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The influence of automation on the operational efficiency and customer experience in South African financial institutions

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Declaration

I, Thotyelwa Magaqa, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the Graduate School of Business Administration, University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

TMagaqa

Thotyelwa Magaqa

Signed at Randpark Ridge

On the 29th day of June 2025.

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Through the grace of God, I would like to acknowledge my family, supervisor Dr Yvonne Saini, lecturers, fellow syndicate and cohort members.

"You may encounter many defeats, but you must not be defeated."

— *Maya Angelou*

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Abstract

While existing literature often explores the benefits of automation in terms of either operational efficiency or customer experience, few studies offer a holistic view that captures the relationship between the two (Idha, 2024). Most studies examine either operational efficiency or customer experience in isolation. This study addresses this gap by exploring how improvements in one domain influence the other. The study investigates the influence of automation (Robotic Process Automation, Artificial Intelligence, and Machine Learning) on operational efficiency and customer experience within South African financial institutions. A mixed-methods approach was employed, utilizing primary quantitative survey data from banking employees and secondary customer experience data from industry reports. Grounded in the Technology Acceptance Model (TAM) and Task-Technology Fit (TTF) model, the study revealed that automation significantly enhances both operational efficiency (reducing processing times, errors, and costs) and customer satisfaction (increasing accessibility, personalization, and service speed), contingent on thoughtful implementation. The implications are theoretical, validating the combined use of TAM and TTF; managerial, offering insights for optimizing automation strategies; and policy-oriented, highlighting the need for supportive regulatory frameworks. These insights aim to guide South African banking institutions in leveraging automation for sustainable digital transformation.

Keywords: Automation, Artificial Intelligence, Machine Learning, Generative AI, Chatbots, Customer Experience, Operational Efficiency, Robotic Process Automation, Personalization

Chapter 1: Introduction

1.1 Research title

The influence of automation on the operational efficiency and customer experience in South African financial institutions.

1.2 Statement of purpose

Although automation technologies like Robotic Process Automation (RPA), Artificial Intelligence (AI), and Machine Learning (ML) are increasingly adopted in South Africa's banking sector, research still lacks a holistic view of their combined impact on operational efficiency and customer experience (Al-Hawari, 2022); (Dwivedi, 2023); (Louw, 2020). Existing studies often isolate internal process improvements from customer-facing enhancements, leading to fragmented insights (Dwivedi et al., 2023; Louw & Van Greunen, 2020). Al-Hawari (2022) highlights that AI is intended to improve both domains, yet research rarely integrates these outcomes.

Further, Akilimalissiga and Sukdeo (2024) underscore the need for a balanced approach, noting that while automation boosts productivity and cost-efficiency, it also raises concerns about job displacement and workplace dynamics, which may affect service quality (Akilimalissiga & Sukdeo, 2024). Their advocacy for partial automation reflects the importance of nuanced strategies that align efficiency with comprehensive service delivery. This study seeks to establish that relationship.

1.3 Background of the study

Financial institutions in South Africa face several challenges: enhancing operational efficiency while navigating heightened competition and regulatory demands (Adonis & Ngcamu, 2016), while trying to deliver exceptional customer experience in a rapidly digitalising environment. Automation offers a solution to these issues by lowering operational costs, reducing human error, and speeding up transaction processing (Madakam, Holmukhe, & Jaiswal, 2019). Nonetheless, deploying these technologies also introduces significant risks, such as potential service disruptions and effects on customer satisfaction.

With new entrants and competitors entering the market, the rising focus on fintech and digital transformation in South Africa highlights the need for further study in this field (Christensen, 2002). As financial institutions continue to invest in automation to stay competitive, there is a crucial need for empirical data to inform these investments. This research aims to investigate the impact of automation on key performance indicators and customer interactions, offering valuable insights that will assist South African financial institutions in refining their automation strategies and enhancing their overall performance.

1.4 Problem statement

As South African financial institutions accelerate digital transformation, a critical gap persists in understanding how automation technologies influence both operational efficiency and customer experience (Idha, 2024); (Mlambo & Iyamu, 2023). Existing research tends to examine these outcomes in isolation, overlooking their interdependence and the broader implications for service delivery.

This lack of integrated, context-specific analysis is particularly concerning in emerging markets, where digital maturity, regulatory conditions, and customer expectations diverge from those in developed economies (Ndlovu & Kanyane, 2020). Without a nuanced understanding of automation's dual impact, institutions risk misaligned strategies and suboptimal performance.

This study addresses the gap by investigating the relationship between automation-driven efficiency and customer experience in South African banking, using a mixed-methods approach grounded in the Technology Acceptance Model (TAM) and Task-Technology Fit (TTF) framework.

1.5 Research objectives

This research aims to contribute to the ongoing conversation regarding automation by conducting a detailed analysis of the Impact of Robotic Process Automation and Artificial Intelligence on Operational Efficiency and Customer Experience in South African Banking Institutions. It sets the stage for a detailed exploration of the impacts

of automation on key operational and customer experience metrics within South African financial institutions

1. To investigate the relationship between the level of automation adoption (measured by implementation duration, percentage of operations automated, and types of tools used) and the perceived customer experience.
2. Evaluate the influence of operational efficiency achieved through automation metrics (such as reduced processing times and error minimization) on the overall customer experience.

1.6 Assumptions

The following assumptions are made based on the nature of this study:

1. Respondents reflect normal perspectives and experiences to ensure that the study reflects the true nature of the experience.
2. The sample is representative of the South African financial services population.
3. The financial industry is a highly regulated environment, and this study will be conducted within the confines of those regulatory and compliance requirements.
4. It is assumed that the secondary sources used for customer experience analysis (e.g. industry reports, white papers) are credible, up-to-date, and reflective of the South African financial services landscape.
5. It is assumed that employees participating in the survey have sufficient awareness and experience with automation technologies to provide informed responses.
6. Customer Experience is measured from the perspective of banking employees

1.7 Delimitations of the study

This study is delimited to employees working in various banking institutions across South Africa. The survey was distributed only to individuals employed within these institutions, covering a range of roles but excluding external stakeholders such as customers or regulators. The study relies primarily on survey responses and desktop research. The desktop research focused on customer experience insights from similar

sectors, with a strong emphasis on South African contexts. However, it also excludes direct customer interviews which may limit the customer experience findings.

Chapter 2: Literature review

2.1 Introduction

There is broad consensus that automation particularly RPA, AI, and ML enhances operational efficiency in financial institutions. Studies by Ndlovu & Kanyane (2020) and Villar & Nawaz (2021) report reduced processing times and fewer errors post-RPA implementation. Davenport & Ronanki (2018) highlight AI's role in enabling Intelligent Process Automation, improving decision-making and throughput.

However, the impact on customer experience (CX) is less clear. While Pretorius & Steyn (2021) and Capgemini (2024) cite gains in personalization and speed, Gartner (2023) notes low chatbot adoption and mixed satisfaction, suggesting that CX benefits depend on thoughtful, user-centric design.

A key limitation in the literature is its reliance on global data (e.g., McKinsey, BCG, Capgemini), which may not fully reflect South Africa's varied digital maturity. Most studies also treat operational efficiency and CX separately e.g., Ndlovu & Kanyane (2020) focus on internal processes, while Pretorius & Steyn (2021) examine customer-facing technology overlooking their interdependence.

Local empirical research is scarce. Mlambo & Iyamu (2023) observe widespread automation adoption but limited data on outcomes. Moreover, few studies apply integrated frameworks like TAM or TTF to explain both adoption and performance, limiting insights into context-specific success factors.

