.

By following these procedures, the research ensured that the data collected was both reliable and ethically gathered, respecting the rights and privacy of the participants while capturing detailed and valuable insights for the study.

The interview schedule (see [Appendix 4: Interview schedule](#)) designed to explore employees' perceptions, concerns, and suggestions regarding the adoption of RPA, was meticulously prepared and documented. Each interview began with an introduction explaining the purpose of the study and the role of RPA in the organization. The interview questions (see [Appendix 3: Questions for semi-structured interviews](#)) focused on various aspects such as the perceived impact of RPA on job security, the main concerns of the employees, and potential support measures from management.

3.6 Population and sample

The study was conducted in company X in Gauteng and a population of 20 Bookkeepers internally were targeted. A snowball sampling method was used. Snowball sampling is a non-probability form of sampling that gives a researcher a choice to approach participants or participants to self-select (Stratton, 2021). Snowball sampling is a type of convenience sampling used when accessing individuals with specific characteristics challenges. In this approach, current participants help identify and recruit future participants from their acquaintances. This process continues until the point of data saturation is reached (Burns & Grove, 1993).

The snowball sampling method was more suitable to this study due to that the targeted participants would be a department where Bookkeepers were classified in an organization in a certain way and they were referring each other to the researcher (Stratton, 2021). Snowball sampling method is often used where the population is not known and the referrals are assisting in bringing more participants until the research is satisfied (Bhat, 2023). The population for this study included twenty Bookkeepers in company X. A number of criteria used was that, a participant must have had worked with RPA in the past or was still using RPA, and the participant must have been employed in company X's Gauteng offices at the time of the interview.

After the first interview with a participant from Finance department, the researcher asked if the participant knew of another potential participant who would be interested in participating in the research. Once the researcher had interviewed the second participant, the researcher asked again for a referral. The researcher continued until 11 interviews were conducted, which was a possible sample size. The balance of the population did not meet the criteria mentioned above.

3.7 Sample and sampling method

The snowball sampling method was used for this study, the participants referred other bookkeepers until the desired sample size was covered. This study did not target everyone that used RPA but only Bookkeepers which implied that an organization could not have large numbers of Bookkeepers in one organization.

3.8 The research instrument

This study utilized semi-structured interviews as a methodological approach to gain detailed insights into Bookkeeping' perceptions regarding the adoption of RPA in Gauteng's automotive industry. Semi-structured interviews provided a flexible yet systematic way to collect data, allowing for the exploration of key themes while also giving participants the freedom to express their views in their own words (Husband, 2020; Adeoye-Olatunde & Olenik, 2021); Knott et al. 2022). One of the main benefits of semi-structured interviews is their adaptability to the research context, allowing researchers to delve deeper into specific topics as they arise during the interview process. This flexibility allows the exploration of unexpected or unexpected aspects of participants' experiences, resulting in a comprehensive understanding of the phenomenon under study (Adeoye-Olatunde & Olenik, 2022).

Moreover, semi-structured interviews allow for a degree of standardization across interviews while also accommodating variations in participants' responses and experiences. This balance between structure and flexibility ensures that relevant topics are covered consistently across interviews while also allowing for the emergence of new insights and perspectives (Husband, 2022). Additionally, semi-structured interviews facilitate rapport-building between the interviewer and the participant, creating a conducive environment for open and honest communication. This rapport is essential for eliciting candid responses and fostering trust, which is particularly important when exploring sensitive topics or issues related to organizational dynamics and workplace experiences (Knott et al. 2022).

Overall, the notion of semi-structured interviews aligns well with the exploratory nature of this study, providing a robust methodological framework for capturing the diverse range of perceptions and experiences surrounding RPA adoption in the automotive industry. By leveraging the flexibility and depth afforded by semi-structured interviews, this study aims to generate comprehensive insights that contribute to both academic understanding and practical

implications for organizations navigating RPA implementation. See [Appendix 4: Interview schedule](#).

3.9 Procedure for data collection

This study was concerned with employee's experiences which are personal and proprietary of an organization. The interviews were conducted face to face and online through MS Teams. The flexibility while maintaining confidentiality was maintained while using online technological tools. In order to avoid any issues, formal meeting invitations were sent to avoid disturbances.

3.10. Data analysis strategies and Interpretation

Thematic analysis was used for this study. Braun and Clarke (2012) Thematic analysis method relate to this study because the methodology implies that analyzing respondents' data answers the research questions by highlighting patterns which helps in formulating themes. The flexibility of the Thematic analysis allows a researcher to make a choice of type of Thematic analysis they used and why they chose a certain type of Thematic analysis (Braun & Clarke, 2012). The researcher could choose an inductive method of data coding which follows a bottom up method whereby the researcher derives data from the patterns as opposed to the deductive method which is a top-down approach whereby the researcher conveys a chain of concepts, formulates ideas and uses topics to program and deduce data (Braun & Clarke, 2012).

3.11 Possible Limitations and Challenges of the Study

- The challenge may be the company law and regulations applicable to external people in terms of data security.
- Sampling used in the study might create reluctance and withholding of information.
- The perception of feeling threatened by technology, in general, might impact the will to participate in the study.

3.12 Quality Assurance

3.12.1 Transferability

This study might suffer from not having enough representation due to that the focus is one province out of 9 provinces in South Africa. The sample size might be weak in representing all 350 car manufacturing companies although the study is cognizant of the history of robotics in the South African environment which are viewed as job takers as opposed to job creators. For this study motivation of participants was important in order to get to sample wishful for the study. The other tactic was to ensure participants represent all types of car market segments in order to be able to say in general the low-priced cars or high-priced car manufacturers are represented even though the pricing does not play any role but the association of which spot is a company occupying in the South African market.

3.12.2 Credibility

This study met the criteria and it can be trusted by other fellow researchers because the sources of data were from the right industry companies and the experiences of the participants were unique. The author was a researcher from an institution that is credible itself, recent literature reviewed and the study was bias-free.

3.12.3 Confirmability

Qualitative research requires that a researcher confirm unclear responses even if it means going back to the participant, play recordings more than once and still confirm if not sure. The verification process is crucial in this study as the researcher deals with inner expressions of individual who could not be happy to read misinterpretations more especially that were never confirmed.

3.13 Ethical considerations

The starting point was to obtain permission from the organization the researcher was working for and ensured that all permissions were granted before starting with collecting data in any shape or form. This was basically after clearance had been granted and a go-ahead was given, then the researcher could begin with collecting data. Once the data was collected, securing data and analysis could begin. The researcher ensured consent was received and interviews commenced. In an instance where there were objections from the participant, respect the participant's view was exercised. Safekeeping of the report was confidential until it was submitted to the institution

for marking. The participants were not disclosed to anyone in the organization. Confidentiality of participants was observed and no records of participants personal data was stored.

3.14 Conclusion

This chapter detailed the qualitative research methodology employed to explore bookkeeping staff perceptions of RPA adoption in Gauteng's automotive industry. It justified the use of an interpretive paradigm and inductive methods to gather and analyze data, highlighting the importance of understanding the human aspects of this technological change. The chapter also covered the research design, data collection methods, and sampling techniques, emphasizing ethical considerations and ensuring data reliability. Through this rigorous methodology, the study aims to provide in-depth insights into the impact of RPA on employees, guiding future research and practical implementations.

CHAPTER 4: RESEARCH FINDINGS AND INTERPRETATION

4.1 Introduction

This chapter discusses the outcomes of the qualitative analysis investigating Bookkeeping perceptions of adopting RPA in Gauteng's automotive sector. By conducting thematic analysis of interviews, we uncover the diverse viewpoints, concerns, and experiences shared by Bookkeeping. This section is organized to offer a comprehensive insight into the emerging themes, elucidating the challenges related to incorporating RPA technologies in the work environment.

In chapter 1 and chapter 3, it was highlighted that the study utilized interviews conducted from one of the automotive companies in Gauteng. Before digging into the thematic findings, it was necessary to provide a brief overview of the participants involved in the study. Participants were selected from a Bookkeeping role within the automotive industry in Gauteng, from the finance and controlling department staff. This sample aimed at capturing a comprehensive range of perspectives across different demographics and Bookkeeping functions. In the organization, the researcher conducted interviews for those Bookkeepers who met the criteria of being a bookkeeper. The participants were not disclosed however they were identified by participants 1, 2 3 etc. in order to protect their identity. The identity of the organization is also masked, and the organization is referred to as Company X.

4.2 Participant demographics data

Interviews were conducted with a combination of less and most experienced people working in company X. The roles of the participants were from the business responsible for functional areas in Finance and Controlling. The demographics of the participants were summarized as below:

Interviewee	Role	Domain	Experience	Age bracket	Biological sex
Participant 1	Bookkeeper	Finance	20 +	36 - 45	Female
Participant 2	Bookkeeper	Finance	5	36 - 45	Female
Participant 3	Junior Bookkeeper	Finance	Less than 12 months	26 - 35	Male
Participant 4	Bookkeeper	Controlling	5	26 - 35	Female
Participant 5	Bookkeeper	Finance	6	36 - 45	Female
Participant 6	Bookkeeper	Controlling	5	26 - 35	Male
Participant 7	Senior Bookkeeper	Controlling	10	26 - 35	Female
Participant 8	Senior Bookkeeper	Controlling	20 +	55 - 65	Female
Participant 9	Bookkeeper	Finance	6	36 - 45	Female
Participant 10	Junior Bookkeeper	Finance	2	26 - 35	Male
Participant 11	Senior Bookkeeper	Controlling	20 +	65 +	Female

Figure 2: Participant demographics data

Source: Author's own

The senior Bookkeepers a provided a more holistic view of the personal impact compared to participants who were at a junior level who focused more on the implementation of the RPA. The participants were asked how often they use RPA in order to anticipate various levels of impact experienced with the RPA tool.