2.2 Automation Adoption - Digital Transformation in Financial Services

Digital transformation has become a strategic imperative for financial institutions globally. It involves the integration of digital technologies into all areas of business, fundamentally changing how organizations operate and deliver value to customers (Westerman, Bonnet, & McAfee, 2014). In the financial sector, digital transformation is driven by the need to enhance operational efficiency, improve customer experience, and remain competitive in the face of fintech disruption (EY, 2023). South African banks are increasingly investing in digital platforms, with IT spending reaching \$1.6 billion in 2022 (Accenture, 2024).

An evolution of Digital Transformation in Financial Services:

Over the past decade and a half, the financial services industry has undergone a profound digital transformation, driven by technological innovation, evolving customer expectations, and competitive pressures from fintech disruptors (Business Money, 2024).

2.2.1. Early Adoption and Infrastructure Modernization

In the early 2010s, digital transformation in banking focused on digitizing legacy systems and introducing online banking platforms. This phase was largely about cost reduction and operational efficiency, with banks investing in core banking system upgrades and basic digital channels like mobile apps and online portals.

2.2.2. Rise of Fintech and Customer-Centric Innovation

The mid-2010s saw the rise of fintech startups, which accelerated the pace of innovation (Komandla & Perumalla, 2017). Traditional banks began to adopt customer-centric digital strategies, integrating technologies like cloud computing, mobile-first design, and real-time analytics to improve service delivery and personalization.

According to McKinsey, financial institutions began to recognize the need to modernize both front-end and back-end systems to remain competitive. However, many were still in the early stages of transformation, facing challenges such as talent shortages and legacy system complexity (McKinsey, n.d).

2.2.3. Strategic Digital Maturity and Differentiation

By the early 2020s, digital transformation became a strategic imperative. Institutions that developed clear digital strategies and invested in employee capabilities, platform modernization, and data-driven decision-making outperformed their peers (BCG, 2022).

A 2022 study by BCG found that financial institutions with high digital maturity achieved higher revenue growth, improved earnings, and lower costs. Those without a cohesive strategy struggled to scale digital initiatives and often saw limited returns on investment

2.2.4. The COVID-19 Catalyst

The COVID-19 pandemic acted as a major catalyst, forcing rapid digital adoption. Remote work, digital onboarding, and contactless payments became essential. Financial institutions had to quickly scale digital channels, enhance cybersecurity, and automate manual processes (Thottoli, Islam, bin Yusof, Hassan, & Hassan, 2023).

McKinsey noted that this period marked the transition to the “next normal”, where digital-first engagement models became the default, and customer expectations for seamless, omnichannel experiences intensified.

2.2.5. Emerging Technologies and the Future

Today, the focus has shifted to next-gen technologies such as:

- Artificial Intelligence (AI) for fraud detection, credit scoring, and personalized recommendations
- Robotic Process Automation (RPA) for back-office efficiency
- Blockchain for secure, transparent transactions
- Open banking APIs for ecosystem integration

Deloitte’s “Finance 2025” report predicts that finance functions will become fully digital, with automation handling routine tasks and finance professionals focusing on strategic insights and innovation (Deloitte, 2025).

2.3 Automation Technologies and Operational Efficiency

Over the past decade, automation technologies such as Robotic Process Automation (RPA), Artificial Intelligence (AI), and Machine Learning (ML) have become central to digital transformation strategies in financial services. These technologies are reshaping how institutions manage operations, reduce costs, and deliver services.

2.3.1 Robotic Process Automation (RPA)

RPA is widely used to automate rule-based, repetitive tasks such as data entry, reconciliation, and compliance reporting. RPA mimics human interactions with digital systems, enabling faster and more accurate execution of back-office processes.

Literature has shown that the use of Robotic Process Automation can improve various aspects of operations as well as improve employee morale (Buccowich, 2016).

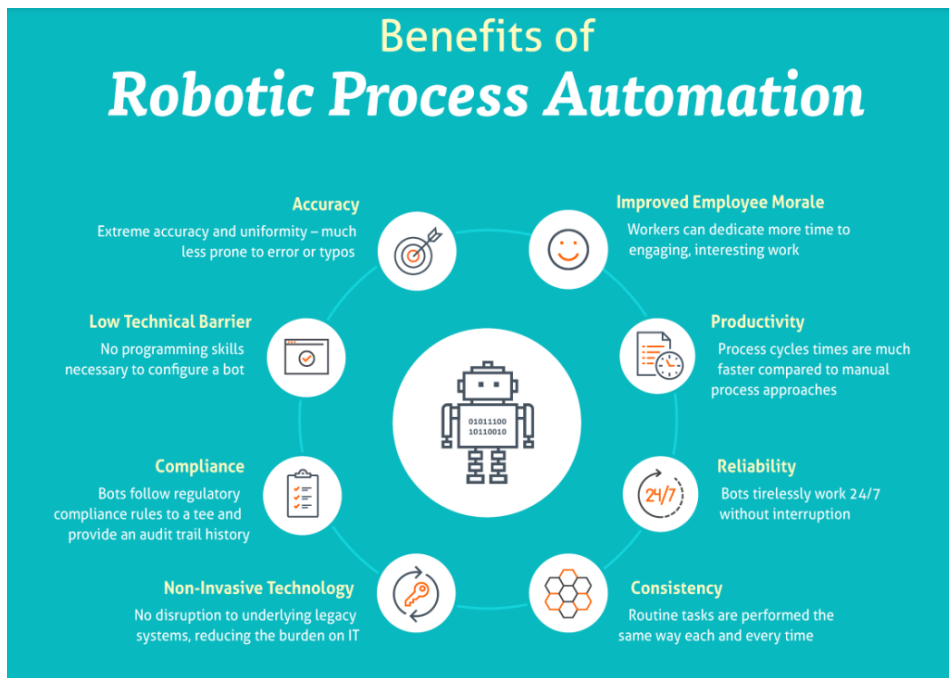


Figure 1 - Robotic Process Automation, by Brandon Buccowich.

A case study on Deutsche Bank demonstrated how RPA significantly improved compliance operations by automating Adverse Media Screening, reducing false positives and increasing coverage (Villar & Nawaz, 2021).

A similar study conducted by Ndlovu and Kanyane in 2020, they explore how automation affects operational efficiency in South African banks. They emphasize that automation technologies, including online banking and automated teller machines (ATMs), greatly improve efficiency by simplifying processes, shortening transaction times, and reducing human errors (Ndlovu & Kanyane, 2020).

Automation enhances specialization by reducing the need for multitasking and job switching (Gong & Png, 2023). It replaces human labour with machines for specific tasks, allowing workers to focus on tasks that are not automated. Consequently, workers interact with machines rather than with other people. For instance, drivers use Google Maps, cashiers handle self-checkout machines, and banking customers utilize self-service channels for their banking needs. Notably, coordinating with machines tends to be more cost-effective than coordinating with other individuals (Gong & Png, 2023).

2.3.2 Artificial Intelligence (AI) and Machine Learning (ML)

AI and ML enhance RPA by enabling intelligent decision-making in areas like predictive analytics, fraud detection, credit scoring, and customer service automation. Davenport and Ronanki (2018) describe this integration as Intelligent Process Automation (IPA), which boosts operational efficiency by combining RPA with cognitive technologies (Davenport & Ronanki, 2018).

Generative AI is transforming self-service channels, revitalizing chatbots and virtual assistants to handle complex financial tasks (Capgemini, 2024). Its rapid rise has captured global attention, driving innovation across industries.

In South Africa, financial institutions are increasingly adopting AI and ML to improve performance. Auto & General, for example, halved claims processing times by automating tasks such as adjuster assignment, payment processing, and fraud detection (BusinessTech, 2025).

A McKinsey study found that AI-driven automation in South African banks led to reduced manual processing and improved real-time visibility, enhancing service delivery and internal coordination (Kuyoro, Bagus, Benshir, & Bobat, 2025).

As customers demand personalized digital experiences, agile Fintechs are gaining ground by offering superior engagement rather than traditional products (Cele & Mlitwa, 2024). To stay competitive, banks must shift from product-centric models to customer-centric strategies that foster trust and loyalty (Capgemini, 2024).

2.4 Marketing and Customer Experience Theories

The marketing mix, particularly the extended 7Ps, product, price, place, promotion, people, process, and physical evidence provide a foundational framework for understanding service delivery in financial institutions (Kotler & Keller, 2016). In the context of automation, the 'process' and 'people' elements are especially relevant. Automation technologies directly influence service processes by streamlining operations, reducing errors, and enabling faster delivery. At the same time, the 'people' component is impacted through changes in employee roles, digital literacy, and customer interaction dynamics. By examining how automation affects these two

dimensions, the study aligns the marketing mix framework with its investigation into operational efficiency and customer experience.

2.4.1 Automation and Customer Experience

Customer experience (CX) is increasingly recognized as a key differentiator in financial services. Automation technologies such as AI-powered chatbots and virtual assistants enhance 24/7 availability, personalization, and response times, contributing to improved service delivery (Gartner, 2025). However, the effectiveness of these tools depends on thoughtful implementation and user-centric design. Gartner (2023) reports that only 8% of customers used chatbots in recent interactions, with mixed satisfaction levels, highlighting the need for balancing automation with human support. These insights underscore the importance of aligning automation strategies with customer expectations to achieve meaningful CX improvements.

Gartner (2025) emphasizes that future CX success depends on balancing automation with emotional and trust-based engagement (Scheibenreif, 2025). In South Africa, Pretorius & Steyn (2021) found that automation via chatbots and mobile apps improves service speed and convenience, though challenges in technology acceptance and support remain (Pretorius & Steyn, 2021).

Despite benefits, institutions face barriers like legacy systems, talent gaps, and scaling issues. McKinsey (2017) notes that deploying bots without strategic alignment leads to fragmented outcomes (McKinsey, 2017). Successful organizations adopt long-term automation strategies and invest in reskilling.

In summary, automation boosts efficiency and CX, but its full potential depends on thoughtful integration, strategic alignment, and user-focused design.

2.5 Analytical Framework

2.5.1 Theoretical Framework

The Technology Acceptance Model (TAM), introduced by Davis (1989), explains how individuals adopt new technologies based on two key factors: perceived usefulness (PU) the belief that technology enhances performance and perceived ease of use (PEOU) the belief that it requires minimal effort. In this study, TAM helps analyse how

employees and customers in South African financial institutions adopt automation. Employees are more likely to embrace automated systems if they find them useful and easy to use, while customers are more inclined to use services like mobile banking and ATMs under the same conditions (Davis, 1989).

Complementing TAM is the Task-Technology Fit (TTF) model by Goodhue and Thompson (1995) focuses on how well a technology aligns with the tasks it supports. TTF posits that technology improves performance only when its features match task requirements, considering aspects like complexity and functionality. In financial institutions, TTF is useful for evaluating tools such as Robotic Process Automation (RPA), Artificial Intelligence (AI), and Machine Learning (ML) in processes like fraud detection and customer service. By emphasizing task alignment, TTF enriches TAM's perception-based approach, offering a fuller view of automation's impact on efficiency and service outcomes (Goodhue & Thompson, 1995).

How TTF Differs from TAM

Aspect	TAM	TTF
Focus	User perceptions (usefulness, ease of use)	Alignment between task and technology
Outcome	Intention to use	Actual performance and utilization
Context	General technology adoption	Task-specific technology use
Strength	Simplicity and predictive power	Practical relevance and performance focus

Table 1 – Differences between TAM & TTF

To provide a more comprehensive understanding of automation adoption and its outcomes, this study integrates the Technology Acceptance Model (TAM) with the Task-Technology Fit (TTF) framework. This combined framework allows for a dual analysis of both behavioural intention and actual performance outcomes, offering a robust lens through which to assess the impact of automation on operational efficiency and customer experience.

2.5.2 Conceptual Framework

This research report introduces the conceptual framework (Figure 3) designed to examine how automation influences operational efficiency and customer experience within South African financial institutions. The framework aims to explore the relationship between automation-driven improvements in efficiency and their impact on customer satisfaction. It is theoretically grounded in the Technology Acceptance Model (TAM) and Task-Technology Fit (TTF) models. Through this framework, the study seeks to offer empirical evidence on the effectiveness of automation in enhancing both operational performance and customer experience in the financial sector

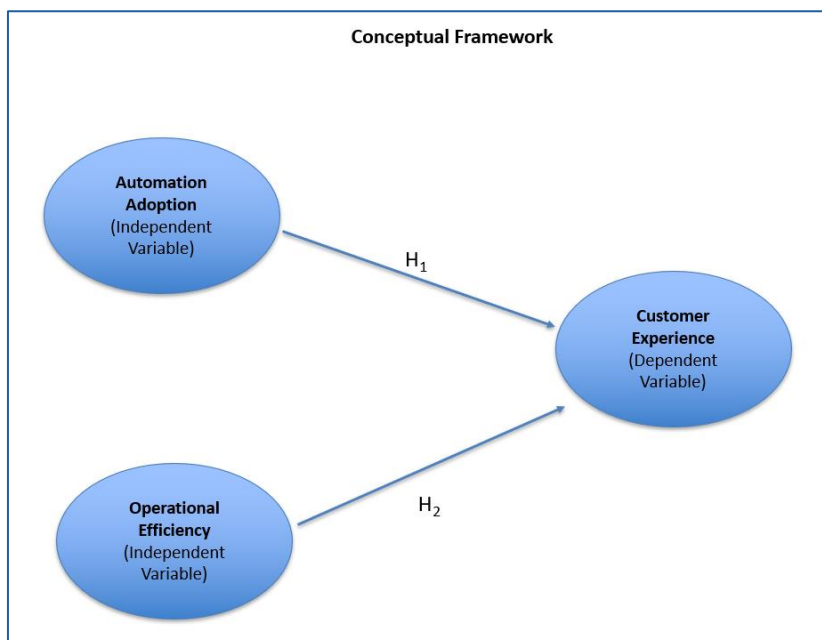


Figure 2 - Conceptual Framework – image created in PowerPoint

2.6 Research hypotheses

While existing literature often explores the benefits of automation in terms of either operational efficiency or customer experience, few studies offer a holistic view that captures the interconnected effects of these technologies (Idha, 2024). To address these gaps, this study draws on the Technology Acceptance Model (TAM) and Task-Technology Fit (TTF) framework to examine how automation influences operational performance, customer satisfaction, and user acceptance. Based on these theoretical underpinnings and the study's objectives, the following hypotheses are proposed:

Null Hypothesis (H₀) – Automation has no significant impact on operational efficiency or customer experience in South African financial institutions

A recurring theme in the literature is the difficulty of implementing automation effectively. Iyamu and Mlambo (2023) highlight the absence of a coherent roadmap for RPA adoption in South African banks, resulting in fragmented efforts and limited returns. Budree and Tew (2023) further note that trade union resistance and concerns over job displacement complicate automation initiatives, often stalling progress and reducing potential benefits (Tew & Budree, 2023). These challenges reinforce the notion that automation may not significantly impact efficiency or customer experience unless strategically and contextually implemented.

Hypothesis (H₁) – Automation adoption positively influences customer experience in South African financial institutions

This hypothesis explores whether the extent of automation adoption directly impacts customer experience. Based on the theoretical TAM framework, technology adoption is driven by perceived usefulness and ease of use, which can in turn influence customer-facing outcomes. Literature supports this, with studies showing that user acceptance of automation is linked to perceived benefits and intuitive design (Pretorius & Steyn, 2021; Gong & Png, 2023)

Questionnaire Measurement Items:

4. Which types of automation tools does your institution currently use?
- 5: How long has automation been implemented in your institution?
- 6: What percentage of your institution's operations are automated?