The options were: used rarely, used occasionally, used frequently, used daily, and used monthly. Three out of eleven of the participants had monthly processes handled by a BOT helping them with previously manual tasks that included processing bulk invoicing and reporting, one participant used RPA frequently, three participants used RPA occasionally and three of the participants cited their implementations to be a work in progress and they went with the rarely option. The literature refers to the collaboration of the business users and RPA in 2.3.1.1 and suggests that RPA and users work in collaboration because in a case where the RPA BOT cannot handle some tasks, a human employee has to intervene and clear exceptions therefore evidently Bookkeeping staff and the robot work jointly to complete a task.

The majority of participants were females which was not done on purpose. The most experienced participants had more than 20 years of experience in the automotive industry, working for company X and the least experienced participant had less than 12 months of experience.

4.3 Usage of thematic analysis framework

The thematic analysis followed a Hierarchical Coding Frame process of coding and categorizing the qualitative data. Open coding was initially employed to identify patterns, recurring ideas, and

meaningful statements from the participants. Through an iterative process, these open codes were then organized into broader themes, allowing for a nuanced exploration of Bookkeeping' perceptions of RPA adoption.

The research analysis was guided by a manual thematic analysis. The thematic analysis six steps helped in achieving results which were accumulated into themes (Braun & Clarke, 2006). Figure 5 table shows an example of codes created for participants with the participant's responses as examples of the types of references that were coded.

Codes	Example code reference
Positive Perceptions	"Because we are still developing in the industry and the BOTS can benefit the industry."
Negative Perceptions	"Job losses especially for less skilled and not that educated. The unemployment rate is also lately high."
Changes in Job Roles	"Job roles – require the workforce to sharpen their automation-related skills such as development, machine learning, process analysis etc."
Adapting to Automation	"Some employees are resistant to change and find it challenging to embrace automation"
Efficiency and Productivity	"The efficiency, and optimization of processes. Improved working relationships, time saving and information sharing and availability"
Job Satisfaction	"People will need new skills because roles are changing. Other roles become obsolete but new opportunities are opening up. Employees need to adapt and learn"
Optimism and Opportunities	"the BOT makes the colleagues feel that there are more opportunities that lie ahead of them."
Role of Management	"Managers are adopting very well eg. The current strategic project is depicting that they support automation so that the organization can be digital as much as possible.."

Table 1: Author's analysis

Regarding the positive perceptions, Bookkeeping perceived RPA as a tool to enhance efficiency and reduce manual errors. They appreciate the time-saving benefits of RPA, allowing them to focus on more strategic tasks. Positive perceptions include increased accuracy and process optimization. *Participant 6: "I view it as a positive, as it will enhance the business processes."* And *Participant 4: "The efficiency, and optimization of processes. Improved working relationships, time saving and information sharing and availability."*

Participant 7: made a comment that supports this theme "RPA Takes away manual intervention,'risk of human error, efficient process, allow the organization to focus on necessary and not repetitive. save costs.

The negative perceptions towards RPA are related to some Bookkeeping who view RPA as a threat to job security, fearing that automation may lead to job displacement. Concerns exist about the impact of RPA on job roles and responsibilities, with worries about job redundancy and the

need for upskilling. *Participant 5: "Workload will be reduced but the impact on Bookkeeping is a concern. It cuts down Bookkeeping and it won't be necessary to employ more."*

Participant 10: "Job losses especially for less skilled and not that educated. The unemployment rate is also lately high."

RPA adoption has led to changes in job roles, with some tasks being automated and others requiring new skills. Bookkeeping are adapting to new responsibilities, such as overseeing and maintaining RPA systems, analyzing data, and providing strategic input. Observation of shifts or modifications in job responsibilities due to RPA integration. Emergence of new job categories or roles related to RPA development, maintenance, or oversight.

Participant 6 commented and said "Job roles – require the workforce to sharpen their automation-related skills such as development, machine learning, process analysis etc..."

Participant 1: "Role impact – learning new skills. Skills – roles change or are phased to be handled by laptops and typists but laptops are more efficient than humans. So because new skills arise, more advanced skills will be established."

Bookkeeping are adapting to automation by learning new skills and embracing technological changes. Training programs and support mechanisms are helping Bookkeeping transition to new roles and responsibilities. Participation in training programs or upskilling initiatives to enhance proficiency with RPA technology.

Participant 2 shared that "I was involved in the creation of the BOT process and I learned so much from the BOT implementation."

Input from participant 6 included "Yes, online training and in-person training. UiPath training basic online training. The training was effective as it gave me a different perspective and it showed me that people do not need to spend as much time as they currently do on manual tasks."

Participant 8 "When we rolled out, demos, was good but there are expectations and limitations or explanations and relationships and differences. Overall training was 80%."

RPA has improved efficiency and productivity by automating repetitive tasks and streamlining processes. Bookkeeping are experiencing increased productivity and are able to complete tasks

more quickly and accurately. Recognition of improved efficiency and productivity as outcomes of RPA implementation. Examples of how RPA has streamlined processes, reduced manual tasks, and increased output are found on participants comments.

Participant 11: "Definitely faster, efficient, less mistakes, data handling, clear defined rules, advantage for the industry, mistakes free." Participant 4: "The efficiency, and optimization of processes. Improved working relationships, time saving and information sharing and availability.."

Participant 9 references the use of RPA as a pro-active measure "I think it is about doing things right thing from the word go, quality work. Improve quality, transfer, work easier. Proactive run reports before month end and know what you are facing. No impact understanding and do a job for the safe of mistakes."

Overall, job satisfaction has been positively impacted by RPA adoption, as Bookkeeping appreciate the benefits of automation. However, concerns about job security and future roles have affected job satisfaction for some Bookkeeping. Employee perceptions of job satisfaction in the context of RPA adoption includes factors contributing to increased or decreased job satisfaction following RPA implementation.

In support of the claim, Participant 2 stated that: "From the beginning of the implementation of the Bots but as the tool was explained to the colleagues, it took away the fear that their jobs would be replaced by Bots..."

Participant 3: People will need new skills because roles are changing. Other roles become obsolete but new opportunities are opening up. Bookkeeping need to adapt and learn,."
Participant 11: Management is very supportive and they want Bookkeeping to adapt even for the future. They are willing to invest in RPA.

There is optimism about the opportunities that RPA brings, such as growth opportunities, career advancement, and continuous improvement. Bookkeeping see RPA as a way to enhance their skills and contribute to the organization's success. Positive outlook towards the future and the opportunities presented by RPA adoption and identification of potential growth prospects, career advancement opportunities, or innovative initiatives.

Participant 2: "the BOT makes the colleagues feel that there are more opportunities that lie ahead of them. ." Participant 6: "Economically it can boost the productivity of and make more revenues. This will result in happier Bookkeeping as their productivity and efficiency in the workplace will improve. "

Management plays a crucial role in facilitating RPA adoption and supporting Bookkeeping through the transition. Effective communication, training, and change management practices are essential for successful RPA implementation. Management's role in facilitating RPA adoption and supporting Bookkeeping through the transition.

Participant 3: "Managers are adopting very well eg. RoTF project is depicting that they support automation so that the organization can be digital as much as possible..."

Participant 7: "A drive from the management to automation but training and tools are not provided, hesitancy from management risks and top down approach and training. Management need to be trained. Managers need to communicate properly that the tool will now do the work and you focus on analysis. Free up time. What is the aim of RPA".

Participant 4 raised a concern to management "A concern could be cyber security, software is prone to cyber security risks and leaking of confidential information, editions when hackers access the information and they could falsify the information. In Gauteng there is a risk if we fall behind with updating the RPAs, there might be an opportunity for vulnerability."

4.4 Understanding the concept of RPA's impact on jobs.

Based on the data gathered, the introduction of RPA in the automotive industry in Gauteng has resulted in several effects on current job roles and responsibilities. According to the participants, Bookkeeping' job roles have been impacted by the automation of repetitive tasks through RPA implementation. Tasks such as data entry, report generation, and invoice processing, which were previously manual and time-consuming, are now automated, reducing the need for human intervention in these areas. Participant 3 (Bookkeeper in Finance, 22 November 2023) "I think it will make my job easier, faster and more efficient because there are lot of manual repetitive processes which automation may come in handy for. Eg. Current strategic project, testing manually we were told that processes will be automation and that showed that automation is taking over." Participant 4 (Exports Accounting department, 1 October 2023) said, "I think it

will optimize and relieve manual effort, be time efficient, more accurate because there is less room for errors.” Participant 6 (Controlling bookkeeper, 23 November 2023) shared that “RPA will save time and I can use the time to upskill so I can learn more of AI, Machine learning tools. There are many courses out there that I would like to participate in but because of the number of tasks requiring my time I cannot get into enrolling in those courses.” On the 1st of October, participant 8 in Group reporting) contributed with “Simple tasks can be taken away and it helps me focus on analysis which I am paid for.”

Deloitte Development LLC (2018) defined RPA as *RPA, commonly known as 'robotics' or 'robots', is the automation of processes based on predefined rules using software that interacts with user interfaces. This software is capable of operating on various types of software platforms, such as web-based applications, ERP systems, and mainframe systems.*

According to a Conversion Capital LLC (2024), in the automotive sector, particularly in the U.S., robust labor unions frequently advocated for improved compensation and benefits. Consequently, car manufacturers began automating various aspects of production. The integration of robots into assembly lines increased productivity, albeit diminishing the demand for manual labor.

4.5 RPA tool adopted by SA automotive companies

The adoption of RPA by South African automotive companies has been observed to have several key characteristics and impacts. Participant 3 (Bookkeeper in Finance, 22 November 2023) described the adoption effects as ” People will need new skills because roles are changing. Other roles become obsolete but new opportunities are opening up. Bookkeeping need to adapt and learn, learn the automation tools to adapt to the environment.” Themes influencing the adoption of RPA by bookkeepers in Gauteng unfolded. These revealed themes aligned with the themes that occurred in literature shown in Table 3.

Themes influencing the adoption of RPA by bookkeepers in Gauteng	
Benefits Realized	Challenges encountered
Increased Efficiency	Workforce Impact
Cost Savings	Integration Complexity
Improved Accuracy	Cybersecurity Risks
Enhanced Customer Service	Change Management
Compliance	Lack of knowledge

Table 2 Source: Author's analysis

The SA Automotive companies are facing transformation towards adopting automation in the industry. Participant 4 (Bookkeeper in Finance Accounts receivable, 22 November 2024) explained that ““Human Bookkeeping will be needed for ongoing support and not to replace or reduce headcount. Improved skills of those directly involved in the development of RPAs because of the continuous improvement and constant changes, agility. These will be part of the fundamental skills that will be acquired in the future..... ”.

Participant 6 (Bookkeeper in Finance, 23 November 2024) made a comment "Job roles – require the workforce to sharpen their automation-related skills such as development, machine learning, process analysis etc. Skills requirements – motivate the workforce to upskill as they are aware of the importance of remaining relevant in the industry. "

According to Wewerka and Reichert (2022) within the automotive sector, the RPA technology is employed to accomplish tasks that have traditionally been arduous and time-intensive, such as inventory and freight management, supplier onboarding, regulatory compliance, order processing, and other related functions. RPA aids in maintaining precision while also releasing resources, both in terms of time and finances, that are usually allocated to managing these administrative operations.

Participant 5 (Bookkeeper in Finance, 01 October 2023) shared a concern regarding that "Workload will be reduced but the impact on Bookkeeping is a concern. It cuts down Bookkeeping and it won't be necessary to employ more. The concern is on my side if I were to get someone to work half of my job I would be jobless and there will job losses in SA as a whole not just our industry. The exports subsidy from the government has a condition that you have to prove that you are creating jobs so if the BOT takes over those jobs then the organization will lose on subsidy. "

The findings by Macpherson et al. (2022) highlighted that Automotive organizations in South Africa were progressing in the adoption of automation for their operational processes, although they encountered hurdles related to their workforce. They observed the emergence of new job roles that demanded a blend of diverse competencies.

This seems to be known as participant 1 (Bookkeeper in Finance, 20 November 2023) alluded to that "Role impact – learning new skills was noticed, skills and roles change or are phased in because even typing used to be handled by typists however typists became obsolete due to that laptops are more efficient...The other participant (Participant 9, Bookkeeper in Controlling) highlighted that "Skills will be improved and use automation where it is easier for you but I am concerned about that once you introduce the automation for the older workforce they will find it hard to adapt and also I believe no job losses will be experienced but analysis will be more efficient. "

4.6 Conclusion

The findings suggest a refined perception of RPA adoption in the Gauteng automotive industry. while Bookkeeping generally recognizes the benefits of RPA, concerns about job losses, cybersecurity, and the need for ongoing training were evident. The management's role in facilitating a smooth co-existence with RPA emerged as a critical factor in shaping employee perceptions.

The next chapter will delve into a thorough discussion and interpretation of these findings, exploring their implications for both Bookkeeping and the automotive industry in Gauteng. Recommendations for organizations aiming to implement or refine RPA strategies will be discussed based on the study's outcomes.

CHAPTER 5: DISCUSSION OF RESULTS

5.1 Discussion of findings and interpretation of results

The adoption of RPA in the automotive industry in Gauteng has emerged as a transformative trend, reshaping the landscape of work and organizational dynamics (PwC, 2023).

This chapter provides a detailed examination of the findings from the study on the perception of Bookkeeping regarding RPA adoption, offering insights into the opportunities and challenges associated with this technological innovation. By analyzing the data collected through interviews, this chapter aims to illuminate the ways in which RPA is influencing job roles, skills development, and organizational culture in the automotive sector. The Theory of change framework was used to understand the perception of employees on the adoption of robotic

process automation in the automotive industry in Gauteng. This study employed four key categories of ToC: strategies, targets, outcomes, and impacts, to comprehensively explore the factors influencing employee perception and to provide actionable insights for successful RPA implementation. For example, the strategy involves providing sufficient resources for employees to obtain the necessary skills. This is done through training and hands-on workshops. The objective of providing training is to ensure a successful implementation that encourages employee involvement. The results include increased efficiency and job satisfaction. This has an overall impact on the organisation eg. Social well-being and industry transformation. The study by Breuer et al. (2016) highlighted one advantage of the Theory of Change (ToC), its emphasis on measuring indicators for each outcome along the pathway. This results in a comprehensive evaluation of inputs, processes, and outcomes throughout the entire causal pathway of the intervention.

In this chapter, we provide a summary of the findings obtained from the study on the perception of Bookkeeping regarding the adoption of RPA in the automotive industry in Gauteng. These findings suggest that the perception of RPA as both a threat and an opportunity is influenced by the specific job roles of employees. This dual perception indicates that tailored communication and support strategies are necessary to address the unique concerns of different employee groups. For instance, administrative staff may require more reassurance and training to mitigate their fears, while technical staff might benefit from opportunities to engage with the technology and enhance their skills. This approach ensures that the transition to RPA is inclusive and considers the diverse needs of the workforce, thereby promoting a positive and supportive work environment. The study revealed that employees in the automotive industry in Gauteng perceive RPA adoption with mixed feelings. While many employees expressed concerns about job security and potential job loss, a considerable number also recognized the efficiency and productivity benefits that RPA can bring. These perceptions varied significantly based on the employees' roles and their familiarity with the technology. Additionally, the study highlighted a general lack of awareness and understanding of RPA among employees, which contributes to anxiety and resistance. Furthermore, it was found that employees who had prior exposure to digital technologies were more optimistic about the integration of RPA, suggesting that familiarity plays a crucial role in shaping perceptions. The findings reflected that RPA is seen as a tool to enhance efficiency and reduce manual errors, allowing bookkeepers to focus on more

strategic tasks however some bookkeepers fear that RPA may lead to job displacement and redundancy. This relates with Naidoo (2021) regarding the paradox associated with the adoption of technologies that imply Bookkeepers lose jobs and some Bookkeepers seize job opportunities and gain employment. Naidoo (2021) argued that the new ways of working open job opportunities as repetitive jobs get automated (Naidoo, 2021).

Even with optimism about the opportunities RPA brings, such as growth opportunities and career advancement, effective communication, training, and change management practices were deemed essential for successful RPA implementation. In line with literature Frey & Osborne (2017) conducted a study on the US labor market about the impact of technology on jobs and the results suggested that non-repetitive jobs were prone to be automated sooner than expected. The key takeaway from the study was that Bookkeeper jobs were likely to be affected by automation however there is an opportunity for teaming up between bookkeeping staff, and bots to perform repetitive tasks and after the bot completes; the human being analyzes the processing that the bot completed.

Company X has has a steady growth in the number of cases implemented in the organisation due to mix feelings found in this study. Some Bookkeepers are happy to automate their process but some are reluctant. Automation differs by profession and the impact is on manual jobs as opposed to professional jobs (Novakova, 2020). In this case, Bookkeeping roles are both manual and professional. It is remarkable thought that there is optimism about the opportunities RPA brings, such as growth opportunities and career advancement in the organisation.

5.2 Practical implications

This study provides an overview to the organisations in the automotive industry and managers interested in implementing RPA. The results imply that there are mixed perceptions about RPA implementations. Our results show that managerial support and clear communication are important in the adoption of RPA by Bookkeepers however managers should be aware of the new responsibilities and emergence of new roles. This can cause panic if the new responsibilities need specialized training more especially if those roles are for the older employees. Based on the study results, we suggest that managers prioritise putting effective training programs and support mechanisms in place to help bookkeepers transition to new roles. By so doing, RPA adoption

perceptions can be managed better, interest to automate more processes can improve which then reduces resistance to automation.

Over and above training of employees, the results of this report showed that awareness campaigns showcasing implementation, informational workshops and distribution of educational materials to enhance employees' understanding of RPA's capabilities and benefits are needed. Finally, skill development programs to be offered to provide targeted training sessions, hands-on workshops to equip employees with the necessary skills to effectively use RPA tools.

5.2.1 The Future of Work and Occupations

The findings of this study align with the literature on the future of work and occupations, which suggests that technological advancements like RPA are reshaping job roles and responsibilities. According to Royhan et al. (2022), automation is likely to replace repetitive and mundane tasks, allowing employees to focus on more strategic and value-added activities. The study confirms this potential, as some employees acknowledged that RPA could free them from monotonous tasks, thereby enhancing job satisfaction and productivity. This is particularly significant for administrative roles, which often involve repetitive data entry tasks. The transition to more strategic roles could potentially lead to greater job fulfillment and opportunities for professional growth.

5.2.2 Redefining Productivity in the Digital Era

The study also supports the notion of redefining productivity in the digital era. As noted in the literature, RPA has the potential to significantly enhance productivity by streamlining business processes and reducing errors (Harjumaaskola, 2022). The findings corroborate this, with employees recognizing the efficiency gains that RPA can provide. However, the anxiety about job security indicates that these productivity gains must be balanced with measures to address employee concerns to achieve a harmonious transition. Effective change management strategies that include clear communication and employee involvement can help mitigate these concerns and ensure a smooth transition to a more productive work environment.

5.2.3 Investing in AI and RPA for an Improved Business Future

Investing in AI and RPA is highlighted in the literature as a crucial strategy for businesses to stay competitive in the future (Siemon & Kedziora, 2023). The study's findings support this perspective, as employees noted the potential for RPA to improve operational efficiency and business outcomes. However, the mixed perceptions among employees underscore the need for careful management of the transition process to ensure that investments in RPA lead to positive outcomes for both the organization and its workforce. This involves not only financial investment but also investing in the training and development of employees to build their capabilities and confidence in working alongside RPA technologies.

5.2.4 Effects of Evolving Technologies on the Job Market: Robotics, AI, and No-Code/Low-Code

The literature emphasizes the disruptive effects of evolving technologies on the job market, particularly in terms of job displacement and the creation of new roles (Nella et al., 2015). The study confirms these disruptive effects, with employees expressing fears about job loss due to RPA. However, it also highlights opportunities for new job creation, particularly in roles that involve managing and maintaining RPA systems. This dual impact suggests that while some job roles may be eliminated, new opportunities will emerge, requiring employees to adapt and acquire new skills. For instance, roles in data analysis, process optimization, and RPA system management are likely to see increased demand, offering new career paths for employees willing to adapt.