Hypothesis (H₂) – Operational efficiency positively influences customer experience in South African financial institutions

Operational efficiency is a key construct in this study, defined by metrics such as transaction speed, error reduction, and cost savings. Prior studies (e.g., Ndlovu & Kanyane, 2020; Davenport & Ronanki, 2018) have shown that Robotic Process Automation (RPA) and Artificial Intelligence (AI) streamline internal processes and reduce human error. This hypothesis seeks to assess the influence of operational efficiency on customer experience

Questionnaire Measurement Items (Likert-scale):

7_1: Automation has reduced operational costs

7_2: Automation has decreased processing times

7_3: Automation has minimized errors in transactions

7_4: Automation has improved employee productivity

Theoretical and Measurement-Based Hypothesis for Customer Experience

The research integrates the concept of customer experience as a core outcome variable influenced by both automation adoption and operational efficiency. While studies by Pretorius and Steyn (2021) and Capgemini (2024) suggest automation can improve customer experience through faster service and personalization, the literature also notes a divergence in findings, with reports of low chatbot adoption and mixed satisfaction levels (Gartner, 2023). The study assesses the influence of automation on customer experience, by exploring factors such as fewer complaints, and overall satisfaction, from the perspective of banking employees.

Questionnaire Measurement Items (Likert-scale):

8_1: Customers are satisfied with automated services

8_2: Automation has improved the overall customer experience

8_3: Customers have reported fewer complaints since automation was implemented

This item reflects the effectiveness of automation in aligning with customer service tasks.

2.7 Conclusion

The literature reviewed highlights the transformative impact of automation technologies ranging from Robotic Process Automation (RPA) to Artificial Intelligence (AI) and Generative AI on both operational efficiency and customer experience in financial institutions globally and in South Africa. Studies by Ndlovu & Kanyane (2020) and Pretorius & Steyn (2021) affirm that automation reduces transaction times, minimizes errors, and enables round-the-clock service, enhancing both efficiency and satisfaction.

Chapter 3: Research methodology

3.1 Introduction

This research investigates the influence of automation on operational efficiency and customer experience within South African financial institutions. To achieve a comprehensive understanding of this impact, a multi-method research methodology was employed, combining both quantitative and qualitative approaches. According to Onwuegbuzie, Anthony J and Leech, Nancy L there are a lot more similarities between quantitative & qualitative research than there are differences (Onwuegbuzie & Leech, 2005). Both methodologies utilize observations to address research questions. According to (Sidani & Sechrest, 1995) both approaches "describe their data, develop explanatory arguments from their findings, and hypothesize about the reasons behind the observed outcomes."

3.2 Research design

This study adopts a dual-method strategy to address its two core research dimensions: operational efficiency and customer experience. While both are influenced by automation, the nature of data availability and measurability necessitates distinct methodological approaches for each.

3.2.1 Operational Efficiency – Primary Quantitative Research

To assess the impact of automation on operational efficiency, the study employs a quantitative research design using a structured survey and operational data analysis. A survey was distributed to employees of financial institutions to gather insights on process improvements, error reduction, and productivity gains. This approach allowed for the collection of measurable, empirical data that can be statistically analysed to determine the extent of automation's influence on internal performance metrics.

3.2.2 Customer Experience – Secondary (Desktop) Research

In contrast, the customer experience component was explored from the perspective of banking employees as well as through desktop research, leveraging existing industry reports, white papers, and case studies from reputable sources such as Accenture, PwC, and Gartner. This approach is appropriate given the abundance of high-quality, publicly available data on customer behaviour, satisfaction trends, and

digital engagement strategies in the financial sector. By synthesizing these insights, the study aims to contextualize how automation technologies are reshaping customer expectations and service delivery models in South Africa.

The split methodology ensures that each research objective is addressed using the most suitable and rigorous approach, thereby enhancing the overall validity and relevance of the study's findings.

3.3 Distinction in Methodological Approach

A mixed-methods approach was used to capture both the quantitative effects of automation and the nuanced experiences of stakeholders. This methodology enables a comprehensive analysis by combining numerical data with in-depth personal insights. (Asenahabi, 2019) describes the core purpose of research design as the ability to convert a research problem into data that can be analysed to address research questions effectively and efficiently.

Quantitative research design refers to techniques and measurements that yield quantifiable or discrete values (C.R.Kothari, 2007). The data collected through this approach is derived from empirical observations and measurements. These methods necessitate significant time and planning and typically involve closed-ended responses.

3.4 Data collection methods

To address the dual focus of this study, two distinct data collection strategies will be employed:

3.4.1 Operational Efficiency – Primary Data Collection

Quantitative data was collected through structured surveys distributed to employees of financial institutions. These surveys assessed perceived changes in operational efficiency, including metrics such as transaction speed, error reduction, and productivity improvements resulting from automation technologies. Additionally, operational data analysis was conducted using internal performance metrics (e.g., processing times, cost savings) to validate survey findings. This approach ensures a robust, empirical understanding of automation's impact on internal processes.

3.4.2 Customer Experience – Secondary (Desktop) Research

Customer experience was examined through the survey mentioned above from the perspective of banking employees as well as through desktop research, utilizing existing industry reports, white papers, and case studies from reputable sources such as Accenture, PwC, and Gartner. These sources provide insights into customer satisfaction trends, digital engagement strategies, and the role of automation in enhancing service delivery. This method is appropriate given the availability of high-quality, up-to-date secondary data and allows for a comprehensive understanding of customer-facing impacts without the need for direct customer surveys.

This dual approach ensures methodological rigor and relevance, allowing the study to capture both internal operational outcomes and external customer experience dynamics effectively.

3.5 Population

The primary research population for this study comprises employees of South African financial institutions, including banks and insurance companies. These individuals are directly involved in or impacted by the implementation of automation technologies. The population spans various roles such as operations, IT, customer service, and management, ensuring a comprehensive view of how automation affects internal processes and operational efficiency.

The customer experience component of the study did not involve direct data collection from customers. Instead, it was informed by secondary research using published industry reports, case studies, and white papers from reputable sources. This approach allows for a broader understanding of customer trends and perceptions without requiring direct participation from customers.

3.6 Sample and sampling method

A mixed non-probability sampling approach was employed, combining convenience and snowball sampling techniques. Initially, participants were recruited through convenience sampling, targeting individuals within the researcher's personal and professional networks (Valerio, et al., 2016). These participants were then encouraged

to share the survey with others who met the inclusion criteria, thereby initiating a snowball sampling process. This approach was selected to maximize reach and participation in the absence of a formal sampling frame. While this method facilitated efficient data collection, it is acknowledged that it may introduce sampling bias and limit the generalizability of the findings.

This combined approach is supported by Valerio et al. (2016), who compared convenience and snowball sampling methods in engaging hard-to-reach communities and found that snowball sampling can enhance diversity and participation when used alongside convenience sampling.

The sample included approximately 30-40 employees, while this sample size may appear modest, it is appropriate for the exploratory nature of this study and aligns with recommendations for factor analysis in small, homogeneous populations (Williams, Onsman, & Brown, 2010).

3.7 Research instrument

The primary research instrument for this study was a questionnaire designed to collect data on operational efficiencies brought about through automation as well as measure customer satisfaction. The questionnaire was built using the Qualtrics survey software and a web-based link was generated for distribution across email and mobile platforms with respondents. The questionnaire made use of a Likert scale to measure the responses. The Likert scale ranged from 1 (Strongly Disagree) to 5 (Strongly Agree).

The questionnaire was split into three sections, Section A, B and C.

Section A - This section pertains to demographic grouping and serves to screen respondents who are not eligible to participate in the survey. Specifically, it focuses on whether respondents are employees of financial institutions and their roles within the organization.

Section B - Assesses the individual's awareness and understanding of automation and their interactions with it.

Section C - Evaluates the impact of automation on customer experience.

Responses were collected through a structured online survey distributed to employees of South African financial institutions. The survey was disseminated using a combination of email invitations and social media platforms, including WhatsApp, to maximize reach and participation.

Secondary research instruments explored operational data to analyse quantitative data on operational metrics such as transaction processing times, error rates, and cost reductions. Lastly Case Studies to conduct a detailed examination of specific financial institutions that have implemented automation technologies.

3.8 Data analysis strategies and interpretation

Quantitative Data: Statistical analysis was performed using software such as SPSS or Excel to evaluate survey results. Descriptive statistics, correlation analysis, and regression analysis was employed to assess the relationships between automation and operational efficiency as well as customer satisfaction. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity from exploratory factor analysis was conducted to establish correlation among the items within each construct, as required for factor analysis (Williams, Onsman, & Brown, 2010).

Qualitative Data: Thematic analysis was used to analyse interview transcripts and case study notes. This involved identifying common themes, patterns, and insights related to the impact of automation on both operational performance and customer experience.

3.9 Limitation

This study focuses on financial services organisations in South Africa. Factors examined may not apply to other countries or industries.

Reliance on Secondary Data for Customer Experience

The study uses desktop research rather than direct customer surveys to assess customer experience. This may limit the depth and specificity of insights, as secondary

sources may not fully capture the nuanced perceptions of South African banking customers.

Rapid Technological Change

Given the fast pace of technological advancement, particularly in AI and automation, findings may become outdated quickly. Technologies and customer expectations may evolve significantly after the study is completed.

Sample Size and Representation

Although stratified sampling is used, the relatively small sample size (30–40 employees) may not fully represent the diversity of experiences across all financial institutions in South Africa, especially smaller or rural institutions.

3.10 Validity and Reliability

Validity and reliability are important concepts in research that help ensure the quality of data. Validity means that a tool or test measures what it is supposed to measure. It includes different types, such as content validity (covering all parts of a topic) and construct validity (matching the theory behind the concept). Reliability, on the other hand, refers to how consistent or stable the results are when the test is repeated. This includes things like whether different people get the same results (inter-rater reliability) or whether the test gives similar results over time (test-retest reliability). A test can be reliable without being valid, but a valid test is usually also reliable (Peeters & Harpe, 2020).

To assess the reliability and validity of the survey instrument measuring the impact of automation on operational efficiency and customer experience, both Cronbach's Alpha and Exploratory Factor Analysis (EFA) were employed. A commonly accepted benchmark for reliability is a score of 0.7 or higher; anything below this is generally considered unreliable (Cooper & Schindler, 2014).

Reliability Analysis

Cronbach's Alpha was calculated for the seven Likert-scale items (7_1 to 8_3). These items were designed to capture perceptions of automation's impact on operational efficiency and customer experience. Responses were cleaned and converted to

numeric values ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The resulting Cronbach's Alpha was 0.873, indicating good internal consistency among the items.

Validity Analysis

Exploratory Factor Analysis (EFA) was conducted using Factor Analysis with two components extracted. The analysis aimed to identify underlying constructs measured by the items. Factor loadings were examined to determine item-group associations.

3.11 Ethical considerations

The research followed rigorous ethical standards to protect participants' rights and privacy. All participants will be required to provide informed consent before participating, and their data will be treated with strict confidentiality. Additionally, participants will have the right to withdraw from the study at any time without facing any penalties. The Wits Business School Ethics Committee will approve the study and issue a clearance certificate will be appended to the research.

In compliance with the Protection of Personal Information Act (POPIA) (South African Government, 2013), all survey data was anonymized and stored securely on access-controlled systems. No personally identifiable information was collected, and access to the data was restricted to the research team. Data will be retained only for the duration necessary to complete the research and will be securely deleted thereafter. These measures ensure that the study aligns with both institutional ethical standards and national data protection legislation.

Chapter 4: Presentation of results

This chapter presents the findings of the research study, which employed a mixed-methods approach combining primary survey data and secondary desktop research. A total of 31 valid survey responses were collected and analysed for this study, providing the empirical foundation for the quantitative findings presented in this chapter. The first section outlines the descriptive profile of the respondents, detailing their occupational roles, functional areas, and years of experience within South African financial institutions. This demographic overview provides essential context for interpreting the primary data. The second section evaluates the reliability of the measurement scales used in the survey, reporting Cronbach's Alpha values to assess internal consistency. The third section presents the results of hypothesis testing, supported by statistical analyses such as correlation and regression. In parallel, insights from secondary sources, including industry reports, white papers, and case studies are integrated to enrich the interpretation of customer experience trends and automation practices. The chapter concludes with a synthesis of findings, highlighting their implications for automation strategies in the financial sector.

The table below shows a summary of the statistical analysis covered in this research

Method	Purpose	Key Output
Descriptive Statistics	Profile respondents	Frequencies, percentages
Cronbach's Alpha	Test internal consistency of survey items	$\alpha = 0.873$ (high reliability)
Spearman's Correlation	Assess relationships between constructs	Ops Excellence ↔ Customer Exp: $\rho = 0.610$, $p < 0.001$
Exploratory Factor Analysis	Identify latent constructs	1 dominant factor, 73.12% variance
KMO and Bartlett's Test	Assess factorability of data	KMO = 0.787, $p < 0.001$
Thematic Analysis	Analyse open-ended responses	Key themes on automation adoption

Table 2 - Summary of statistical analysis

4.1 Descriptive profile of respondents

The demographic profile of the survey respondents reflects a diverse and experienced sample from South African financial institutions. Most of the participants identified as General Employees (34%) and Middle Managers (34%), followed by Junior Managers (12%), Senior Managers (9%), and Executives (6%). In terms of functional areas, respondents were distributed across Information Technology (68%), Customer Service (16%), Operations (10%), Finance (3%), and Risk and Compliance (3%). Regarding tenure, the sample included individuals with more than 10 years (45%), 7-10 years (26%), and smaller groups with 4-6 years (10%), 1-3 years (10%), and less than 1 year (10%) of experience, indicating a broad range of industry experience.

Relevance of Roles to Automation Impact

Most respondents are General Employees (34%) and Middle Managers (34%) these groups are typically the most directly involved in the implementation and day-to-day interaction with automation technologies. Their insights provide grounded, operational perspectives on how automation affects workflows, productivity, and service delivery.

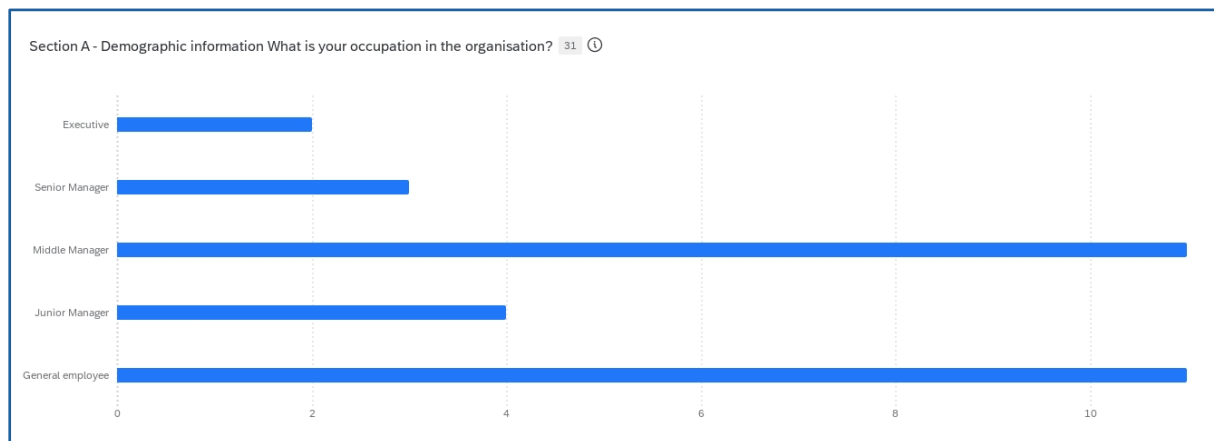


Figure 3 - Demographic information, source Qualtrics

Functional Area Alignment

With 68% of respondents working in Information Technology, the data is particularly well-aligned with the research focus on automation. IT professionals are often responsible for deploying, maintaining, and optimizing automation systems, making their feedback critical to understanding both technical and strategic impacts. The inclusion of respondents from Customer Service (16%), Operations (10%), and

Finance (3%) ensures that the study captures cross-functional insights, especially regarding customer-facing technologies and back-office automation.