5.2.5 Adapting to the Digital Future

Adapting to the digital future is a recurring theme in the literature, which stresses the importance of continuous learning and skill development (Inoue & Misumi, 2022). The findings underscore the need for organizations to invest in training and development programs to help employees adapt to the new digital landscape. Employees who felt more confident and knowledgeable about RPA were less anxious and more optimistic about its potential benefits, highlighting the importance of education and engagement in facilitating a smooth transition. Organizations can facilitate this by offering workshops, seminars, and hands-on training sessions to build digital competencies among their workforce, thereby reducing resistance and fostering a culture of continuous improvement.

5.3 Theoretical implications of the study

The findings from the thematic analysis align well with the literature discussed in Chapter 2, reinforcing the multifaceted impact of RPA on job roles, efficiency, and employee perceptions within the automotive industry

Positive Perceptions and Efficiency Gains

Alignment: The literature in Chapter 2 emphasizes the efficiency and accuracy gains that RPA brings to various industries, including automotive. For instance, according to Deloitte Development LLC (2018), RPA is known for enhancing productivity by automating repetitive and manual tasks, thus allowing employees to focus on more strategic activities. The current findings echo this sentiment, with participants highlighting the time-saving benefits and improved accuracy resulting from RPA adoption. Comments such as those from Participant 6 and Participant 7, which emphasize enhanced business processes and reduced manual intervention, directly align with these documented benefits. This alignment is evident because both the findings and the literature recognize the inherent strengths of RPA in optimizing processes and reducing human error. The positive feedback from participants about increased efficiency and process optimization reflects the broader industry trends and supports the literature's claims.

Negative Perceptions and Job Security Concerns

Alignment: Chapter 2 also discusses the potential negative impacts of RPA on job security, highlighting fears of job displacement and redundancy, especially for less skilled workers. The findings from the thematic analysis support this, with several participants expressing concerns about job losses and the need for upskilling to remain relevant. Participant 10's concern about increased unemployment and Participant 5's fear of job cuts align with the literature's discussion on the socio-economic impacts of automation. The consistency between the findings and the literature is due to the widespread apprehension about automation across various industries. Both the thematic analysis and the literature review identify similar fears among employees regarding the future of their job roles in the face of increasing automation.

Adaptation and Upskilling

Alignment: The literature reviewed in Chapter 2 emphasizes the need for continuous learning and adaptation in response to automation. It mentions that employees will need to acquire new skills to manage and work alongside automated systems. The findings corroborate this, with participants discussing their involvement in training programs and the necessity of upskilling. Participant 2's and Participant 6's positive experiences with training and learning new skills are in line with the literature's emphasis on the importance of employee development in the era of RPA. The alignment is due to the recognition that automation not only changes job roles but also creates new opportunities for skill development. Both the literature and the findings reflect the need for a workforce that is adaptable and capable of leveraging new technologies.

Role of Management and Organizational Support

Alignment: Chapter 2 highlights the crucial role of management in facilitating the successful adoption of RPA, including the importance of effective communication, training, and change management practices. The findings echo this, with participants noting the support from management and the importance of clear communication regarding RPA's objectives and benefits. Participant 3's and Participant 7's comments about management's role in supporting automation efforts are directly aligned with the literature. This alignment exists because successful implementation of RPA is heavily dependent on organizational culture and management practices. Both the literature and the findings recognize that proactive and supportive management is key to overcoming resistance and ensuring smooth transitions.

5.4 Conclusion

The findings from the thematic analysis are well-aligned with the literature discussed in Chapter 2. Both sources highlight the dual nature of RPA's impact—bringing significant efficiency gains while also posing challenges related to job security and the need for upskilling. The role of management in facilitating this transition is also consistently emphasized. This alignment reinforces the credibility of the research findings and supports the broader narrative on the impact of RPA in the automotive industry.

CHAPTER 6: CONCLUSION

6.1 Introduction

In this chapter, we first summarize the key findings of the study, highlighting the main themes and their implications for practice. Next, we offer practical recommendations for organizations looking to adopt RPA, focusing on strategies to address employee concerns and promote successful implementation. Finally, we outline the limitations of the study and suggest directions for future research to further explore the complex dynamics of RPA adoption and its impact on Bookkeeping and organizations.

6.2 Summary of key findings

The primary research question is “What are the perceptions of Bookkeepers within the automotive industry in Gauteng regarding the adoption of RPA, and how do these perceptions impact job roles, responsibilities, and organizational dynamics?” The study aimed at investigating the effects of RPA on bookkeeping staff in Gauteng's automotive industry. Research questions included RQ1. What do bookkeeping personnel believe is the future of their profession with the continued integration of RPA? RQ2. In what ways has the introduction of RPA changed the daily responsibilities of bookkeeping personnel? RQ3. What kind of training or support have bookkeeping personnel received to adapt to RPA technologies? RQ4. How do bookkeeping personnel view the impact of RPA on their job security? RQ5. What strategies have management implemented to facilitate the co-existence of RPA and bookkeeping staff?

6.2.1 Positive Perceptions and Efficiency Gains

One of the primary research aims was to understand the positive impacts of RPA on bookkeeping staff. The findings demonstrate that bookkeepers perceive RPA as a significant tool for enhancing efficiency and reducing manual errors. Participants consistently highlighted the time-saving benefits and improved accuracy that RPA offers, allowing them to focus on more strategic and value-added tasks. This aligns with the broader literature, which emphasizes the potential of RPA to optimize processes and improve overall productivity. These efficiency gains not only streamline operations but also contribute to higher job satisfaction among bookkeepers who can leverage automation to achieve better outcomes.

6.2.2 Negative Perceptions and Job Security Concerns

Another key aim of the research was to identify any negative perceptions and concerns related to RPA adoption. The findings reveal significant apprehension among bookkeepers regarding job security and the potential for job displacement. Participants expressed fears that automation might lead to redundancy, particularly for less skilled workers. This concern about job losses and the need for continuous upskilling reflects broader industry anxieties about the socio-economic impacts of automation. Addressing these concerns is crucial for ensuring a smooth transition and maintaining workforce morale.

6.2.3 Adaptation and Upskilling

The research also aimed to explore how bookkeepers are adapting to new job roles and responsibilities brought about by RPA. The findings indicate that bookkeepers are actively engaging in training programs and upskilling initiatives to enhance their proficiency with RPA technology. Participants shared positive experiences related to learning new skills and participating in training sessions, which are essential for adapting to the evolving demands of their roles. This adaptation process highlights the importance of continuous learning and development in an automated work environment and underscores the need for organizations to invest in employee training to support this transition.

6.2.4 Role of Management and Organizational Support

The role of management in facilitating the adoption of RPA was another critical research aim. The findings underscore the importance of effective communication, training, and change management practices in ensuring the successful implementation of RPA. Participants noted that supportive management practices, clear communication about the benefits and goals of RPA, and comprehensive training programs were pivotal in alleviating concerns and fostering a positive outlook towards automation. This highlights the need for proactive and engaged leadership to guide the workforce through technological transitions.

6.3 Recommendations

Based on the findings of the study on the perception of Bookkeepers regarding the adoption of RPA in the automotive industry in Gauteng, the following recommendations are provided to support organizations, policymakers, and practitioners in effectively navigating RPA adoption and maximizing its benefits.

6.3.1 Invest in Employee Training and Development:

Develop comprehensive training programs to equip Bookkeeping with the necessary skills to work alongside RPA systems effectively. Provide ongoing learning opportunities to ensure continuous skill development and adaptation to technological advancements.

6.3.2 Promote Change Management Strategies:

Implement effective change management strategies to address Bookkeeping' concerns and resistance to RPA adoption. Communicate transparently about the goals, benefits, and potential impacts of RPA implementation to gain buy-in from Bookkeeping at all levels.

6.3.3 Redesign Job Roles and Responsibilities:

Redefine job roles and responsibilities to align with the evolving nature of work in a digitalized environment. Create new job categories that leverage Bookkeeping' expertise and complement.

6.4 Limitations of the Study

While the research provides valuable insights into the perception of Bookkeepers regarding the adoption of RPA in the automotive industry in Gauteng, several limitations should be acknowledged:

Sample Size and Generalizability: The study was conducted in company X with a relatively small sample of participants in Gauteng, caution should be exercised when extrapolating the results to other automotive companies within the industry or other provinces.

Qualitative Nature of the Study: As a qualitative study, the research focused on exploring in-depth insights and perspectives from participants. While this approach offers rich and detailed data, it may lack the statistical power and generalizability of quantitative studies. There is room to explore the quantitative method to gain another perspective.

Single Method of Data Collection: The study relied solely on semi-structured interviews for data collection. While interviews allow for rich, nuanced data collection, using multiple methods such as surveys or observations could provide a more comprehensive understanding of Bookkeepers' perceptions.

Time Constraints: The study was conducted within a limited time frame of three months, which may have restricted the depth and breadth of data collection and analysis. A longer research period could have allowed for more comprehensive exploration of the research questions and themes.

Acknowledging these limitations is essential for interpreting the findings accurately and recognizing the scope of the study's implications. Future research could address these limitations by employing larger and more diverse samples, using mixed-method approaches, and conducting longitudinal studies to track changes over time.

6.5 Future Research Considerations

The study on the perception of Bookkeeping regarding the adoption of RPA in the automotive industry in Gauteng suggests several avenues for future research that can further advance our understanding of RPA adoption and its implications. These future research implications are outlined below:

Employee Well-being and Satisfaction: Exploring the relationship between RPA adoption and employee well-being and satisfaction can shed light on the social and psychological implications of automation (Turner & Turner, 2020). Examining factors such as job satisfaction, work-life balance, and psychological safety in the context of RPA implementation can help organizations prioritize employee engagement and retention (Saks, 2020).