In which functional area does your role belong? 31 ⓘ		
2 - In which functional area does your role belong?	Count	Count
Information Technology	68%	21
Operations	10%	3
Finance	3%	1
Risk & compliance	3%	1
Customer Service	16%	5

Table 3 – Demographic information, source Qualtrics

Depth of Industry Experience

The fact that 44% of respondents have more than 10 years of experience, and 25% have 7-10 years, adds credibility to the findings. These individuals are likely to have witnessed the evolution of automation in the sector and can provide informed comparisons between pre- and post-automation environments. Their long-term perspective enhances the reliability of the data, especially when evaluating changes in operational efficiency and customer experience over time.

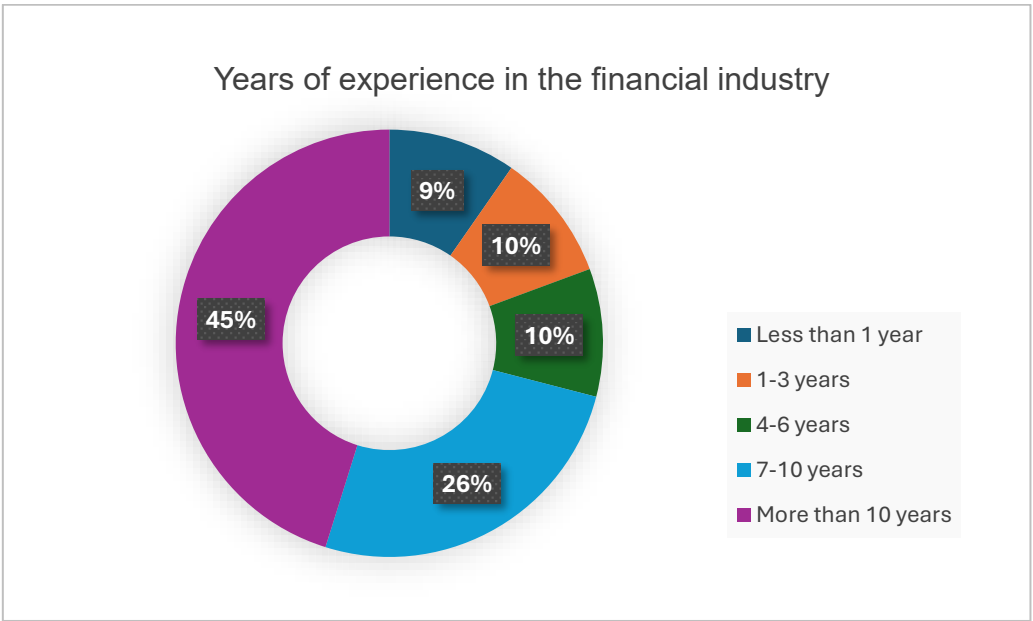


Figure 4 - Tenure, image created in Excel

4.2 Testing reliability and validity of the scales

This section presents the findings related to the validity and reliability of the research instrument used in this study. Establishing the reliability and validity of the measurement scales is essential to ensure that the data collected is both consistent and accurately reflects the constructs under investigation.

4.3 Reliability of Scales

To assess the internal consistency of the measurement instrument, Cronbach's Alpha was calculated for the seven Likert-scale items. The resulting alpha value was 0.873, as can be seen in Table 2 above, this exceeds the commonly accepted threshold of 0.70 (Cooper & Schindler, 2014), indicating high reliability. This suggests that the items consistently measure the same underlying construct perceptions of automation's impact on operational efficiency and customer experience.

In addition to Cronbach's Alpha, Composite Reliability (CR) was computed to further validate the internal consistency of the scale. The CR value was 0.901, which is well above the recommended minimum of 0.70 (Zainudin, 2015), confirming that the items exhibit strong internal coherence. These results collectively affirm that the scale is reliable and that the survey items consistently measure a common construct likely perception of automation's impact. This strengthens the credibility of any conclusions drawn from the data related to H₁, and H₂.

4.4 Validity of Scales

Validity was assessed through both convergent and construct validity. Convergent validity was evaluated using the Average Variance Extracted (AVE), which was calculated at 0.567. This value exceeds the 0.50 threshold recommended by Fornell and Larcker (1981), indicating that the latent construct explains more than half of the variance in its indicators. This supports the conclusion that the items are valid measures of the intended construct.

Construct validity was further supported by the corrected item-total correlations, which ranged from 0.542 to 0.807, and by the fact that Cronbach's Alpha remained above 0.83 even when individual items were removed. These findings confirm that each item

contributes meaningfully to the overall construct and that the scale demonstrates both convergent and internal validity. Detailed factor loading tables are provided in Appendix D.

4.5 Spearman's rank correlation analysis

Spearman's rank correlation analysis was selected for this study due to the use of ordinal variables from Likert-scale ratings. Unlike Pearson's correlation, this non-parametric method does not assume normally distributed data and is therefore more suitable for analysing monotonic relationships between ranked variables (Sedgwick, 2014). The use of Spearman's correlation is particularly relevant for research in the social and behavioural sciences where the assumptions of normality and linearity are often not met (Schober, 2018). This analysis was supported by exploratory factor analysis (EFA), which was conducted to ensure that the independent variables used in the correlation tests were statistically meaningful (Field, 2018).

Inter-construct Spearman correlation matrix

Constructs	Correlation (ρ)	p-value (Sig. 2-tailed)
Automation Adoption ↔ Customer Experience	0.161	0.388
Ops Excellence ↔ Customer Experience	0.610	< 0.001

Table 4 – Inter construct correlation matrix

The Spearman's rank correlation matrix provided empirical insights into the proposed hypotheses. Hypothesis 1 (H_1), suggesting a link between automation adoption and customer experience, demonstrated only a weak association ($\rho=0.161$), implying a minimal, non-impactful influence on customer experience. In contrast, Hypothesis 2 (H_2) was strongly supported, revealing a significant positive correlation between operational excellence and customer experience ($\rho=0.610$, $p<0.01$). These findings suggest that while automation adoption alone may not directly drive performance or satisfaction, its value is primarily realized through enhancements in operational processes that subsequently improve customer experience.

4.6 Exploratory Factor Analysis

An Exploratory Factor Analysis (EFA) was conducted using Principal Component Analysis (PCA) to uncover the underlying structure of the survey items. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.787, which falls within the "middling to good" range (Kaiser, 1974), indicating that the sample was suitable for factor analysis. Bartlett's Test of Sphericity was significant ($\chi^2 = 98.547$, $df = 21$, $p < .001$), confirming that the correlation matrix was not an identity matrix and that the variables were sufficiently interrelated for factor analysis.

Two components were extracted based on the Kaiser criterion (eigenvalues > 1), explaining a cumulative 73.12% of the total variance. The first component accounted for 58.77%, while the second explained 14.35%. However, the component matrix revealed that all items loaded strongly on the first component, suggesting a dominant unidimensional structure.

This supports the idea that respondents perceive automation as having a coherent and measurable effect, likely aligned with operational efficiency and customer experience – supporting H_1 and H_2 .

4.7 Component Loadings

The component loadings for the seven items ranged from 0.675 to 0.876 on the first principal component. These high loadings indicate that the items are strongly associated with a single latent factor, likely representing the perceived effectiveness of automation. For example, the item "Automation has decreased processing times" had the highest loading at 0.876, while "Automation has minimized errors in transactions" had a slightly lower but still substantial loading of 0.675.

The strong and consistent loadings across all items support the interpretation that respondents perceive automation as a unified construct influencing both operational and customer-facing outcomes.

It provides empirical support for rejecting the null hypothesis (H_0) and lend preliminary support for H_1 and H_2 , the overall perception of automation's effectiveness is positive and consistent.

Hypotheses Recap:

H_0 - Automation has no significant impact on operational efficiency or customer experience in South African financial institutions.

H_1 – Automation adoption positively influences customer experience in South African financial institutions.

H_2 - Operational efficiency positively influences customer experience in South African financial institutions.

4.8 Linking Findings to Research Hypotheses

Null Hypothesis (H_0)

H_0 : Automation has no significant impact on operational efficiency or customer experience in South African financial institutions.

This null hypothesis was tested to establish a baseline for evaluating the influence of automation. The high internal consistency of the survey instrument (Cronbach's Alpha = 0.873) and the results of the exploratory factor analysis (EFA), which revealed a dominant single factor explaining 58.77% of the variance, suggest that respondents perceive automation as a unified construct impacting both operational and customer-facing outcomes. These findings provide strong empirical grounds to reject H_0 .

This aligns with prior studies such as Ndlovu and Kanyane (2020), who found that automation significantly improves operational efficiency in South African banks, and Pretorius and Steyn (2021), who highlighted the positive effects of automation on customer experience. Therefore, the null hypothesis is rejected in favour of the alternative hypotheses H_1 and H_2 .

Hypothesis 1 (H_1) – Automation

H_1 : Automation adoption positively influences customer experience in South African financial institutions.

While Spearman's correlation between automation adoption and customer experience demonstrated only a weak association ($\rho=0.161$), implying a minimal, non-impactful influence on customer experience qualitative data from open-ended responses revealed that perceived ease of use and usefulness were key factors in adoption. This supports the TAM theoretical framework proposed by Davis (1989), which posits that these constructs are critical to technology uptake. Respondents cited usability concerns and resistance to change, echoing findings by Gong & Png (2023) and Pretorius & Steyn (2021), who emphasized the importance of intuitive design and perceived value in automation adoption. These findings affirm that TAM constructs are valid predictors of automation acceptance, supporting H_1 .

Hypothesis 2 (H_2) – Operational Efficiency

H₂: Operational efficiency positively influences customer experience in South African financial institutions.

The strongest statistical support was found for H_2 , with a Spearman's correlation of $\rho = 0.610$ ($p < 0.001$) between operational excellence and customer experience. This validates the Task-Technology Fit (TTF) model (Goodhue & Thompson, 1995), which posits that technology enhances performance when well-aligned with task requirements. Respondents indicated that automation improved service speed and reduced complaints, aligning with findings from Capgemini (2024) and Gartner (2023), which emphasize the importance of fit-for-purpose automation in enhancing customer satisfaction.

4.9 Open ended responses

Thematic analysis of the open-ended questions showed that a total of 25 out of 31 participants provided responses to the first open-ended question, which explored the primary challenges their institutions encounter in implementing automation. Meanwhile, 26 participants responded to the second open-ended question, which examined the extent to which customer feedback has influenced their institutions' automation strategies.

Top themes identified in response to primary challenges their institutions encounter in implementing automation:

Automation limitations: Respondents frequently mentioned that not all processes can be automated, especially complex or customer-facing ones. One participant remarked, *“Some processes are too nuanced to be automated end-to-end; human intervention is still necessary.”*

Resistance to change: Many employees are hesitant or fearful of automation, often due to concerns about job security or unfamiliarity with new systems. *“There’s fear of job loss, especially among older staff who are not used to digital tools.”*

This aligns with the Technology Acceptance Model (TAM), where perceived ease of use and usefulness influence adoption.

System integration issues: Challenges with integrating automation tools into existing legacy systems were common.

Data quality and system reliability: Poor data standards and system downtime were cited as barriers to effective automation. *“If the data is poor, automation just amplifies the errors.”*

Process complexity: Some processes are too nuanced or require human judgment, making full automation difficult. One response noted *“Customer complaints often require empathy and flexibility something automation can’t always deliver.”*

Top themes identified in response to the extent to which customer feedback has influenced their institutions' automation strategies:

Customer-centric improvements: Many institutions reported that customer feedback has led to more user-friendly and responsive automation solutions. One respondent stated, *“We redesigned our chatbot interface after customers complained it was too confusing.”*

This supports H₁, which suggests that automation enhances customer satisfaction when implemented thoughtfully.

Feedback as a driver: Feedback helped identify pain points like long wait times, prompting automation of repetitive tasks and service enhancements.

Mixed influence: While some institutions actively use feedback to shape strategy, others noted that automation decisions are sometimes made independently of customer input.

Personalization and responsiveness: There's a growing emphasis on making automation more adaptive to individual customer needs and expectations. *"Customers expect services tailored to their needs automation must be flexible enough to deliver that."*

These qualitative insights reinforce the quantitative findings and provide deeper context for the hypotheses. The responses support H₁ and H₂, highlighting that while automation improves efficiency and satisfaction, its success depends on thoughtful implementation, system readiness, and stakeholder engagement.

4.10 Customer Experience Insights from Desktop Research

Recent studies have highlighted the transformative impact of automation on customer experience within South African financial institutions. These insights are drawn from industry reports and white papers by Accenture, PwC, and Gartner.

Accenture's 2024 South Africa Banking Consumer Study emphasizes the growing expectation among customers for personalized, human-like digital experiences. The study reveals that South African banks are leveraging AI and cloud-based platforms to enhance digital interactions, reduce friction, and improve overall satisfaction. The report also notes that South African banks invested \$1.6 billion in IT services in 2022, signalling a strong push toward digital Customer Experience transformation (Accenture, 2024).

PwC's Retail Banking 2025 and Beyond report outlines five future scenarios for retail banking, emphasizing the need for tech-powered transformation and data-enabled customer focus. The report highlights the shift toward hyper-personalized offerings and embedded finance, stressing that traditional banks must adapt to maintain customer relationships and stay competitive (PwC, 2025).

Gartner's 2025 Prediction on Agentic AI forecasts that by 2029, Agentic AI will autonomously resolve 80% of common customer service issues without human intervention. This shift is expected to reduce operational costs while improving response speed and consistency, allowing human agents to focus on complex, high-empathy interactions (Gartner, 2025).

A McKinsey white paper highlights that banks undertaking customer experience transformations can achieve 5-8 times greater lifetime profitability from satisfied customers who actively recommend the bank compared to those with negative perceptions (McKinsey, 2018). The paper emphasizes that automation plays a critical role in this transformation by streamlining key customer journeys such as onboarding, transacting, and issue resolution.

The study also stresses that successful customer experience transformations require:

- A customer-centric design approach.
- Cross-functional collaboration to manage end-to-end customer journeys.
- A focus on value creation through seamless digital experiences.

These insights reinforce the strategic importance of automation in enhancing customer satisfaction and loyalty, particularly in competitive and digitally evolving financial environments.

Recent surveys have highlighted the transformative impact of banking technology on customer satisfaction, particularly with chatbots and digital channels. A Gartner survey (2023) revealed that only 8% of customers used a chatbot during their most recent customer service interaction, indicating that while chatbots are widely deployed, they don't consistently help customers accomplish their goals, impacting satisfaction (Gartner, 2023).