Skill Development and Training Needs: Examine the specific skill development and training needs required for bookkeepers to effectively use and integrate RPA into their workflows. Research should also evaluate the effectiveness of different training programs and methods.

Organizational Culture and Change Management: Investigating the role of organizational culture and change management strategies in facilitating RPA adoption can provide valuable

lessons for organizations undergoing digital transformation (Cameron & Green, 2019). Understanding how cultural factors influence attitudes towards automation and how effective change management practices can mitigate resistance to change is essential for successful RPA implementation (Kotter, 2016).

By addressing these future research implications, scholars can contribute to the ongoing discourse on RPA adoption and its implications for the automotive industry in Gauteng and beyond. Conducting rigorous research in these areas can help organizations, policymakers, and researchers navigate the complexities of RPA implementation and ensure its responsible and sustainable use in the future.

6.6 Conclusion

The study found that while RPA offers substantial benefits such as cost reduction, improved accuracy, and enhanced operational speed, it also raises significant concerns among bookkeeping staff. Employees perceive RPA as both a threat to job security and an opportunity to eliminate repetitive tasks. The study identified that clear communication from management, adequate training, and support are crucial in addressing these concerns and facilitating the adoption of RPA. Additionally, the perceptions of bookkeeping staff significantly influence the success of RPA implementation, highlighting the need for a balanced approach that considers both technological and human factors.

The primary aim of this study was to explore the perceptions of bookkeeping staff regarding RPA adoption in the Gauteng automotive industry. The results indicated that RPA is perceived as a threat to job security by some bookkeeping staff, leading to anxiety and resistance. Management can encourage the coexistence of RPA and bookkeeping staff through transparent communication, training programs, and support systems. Addressing the fear of job loss is essential to improve RPA adoption among bookkeeping staff. The perception of employees has a significant impact on the overall strategy and operational efficiency within the automotive industry.

The study provides empirical evidence on the perceptions of bookkeeping staff towards RPA, contributing to the broader literature on technology adoption, automation, and employee attitudes. It addresses the gap in understanding how RPA affects bookkeeping staff in the South

African automotive industry, providing insights into the human aspect of RPA adoption. By focusing on the perceptions of bookkeeping staff, the study fills a gap in the existing literature that often overlooks the psychological and operational impacts of RPA on employees. The study supports existing theories on technology adoption and employee resistance, highlighting the importance of addressing employee concerns to ensure successful implementation.

The findings offer practical recommendations for automotive industry leaders and policymakers to design more effective RPA implementation strategies, enhance employee buy-in, and promote a smoother transition to a more automated future.

While this study provides valuable insights, it is not without limitations. The qualitative nature of the research means that the findings are context-specific and may not be generalizable to other industries or regions. Additionally, the study did not explore the psychological challenges in-depth, as they were not directly related to the research aims. Future research could benefit from a larger sample size and a more diverse participant pool to enhance the generalizability of the findings.

In conclusion, this study examined the perceptions of bookkeeping staff regarding RPA adoption in the Gauteng automotive industry, highlighting RPA as both an advancement and a potential threat to job security. Addressing employee concerns and fostering a supportive environment is crucial for maximizing RPA benefits and ensuring a positive work environment. Future research should further explore the human aspects of RPA adoption to enhance our understanding and implementation of this technology.

References

- Accenture. (2022). Building a resilient automotive supply chain. Retrieved from <https://www.accenture.com/content/dam/accenture/final/accenture-com/document/Accenture-Building-A-Resilient-Automotive-Supply-Chain.pdf.pdf>. Adam, S. 4IR AND TAX: A COMPARITIVE STUDY OF SOUTH AFRICA AND SELECTED COUNTRIES.
- Acemoglu, D., & Restrepo, P. (2019). Automation and new tasks: How technology displaces and reinstates labor. *Journal of Economic Perspectives*, 33(2), 3-30.
- Adaptive Growth. (2022). Guaranteed operating cost reductions in your business with RPA: Robotic process automation implementation. Retrieved from <https://adaptivegrowth.com/>. Retrieved on February 18, 2023.
- Adeoye-Olatunde, O. A., & Olenik, N. L. (2021). Research and scholarly methods: Semi-structured interviews. *Journal of the american college of clinical pharmacy*, 4(10), 1358-1367.
- Ahmad, K., & Dukhan, R. (2022). Guiding firms in the automotive industry with digital transformations.
- Alareeni, B., & Hamdan, A. (Eds.). (2022). *Sustainable Finance, Digitalization and the Role of Technology: Proceedings of The International Conference on Business and Technology (ICBT 2021)* (Vol. 487). Springer Nature.
- Alharahsheh, H. H., & Pius, A. (2020). A review of key paradigms: Positivism VS interpretivism. *Global Academic Journal of Humanities and Social Sciences*, 2(3), 39-43.
- Anderson, A. A. (2005). *The Community Builder's Approach to Theory of Change: A Practical Guide to Theory Development*. The Aspen Institute.
- Asatiani, A., Copeland, O., & Penttinen, E. (2023). Deciding on the robotic process automation operating model: A checklist for RPA managers. *Business Horizons*, 66(1), 109-121.
- Appelbaum, S. H., Habashy, S., Malo, J. L., & Shafiq, H. (2012). Back to the future: revisiting Kotter's 1996 change model. *Journal of Management development*, 31(8), 764-782.
- Automotive Industry Export Council (AIEC). (2023). "Annual Report." Retrieved from <https://www.aiec.co.za/index>

- Bexiga, M., Garbatov, S., & Seco, J. C. (2020, October). Closing the gap between designers and developers in a low code ecosystem. In *Proceedings of the 23rd ACM/IEEE International Conference on Model Driven Engineering Languages and Systems: Companion Proceedings* (pp. 1-10).
- Brauer, M., & Wollersheim, J. (2020). *Robotic Process Automation: The Impact of RPA on Business Process Management*. Springer.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.
- Braun, V., & Clarke, V. (2012). *Thematic analysis*. American Psychological Association.
- Breuer, E., De Silva, M. J., Shidaye, R., Petersen, I., Nakku, J., Jordans, M. J., ... & Lund, C. (2016). Planning and evaluating mental health services in low-and middle-income countries using theory of change. *The British journal of psychiatry*, 208(s56), s55-s62.
- Brzeziński, Ł. (2022). Robotic process automation in logistics: a case study of a production company.
- Bughin, J., Deakin, J., & O'Beirne, B. (2019). Digital transformation: Improving the odds of success. *McKinsey Quarterly*, 22, 1-5.
- Business Wire. (2023, October 10). *Global robotic process automation (RPA) thematic research report 2022: Market will be valued at \$20.1 billion in 2030, up from \$4.8 billion in 2021 - ResearchAndMarkets.com*. Business Wire. Retrieve from <https://www.businesswire.com/news/home/20221010005467/en/Global-Robotic-Process-Automation-RPA-Thematic-Research-Report-2022-Market-will-be-Valued-at-20.1-Billion-in-2030-up-from-4.8-Billion-in-2021---ResearchAndMarkets.com>
- Caelli, K., Ray, L., & Mill, J. (2003). 'Clear as mud': toward greater clarity in generic qualitative research. *International journal of qualitative methods*, 2(2), 1-13.
- Cameron, E., & Green, M. (2019). *Making sense of change management: A complete guide to the models, tools and techniques of organizational change*. Kogan Page Publishers.
- Chui, M., Manyika, J., & Miremadi, M. (2016). Where machines could replace humans—and where they can't (yet). *McKinsey Quarterly*.
- Conversion Capital LLC (2024). Labor Unions and Automation [Web log message]. Retrieved from <https://conversioncapital.com/labor-unions-and-automation>

- Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. SAGE Publications.
- Davenport, T. H., Harris, J., & Shapiro, J. (2018). Competing on the rate of learning. *Harvard Business Review*.
- Davenport, T. H. (2018). From analytics to artificial intelligence. *Journal of Business Analytics*, 1(2), 73-80.
- David, B. (2017). Computer technology and probable job destructions in Japan: An evaluation. *Journal of the Japanese and International Economies*, 43, 77-87.
- Davis, F. D. (1989). Technology acceptance model: TAM. *Al-Suqri, MN, Al-Aufi, AS: Information Seeking Behavior and Technology Adoption*, 205, 219.
- Deloitte. (2023). Technological advancements in the automotive industry. Retrieved from <https://www.deloitte.com/ng/en/Industries/tmt/perspectives/technology-industry-outlook.html>
- Denzin, N. K., & Lincoln, Y. S. (Eds.). (2011). *The Sage handbook of qualitative research*. sage..
- De Silva, M. J., Breuer, E., Lee, L., Asher, L., Chowdhary, N., Lund, C., & Patel, V. (2014). Theory of change: a theory-driven approach to enhance the Medical Research Council's framework for complex interventions. *Trials*, 15(1), 1-13.
- Dobie, A., & Oldroyd, D. (2020). Bookkeeping. *The Routledge Companion to Accounting History*.
- Egiyi, M. A., & Chukwuani, V. N. (2021). Robotic Process Automation (RPA): Its Application and the Place for Accountants in the 21st Century. *International Journal of Advanced Finance and Accounting*, 2(1), 30-40.
- Eikebrokk, T. R., & Olsen, D. H. (2020). Robotic process automation and consequences for knowledge workers; a mixed-method study. In *Responsible Design, Implementation and Use of Information and Communication Technology: 19th IFIP WG 6.11 Conference on e-Business, e-Services, and e-Society, I3E 2020, Skukuza, South Africa, April 6–8, 2020, Proceedings, Part I 19* (pp. 114-125). Springer International Publishing.
- Ellis, J. L., & Hart, D. L. (2023). Strengthening the Choice for a Generic Qualitative Research Design. *Qualitative Report*, 28(6).
- Elshan, E., Dickhaut, E., & Ebel, P. (2023, January). An Investigation of Why Low Code Platforms Provide Answers and New Challenges. In *Hawaii International Conference on System Sciences (HICSS)*.