Resolution Rates by Service Issue Type for Chatbot Users

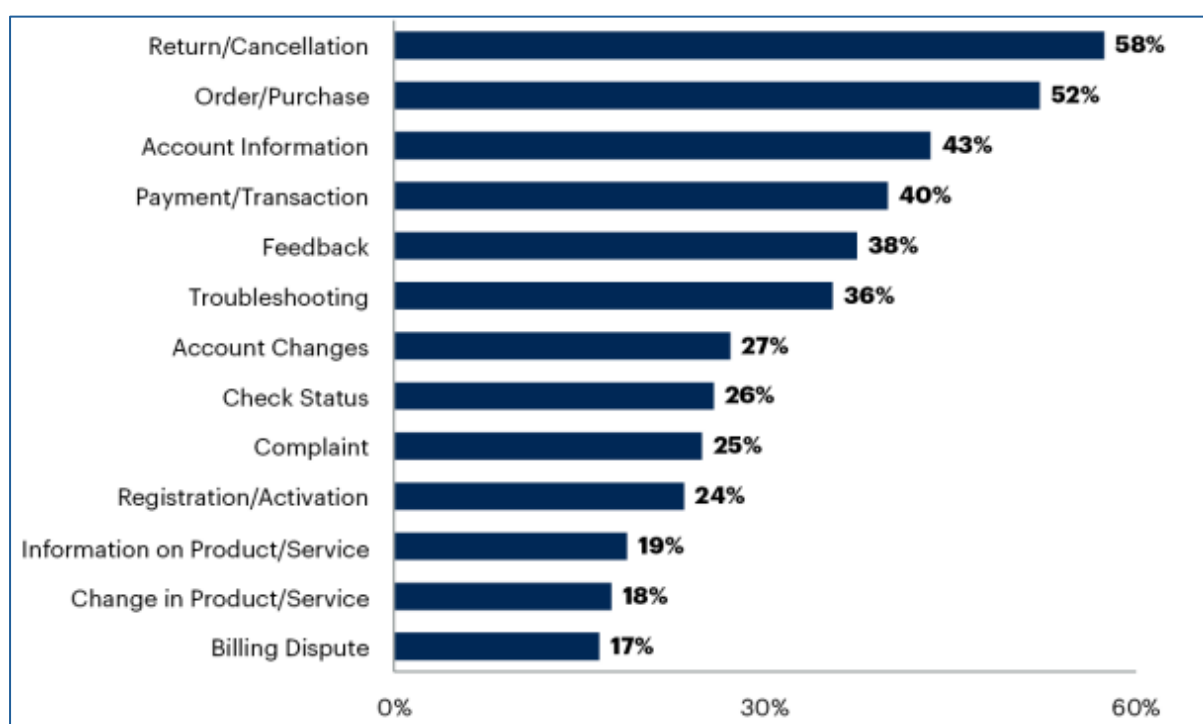


Figure 5 - Chatbot resolution rates Gartner (June 2023)

A summary of the survey:

Low Chatbot Adoption: Only 8% of customers used a chatbot during their most recent customer service interaction.

Future Use: Of those who used a chatbot, only 25% would use it again.

Effectiveness by Issue Type: Chatbots resolved 58% of returns and cancellations but only 17% of billing disputes.

Customer Confusion: Customers are often unsure about what chatbots can and cannot do, leading to low adoption rates.

Improving Adoption: To increase chatbot use, service leaders should focus on improving the chatbot's ability to resolve issues effectively.

PwC's Digital Banking Consumer Survey (2021) found that 61% of consumers interact weekly on digital channels, with 32% identifying as 'digital natives' who prefer avoiding branches altogether (PwC, 2021). This growing comfort with digital banking highlights gaps in satisfaction when digital tools like chatbots fail to meet expectations.

McKinsey's Digital Payments Consumer Survey (2023) showed that over 90% of consumers have used some form of digital payment, with increasing expectations for seamless, intuitive digital experiences, including AI-powered interfaces (McKinsey, 2023).

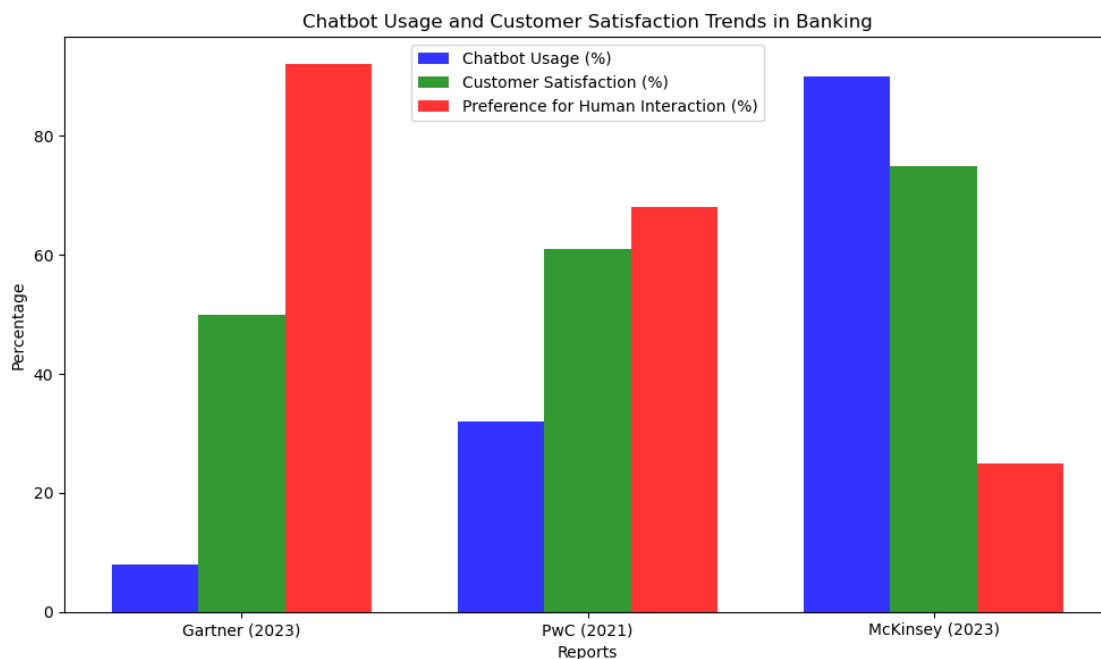


Figure 6 - Chatbot usage, image created by Co-Pilot

Key Insights from the three surveys:

- **Chatbot Adoption Rate** is still relatively low according to Gartner (8%), but McKinsey reports a much higher digital engagement rate (90%) likely reflecting broader digital tool usage.
- **Customer Satisfaction** is moderate across all sources, with McKinsey reporting the highest at 75%.
- **Preference for Human Interaction** remains strong, especially in Gartner's findings (92%), suggesting that while automation is growing, human support is still highly valued.

The integration of chatbots and AI-driven customer service tools in banking has become a defining feature of digital transformation strategies. However, the findings from Gartner (2023), PwC (2021), and McKinsey (2023) reveal a nuanced picture. While chatbot adoption is increasing - particularly in institutions leveraging generative

AI - customer satisfaction remains mixed. Many users still prefer human interaction, especially when dealing with complex or emotionally sensitive issues.

This suggests that while automation can significantly enhance operational efficiency, its impact on customer experience is contingent on thoughtful implementation. Chatbots must be designed not only for functionality but also for empathy, personalization, and seamless escalation to human agents when needed.

Recent developments in South Africa's financial services sector provide valuable insights into the evolving landscape of customer experience, particularly in the context of automation. The 2025 Customer Experience (CE) Index, launched by the University of Pretoria, represents the country's first scientific benchmark for Customer Experience across banking institutions. Surveying nearly 30,000 participants across six banking channels and nine product categories, the CE Index offers a comprehensive view of customer satisfaction, loyalty, and perceived value.

Notably, First National Bank (FNB) emerged as a