- Etehad, B., & Karatepe, O. M. (2019). The impact of job insecurity on critical hotel employee outcomes: The mediating role of self-efficacy. *Journal of Hospitality Marketing & Management*, 28(6), 665-689.
- Fernandez, D., & Aman, A. (2021). The influence of robotic process automation (Rpa) towards employee acceptance. *International Journal of Recent Technology and Engineering*, 9(5), 295-299.
- Fernandez, D., Dastane, O., Zaki, H. O., & Aman, A. (2023). Robotic process automation: bibliometric reflection and future opportunities. *European Journal of Innovation Management*, 27(2), 692-712.
- Flick, U. (2014). Challenges for qualitative inquiry as a global endeavor: Introduction to the special issue. *Qualitative Inquiry*, 20(9), 1059-1063.
- Ford Motor Company. (2022). History of automotive manufacturing. Retrieved from <https://corporate.ford.com/about/history.html>
- Fossen, F., & Sorgner, A. (2019). Mapping the future of occupations: transformative and destructive effects of new digital technologies on jobs. *Форсаўм*, 13(2 (eng)), 10-18.
- Foss, N. J., Lyngsie, J., & Zahra, S. A. (2020). Organizational Design and Firm Performance: Managerial Preferences and Capabilities Considered. *Organization Science*.
- Frazer, I., Orr, C., & Thielking, M. (2023). Applying the framework method to qualitative psychological research: Methodological overview and worked example. *Qualitative Psychology*, 10(1), 44.
- Frey, C. B., & Osborne, M. A. (2017). The future of employment: How susceptible are jobs to computerisation?. *Technological forecasting and social change*, 114, 254-280.
- Harjumaaskola, T. (2022). Impact and value of robotic process automation from the users' point of view.
- Hofmann, P., Samp, C., & Urbach, N. (2020). Robotic process automation. *Electronic markets*, 30(1), 99-106.
- Husband, G. (2020). Ethical data collection and recognizing the impact of semi-structured interviews on research respondents. *Education Sciences*, 10(8), 206.
- Inoue, T., & Misumi, R. (2022). Learning from Precipitation Events in the Wider Domain to Improve the Performance of a Deep Learning-Based Precipitation Nowcasting Model. *Weather and Forecasting*, 37(6), 1013-1026.
- Ivanov, S., Kuyumdzhev, M., & Webster, C. (2020). Automation fears: Drivers and solutions. *Technology in Society*, 63, 101431.
- Jędrzejka, D. (2019). Robotic process automation and its impact on accounting. *Zeszyty Teoretyczne Rachunkowości*, (105), 137-166.

Johansson, B., Engberg, S., Lindgren, I., & Sördal, T. (2020). Impacts of RPA on Bookkeeping' skill variety.

Kamal, C. R., Agnes, G., Jemima, L., & Chandrakala, M. (2024). Automation of Business Processes Using Robots in the Fields of Supply Chain Management, Intelligent Transportation, and Logistics. In *AI in Business: Opportunities and Limitations: Volume 1* (pp. 477-489). Cham: Springer Nature Switzerland.

Kaniadakis, A., & Linturn, L. (2021). Organizational adoption of a hyped technology: the case of robotic process automation. In *ECIS*.

Kaniadakis, A., & Linturn, L. (2022). Organizational adoption of Robotic Process Automation: managing the performativity of hype.

Kempers, J. (2023). *Are employees ready for digital transformation? Employees' change readiness for and acceptance of base technologies for digital transformation in service SMEs* (Master's thesis, University of Twente).

Koch, M., Manuylov, I., & Smolka, M. (2021). Robots and firms. *The Economic Journal*, 131(638), 2553-2584.

Knott, E., Rao, A. H., Summers, K., & Teeger, C. (2022). Interviews in the social sciences. *Nature Reviews Methods Primers*, 2(1), 73.

Kolokytha, E., Kolokythas, G., Perdiki, F., & Valsamidis, S. (2018). LABOUR JOB DIGITALIZATION: MYTHS AND REALITIES. *Scientific Bulletin-Economic Sciences/Buletin Stiintific-Seria Stiinte Economice*, 17(2).

KPMG. (2023). "Robotic Process Automation (RPA)." Retrieved from <https://kpmg.com/xx/en/home/industries/automotive.html>.

Kosonen, L., & Lappi, O. E. (2020). Impacts, benefits, and implementation of RPA and its effect on outsourced work.

Kotter, J. (2012). *Leading Change*. Boston, MA: Harvard Business Review Press.

Kumar, A., Tripathi, N., & Jaiswal, S. (2019). Robotic Process Automation (RPA): A comprehensive literature review and a roadmap for future research. *Expert Systems with Applications*, 115, 51-67.

- Lakay, D., & Mlambo, N. (2022, November). Activity Theory Analysis of RPA and Workforce in Financial Institutions. In *European Conference on the Impact of Artificial Intelligence and Robotics* (Vol. 4, No. 1, pp. 173-180).
- LASSO-RODRIGUEZ, G., & WINKLER, K. (2020). Hyperautomation to fulfil jobs rather than executing tasks: the BPM manager robot vs human case. *Romanian Journal of Information Technology and Automatic Control*, 30(3), 7-22.
- Lubinga, S., Maramura, T. C., & Masiya, T. (2023). The Fourth Industrial Revolution Adoption: Challenges in South African Higher Education Institutions. *Journal of Culture and Values in Education*, 6(2), 1-17.
- Macpherson, W., Werner, A., & Mey, M. R. (2022). Industry 4.0: Emerging job categories and associated competencies in the automotive industry in South Africa. *SA Journal of Human Resource Management*, 20, 10.
- Madakam, S., Holmukhe, R. M., & Jaiswal, D. K. (2019). The future digital work force: robotic process automation (RPA). *JISTEM-Journal of Information Systems and Technology Management*, 16, e201916001.
- Mahadeo, M. R. (2020). *The impact of trust in transformation leadership of the implementation of robotic process automation (RPA)* (Doctoral dissertation, University of Pretoria).
- Manyika, J., Chui, M., Miremadi, M., Bughin, J., George, K., Willmott, P., & Dewhurst, M. (2017). A future that works: AI, automation, employment, and productivity. *McKinsey Global Institute Research, Tech. Rep*, 60, 1-135.
- Marwala, T. (2019). *Handbook of machine learning: Volume 1: Foundation of artificial intelligence*.
- Masrom, M. (2007). Technology acceptance model and e-learning. *Technology*, 21(24), 81.
- McKinsey & Company. (2023). "Global Automotive Industry Trends and Insights." Retrieved from <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights>.
- Merriam Webster. (n.d.). In Merriam Webster Institute. Retrieved February 29, 2024, from <https://www.merriam-webster.com/dictionary/bookkeeper>
- Meteab, W., & Hazem, A. (2020). A morpho-syntactic approach to translating English verb phrases in literary texts into Arabic. *Kufa Journal of Arts*, 1(44), 805-814.
- Miller, R. L. (2015). Rogers' innovation diffusion theory (1962, 1995). In *Information seeking behavior and technology adoption: Theories and trends* (pp. 261-274). IGI Global.

- Mhlanga, D., & Moloi, T. (2020). COVID-19 and the digital transformation of education: What are we learning on 4IR in South Africa?. *Education sciences*, 10(7), 180.
- Mlambo, N. (2022). *The adoption of robotic process automation in a financial institution in South Africa* (Doctoral dissertation, Cape Peninsula University of Technology).
- Moroi, T. (2021). Quantitative and qualitative research and philosophical assumptions. *Journal of Bunkyo Gakuin University, Department of Foreign Languages*, (20), 127-132.
- Muro, M., Maxim, R., & Whiton, J. (2019). *Automation and Artificial Intelligence: How Machines Are Affecting People and Places*. Brookings Institution.
- Muzari, T., Shava, G. N., & Shonhiwa, S. (2022). Qualitative research paradigm, a key research design for educational researchers, processes and procedures: A theoretical overview. *Indiana Journal of Humanities and Social Sciences*, 3(1), 14-20.
- NAAMSA. (2023). "The South African Automotive Industry." Retrieved from <https://naamsa.net/>.
- Naidoo, A. (2021). *The Influence of Digitalization on Work and Employment in the Banking Sector in South Africa* (Doctoral dissertation).
- Nechiporenko, A. (2022). Artificial Intelligence and RPA usage and competencies in Finnish SMEs' finance and accounting processes.y
- Nella, D., Panagopoulou, E., Galanis, N., Montgomery, A., & Benos, A. (2015). Consequences of job insecurity on the psychological and physical health of Greek civil servants. *BioMed research international*, 2015.
- Noppen, P. V. (2019). *The qualitative impact of robotic process automation* (Master's thesis).
- Odeibat, A. S. (2021). The Effect Of Technology Evolution On The Future Of Jobs. *Network Intelligence Studies*, 9(17), 57-67.
- OECD. (2023). "Economic Volatility in the Automotive Sector." Retrieved from OECD website.
- OICA. (2023). "Global Automotive Industry Overview." Retrieved from <https://www.oica.net/category/economic-contributions/rd/#>
- Okridu, O. S. F., & Eze, P. M. (2021). Influence Of Accounting Education Skills On The Effectiveness Of Bursary Department Staff In Public Tertiary Institutions In Rivers State.

- Okoye, C. I., Okoye, D., & Warmate, F. Robotic Process Automation and its effect on Employees' Attitude and Behaviour.
- Olaitan, O. O., Issah, M., & Wayi, N. (2021). A framework to test South Africa's readiness for the fourth industrial revolution. *South African Journal of Information Management*, 23(1), 1-10.
- Ormston, R., Spencer, L., Barnard, M., & Snape, D. (2014). The foundations of qualitative research. In J. Ritchie, J. Lewis, C. McNaughton Nicholls, & R. Ormston (Eds.), *Qualitative research practice: A guide for social science students and researchers* (2nd ed., pp. 1-25). SAGE Publications.
- Ovum. (2017). Ovum Decision Matrix: Selecting a Robotic Process Automation (RPA) Platform, 2017–18.
- Parker, H., & Appel, S. E. (2021). On the path to artificial intelligence: the effects of a robotics solution in a financial services firm. *South African Journal of Industrial Engineering*, 32(2), 37-47.
- Parliamentary Monitoring Group. (2021). Report of the Portfolio Committee on Communications on its deliberations of Budget Vote 30: Communications and Digital Technologies. Retrieved from <https://pmg.org.za/taled-committee-report/4262/>
- Parschau, C., & Hauge, J. (2020). Is automation stealing manufacturing jobs? Evidence from South Africa's apparel industry. *Geoforum*, 115, 120-131.
- Perannagari, K. T., & Chakrabarti, S. (2020). Factors influencing acceptance of augmented reality in retail: insights from thematic analysis. *International Journal of Retail & Distribution Management*, 48(1), 18-34.
- Perdana, A., Lee, W. E., & Kim, C. M. (2023). Prototyping and implementing Robotic Process Automation in accounting firms: Benefits, challenges and opportunities to audit automation. *International Journal of Accounting Information Systems*, 51, 100641.
- Pereira, P., & Romero, D. (2017). An Industry 4.0 Research Framework for Sustainable Business Models. In *Proceedings of the 5th International Conference on Enterprise Systems* (pp. 449-459). Springer.
- Pham, Q. C., Madhavan, R., Righetti, L., Smart, W., & Chatila, R. (2018). The impact of robotics and automation on working conditions and employment. *IEEE Robotics & Automation Magazine*, 25(2), 126-128.
- Provincial Government. (2023). "Gauteng-Economic-Development-Annual-Report." Retrieved from https://provincialgovernment.co.za/departments_annual/1350/2023-gauteng-economic-development-annual-report.pdf.

- Pulijala, Y., Garbaczewska, M., & Napier, A. (2018). Attitude and behavioral intention formation towards robotic surgery in the United Kingdom: A technology acceptance model 3 perspective. *Health Informatics Journal*.
- PwC. (2023). "<https://www.pwc.de/en/automotive-industry/automotiveinnovations-awards.html>." Retrieved from <https://www.pwc.com/gx/en/transportation-logistics/publications/africa-infrastructure-investment/assets/south-africa.pdf>.
- Raghavan, V., Pham, C., & Tait, A. (2019). *Robotic Process Automation in the Enterprise: A Guide to Assessing Return on Investment*. Springer.
- Report of the Portfolio Committee on Communications on its deliberations of Budget Vote 30: Communications and Digital Technologies. *Parliamentary monitoring group* Retrieved from [ATC210514: Report of the Portfolio Committee on Communications on its deliberations of Budget Vote 30: Communications and Digital Technologies, dated 14 May 2021 | PMG](#) Retrieved on 02 April 2023
- Rice, W. S., Sowman, M. R., & Bavinck, M. (2020). Using Theory of Change to improve post-2020 conservation: A proposed framework and recommendations for use. *Conservation Science and Practice*, 2(12), e301.
- Royhan, M., Wati, L. N., & Soma, A. M. (2022, December). Systematic Literature Review Impact of RPA Implementation on Company Performance. In *International Conference on Global Innovation and Trends in Economics and Business (ICOBIS 2022)* (pp. 137-172). Atlantis Press.
- Ruiz, R. C., Ramírez, A. J., Cuaresma, M. J. E., & Enríquez, J. G. (2022). Hybridizing humans and Robots: An RPA horizon envisaged from the trenches. *Computers in Industry*, 138, 103615.
- Saavedra, R., & Kwun, S. K. (2000). Affective states in job characteristics theory. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 21(2), 131-146.
- Saks, A. M., & Gruman, J. A. (2020). Employee engagement. *Essentials of Job Attitudes and Other Workplace Psychological Constructs*, 242-271.
- Sahin, I. (2006). Detailed review of Rogers' diffusion of innovations theory and educational technology-related studies based on Rogers' theory. *Turkish Online Journal of Educational Technology-TOJET*, 5(2), 14-23.
- Satria, N., & Kustiawan, U. (2023). THE ROLE OF JOB INSECURITY AND HIGH COMMITMENT WORK SYSTEM ON EMPLOYEE WELL BEING. *JURNAL CAFETARIA*, 4(1), 25-39.

- Scheib, J. W. (2020). Paradigms and Theories. *Approaches to Qualitative Research: An Oxford Handbook of Qualitative Research in American Music Education*, 1, 56.
- Schwandt, T. A. (2023). The Interpretivist-Humanist Evaluator. In *Disrupting Program Evaluation and Mixed Methods Research for a More Just Society: The Contributions of Jennifer C. Greene* (pp. 49-60). Information Age Publishing Inc..
- Seiffer, A., Gnewuch, U., & Maedche, A. (2021). Understanding employee responses to software Robots: A systematic literature review.
- Sifile, O., Twesige, D., Gasheja, F., Gwangwava, E., Makurumidze, S., Matowanyika, K., ... & Sunday, K. (2021). The Fourth Industrial Revolution: Assessing the Readiness of Accountancy Profession in Africa.
- Siderska, J. (2020). Robotic Process Automation—a driver of digital transformation?. *Engineering Management in Production and Services*, 12(2), 21-31.
- Siemon, D., & Kedziora, D. (2023). From Accountant to Software Developer—Transforming Bookkeeping with Robotic Process Automation (RPA).
- Shin, D. D. (2019). Blockchain: The emerging technology of digital trust. *Telematics and informatics*, 45, 101278.
- Stanton, J. M. (2019). Information Security: Principles and Practices. Wiley.
- South African Government News Agency. (2024). "Gauteng looks to manufacturing for inclusive growth." Retrieved from <https://www.sanews.gov.za/south-africa/gauteng-looks-manufacturing-inclusive-growth>.
- Syed, R., Suriadi, S., Adams, M., Bandara, W., Leemans, S. J., Ouyang, C., ... & Reijers, H. A. (2020). Robotic process automation: contemporary themes and challenges. *Computers in Industry*, 115, 103162.
- Taha, S. (2021). *The Effect of Automation on Employment within the Accounting Industry: A Case Study in Deloitte San Francisco* (Doctoral dissertation, Alliant International University).
- Taşdoğan, M. E. (2021). *Implementation of Robotic Process Automation (RPA): a qualitative case study into the way organizational actors give and make sense of the implementation process* (Master's thesis, University of Twente).

- Tew, M. (2020). Investigating the factors driving adoption of RPA in South African banking: a qualitative analysis.
- Toktar, D., & Coban, U. (2022). Understanding the Operational Outcomes of Adopting Robotic Process Automtion Systems in Audit Sector. *Social Sciences*, 4(61).
- Toma, S. G. (2023). The Evolution of the World Motor Vehicle Production in the Period 2018-2022. *Ovidius University Annals, Economic Sciences Series*, 23(2), 175-179.
- Statista. (2023). "Revenue of the Global Automotive Industry." Retrieved from <https://www.statista.com/statistics/456342/realtime-comparison-of-value-added-in-manufacturing-of-leading-countries/>
- Turner, P., & Turner, P. (2020). Why Is Employee Engagement Important?. *Employee Engagement in Contemporary Organizations: Maintaining High Productivity and Sustained Competitiveness*, 57-84.'
- Zalewska-Turzyńska, M. (2022). The change of communication process in manufacturing companies implementing new technologies: empirical evidence.
- Zuidafrika. (2021). " South African Automotive Industry – Profile." Retrieved from <https://zuidafrika.nl/trade-investment/automotive-industry/>
- Weiss, C. H. (1997). Theory-based evaluation: past, present, and future. *New directions for evaluation*, 76, 41-55.
- Waizenegger, L., & Techatassanasoontorn, A. A. (2022). When robots join our team: A configuration theory of employees' perceptions of and reactions to robotic process automation. *Australasian Journal of Information Systems*, 26.
- Wallace, E. (2022). *The Role of Organisational Change Management in Robotic Process Automation Implementation Projects* (Doctoral dissertation, Auckland University of Technology).
- Wewerka, J., & Reichert, M. (2021, May). Robotic process automation in the automotive industry-lessons learned from an exploratory case study. In *International Conference on Research Challenges in Information Science* (pp. 3-19). Cham: Springer International Publishing.
- Willcocks, L., Lacity, M., & Craig, A. (2015). Robotic Process Automation: The Next Transformation Lever for Shared Services. *Journal of Information Technology Teaching Cases*, 5(2), 28-33.

Writer, S. (n.d.). How AI is being used in South Africa.
<https://businesstech.co.za/news/enterprise/322505/how-ai-is-being-used-in-south-africa/>

Zireva, D. (2013). Qualitative Data Analysis. *B. Chisaka, Action Research: Some Practical Ideas for Educational Practice*, 38-44.

Zhu, W., Zheng, X., He, H., Wang, G., & Zhang, X. (2019). Ethical leadership with both “moral person” and “moral manager” aspects: Scale development and cross-cultural validation. *Journal of Business Ethics*, 158, 547-565.

APPENDICES

Appendix 1: Information letter to participants



Dear Sir / Madam

My name is Nozipho Dlamini. I am a Master of Business Administration in the Faculty of Commerce, Law and Management at the University of the Witwatersrand, Johannesburg. My supervisor is Dr Robert Venter. I am conducting a research study about the effects of RPA implementations in an organization. The study title is "The Perception of Bookkeeping on the Adoption of robotic process automation in the automotive industry in Gauteng. "

I am inviting you to take part in an interview or answer a questionnaire. You are free to choose if you prefer an interview or a survey online. If you decide to take part, your participation in this research study will last about 10-15 minutes. The interview will take place in the private room in the office at 12:00. With your permission, I would like to audio record the interview. This data will be stored in secured cloud storage for 7 years and be archived thereafter. Only the researcher will have access to the data. The interview/online questionnaire will be confidential and anonymous. When I share the results of the research study, I will not include your name or

anything else that could identify you. With your permission, other researchers may use the data collected from this research study, but your name and any personal information will not be used or passed on.

If you decide to take part in the research study, it should be because you want to volunteer. You do not have to take part. You can stop being in the study at any time. You do not have to answer any questions if you do not want to. You will not get any direct benefits if you choose to join the research study. You will not lose any services, benefits, or rights you would normally have if you decided not to join. Taking part in the research study will not cost you anything. You will not be paid for being in this research study. The study will take place on office days, with your consent at 12:00 lunch break, in various meeting rooms available at that time. This will be in a form of meeting invites from MS Teams.

The risks for this research study are no more than what happens in everyday life or some of the questions asked may make you feel sad or upset. If this happens, I will stop the interview and continue another time. If you need some support or counselling services following the interview or questionnaire, these are available free of charge at Life Healthcare's Counselling Services which are available 24/7, 365. The name of the counsellor is not available upfront however the counsellor gets assigned after receiving your call. This research study will be written up as a research report. The report will be available on the university library website. If you would like to receive a summary of this report, I will be happy to send it to you.

If you have any questions during or afterwards about this research study, feel free to contact me or my supervisor on the details listed below. If you have any concerns or complaints about the ethical procedures of this research study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), by telephone +27(0) 11 717 1408, email hrecnon-medical@wits.ac.za.

Yours sincerely,

Nozipho Dlamini

Researcher:

Nozipho Dlamini, 2135464@Students.wits.ac.za, 0614561909 or 0713644507

Supervisor:

Dr Robert Venter, Robert.Venter@wits.ac.za, +27 11 717 8090 (Office)

Appendix 2: Participant consent form

Name of researcher: Nozipho Dlamini

I,, agree to participate in this research project.

I agree to the following:

(Please circle the relevant options below)

The research study was explained to me. I understand what this study is about.

YES NO

I understand that I can volunteer to take part in the study

YES NO

I agree that the interview/focus group/other activity may be audio recorded

YES NO

I agree that direct quotations from my interview/focus group/other activity may be used by the researcher in their research report/ manuscript/book chapter

YES NO

I agree that my participation will remain anonymous (my name or other identifying data will not be used by the researcher in their research report/manuscript/book chapter)

YES NO

I agree that other researchers may use the information I provide in my interview/focus group/other activity (depending on their own ethics clearance being obtained) but my name and any personal information will not be used or passed on

YES NO

..... (signature)

.....(name of participant)

..... (date)

Appendix 3: Questions for semi-structured interviews

Q1 Consent

- ☐ Yes, I give consent.
- ☐ No, I do not give consent.

Q2 What age range do you belong to?

- ☐ 18 - 25
- ☐ 26 - 35
- ☐ 36 - 45
- ☐ 46 - 55
- ☐ 65 - 65
- ☐ over 65
- ☐ I would rather not disclose my age

Q3 Please select the gender that is suitable.

- ☒ Male
- ☐ Female
- ☐ I choose not to disclose my gender

Q4 How long have you been employed in this company?

- ☒ 0-12 months
- ☐ 1 - 5 years

- ☐ 5 - 10 years
- ☐ 10 - 20 years
- ☐ Over 20 years

Q5 How often do you use RPA?

- ☐ Used rarely
- ☒ Used occasionally
- ☐ Used frequently
- ☐ Used daily
- ☐ Used monthly

Q6 Can you explain your role and responsibilities within the automotive industry?

Responsible for accounts receivables, Retail of the future implementation project- AR responsible in the accounts departments.

Q7 What do you believe are the main reasons for organizations in the industry to adopt RPA?

To eliminate human errors, accuracy, and for a competitive advantage. The times are moving and we are in the digital era and we need to adapt. RPA saves time and it translates to savings on human resources costs.

Q8 How do you think the adoption of RPA will impact the workforce within the automotive industry in Gauteng, both in terms of job roles and skill requirements?

People will need new skills because roles are changing. Other roles become obsolete but new opportunities are opening up. Bookkeeping need to adapt and learn, learn the automation tools to adapt to the environment.

Q9 How do you perceive the adoption of RPA in the automotive industry in Gauteng? Do you view it positively, or negatively, or are you unsure?

In between because I am for automation, based on the country or the province people are not fast adopting but the industry is adopting automation. Big organisations can adopt quicker while some in the Gauteng province are still lagging behind. This leads to insourcing talent from other countries because within SA only few are privileged about the automation tools.

Q10 What worries or fears, if any, do you have regarding the adoption of RPA in the automotive industry in Gauteng?

I think businesses will grow faster but ppl will be doing manual processes will suffer because of the adoption of automation. The fear is that those who loss their jobs to automation might not have the affordability to develop themselves and learn the tools because people are resistant to change. Old people will be challenged most more than the younger generation.

Q11 How do you believe the introduction of RPA will impact your current job role and responsibilities in the automotive industry?

I think It will make my job easier faster and more efficient because there are lot of manual repetitive processes which automation may come in handy for. Eg. RoTF project, testing manually we were told that processes will be automation and that showed that automation is taking over.

Q12 Have you received any training or guidance on how to work alongside RPA technology? If so, how effective was this training?

I have not received any training but I have been involved in automation. Eg, GoAML automation of a government website that handles reporting cash transactions above a threshold. Eg. If the amount received is above 24999 then it should be declared to the government. The process is based on the bank statement and the BOT fetched the amount from the B/S and reports to the website including the details about the amount, customer, company information etc.

Q13 In your opinion, what are the potential benefits that RPA can bring to the automotive industry in Gauteng?

The industry is going to grow, efficiency, and revenues can improve. The people will be relieved from stress and enjoy their jobs, preventing Bookkeeping from breaking down. RPA saved time and I was able to use the time saved in other important tasks.

Q14 Is RPA (RPA) helping you meet your work demands? If so Why?

Yes, because it saves me time, and improves the quality of my work. I will meet my targets and complete bank statements processed in time since my work is time and deadline based on daily, weekly and monthly.

Q15 Is there anything else you would like to share regarding your perception of RPA adoption in the automotive industry in Gauteng?

I cannot think of something different from what I shared.

Q16 How do you perceive the level of support provided by management for the adoption of RPA in the automotive industry?

Managers are adopting very well eg. RoTF project is depicting that they support automation so that the organization can be digital as much as possible.

Q17 Have you witnessed any resistance or reluctance from colleagues in accepting and adopting RPA? If so, what are the main reasons behind this resistance?

Yes, when it comes to the older generations adapting to technology and digitization is a bit of a challenge because they have worked in a company for a long time and Bots are coming with changes constantly. Lots of people are not good and this is talking to not embracing the change and not perceiving that the organization is simplifying their work lives. They are comfortable with the old ways and old systems they used because of the fear of change.

Appendix 4: Interview schedule

Research appointment control sheet			
Interviewee	Role	Domain	Date
Participant 1	Bookkeeper	Finance	20/11/2023
Participant 2	Bookkeeper	Finance	21/11/2023
Participant 3	Junior Bookkeeper	Finance	22/11/2023
Participant 4	Bookkeeper	Controlling	28/11/2023
Participant 5	Bookkeeper	Finance	29/11/2023
Participant 6	Bookkeeper	Controlling	23/11/2023
Participant 7	Senior Bookkeeper	Controlling	30/11/2023
Participant 8	Senior Bookkeeper	Controlling	13/11/2023
Participant 9	Bookkeeper	Finance	15/10/2023
Participant 10	Junior Bookkeeper	Finance	1/12/2023
Participant 11	Senior Bookkeeper	Controlling	5/12/2023

Appendix 5: Authorization letter



Mercedes-Benz South Africa Ltd | P.O. Box 1717 | Pretoria | 0001

Mercedes-Benz South Africa Ltd

09 November 2023

Private & Confidential

Nozipho Theodorah Dlamini
Mercedes-Benz South Africa Limited
210 Aramist Avenue
Waterkloof Glen
Pretoria
0181

Dear Nozipho,

This hereby confirms that Mercedes-Benz South Africa Limited permits the use of internal data for the purpose of completion of your research project towards the study of your Masters, at the University of Witwatersrand.

Only data pertaining to the research topic, *"Bookkeeper's perceptions of robotic process automation in the automotive industry in Gauteng"*, may be used.

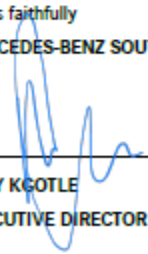
Please note that the study should be conducted in a way that does not compromise the name and image of the Company.

This letter must be included in the study documentation, to ensure that this information is not distributed. Details regarding these restrictions should be indicated in the Ethical Clearance Form, and a copy thereof must be sent to Nadine.a.kamineth@mercedes-benz.com.

Thank you for your interest.

Yours faithfully

MERCEDES-BENZ SOUTH AFRICA LTD


ABEY KGOTLE

EXECUTIVE DIRECTOR HR & CORPORATE AFFAIRS

Mercedes-Benz South Africa Ltd | 210 Aramist Avenue, Waterkloof Glen, Pretoria 0181 | T +27 012 677 1500 | F +27 012 673 6050 | www.mercedes-benz.co.za

Independent directors: W. Porth* (Chairman), PN JanuaryBardill (Lead Independent), S Ziliwa, F De Buck, N Mbhele | Executive directors: A Brand* (CEO), M Raine* (Co-CEO), T Woodbridge (CFO), AM Kgotle | Nonexecutive directors: A. Van Der Merwe, S. Sardien
| Company Secretary: C Peterson | * German

Appendix 6: Clearance certificate from WBS

Internal

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/BA2135464/123

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	Bookkeepers' perceptions of robotic process automation in the automotive industry in Gauteng
Investigator / Researcher	Ms Nozipho Dlamini
Nature of Project	MBA (Research Article)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed confidentiality.
Issue Date of Certificate	2023/08/28
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

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.


Signed by: Nozipho Theodorah Dlamini
Signing time: 09-10-2023 22:49:28 (+02:00)

09 October 2023

Signature

Date:

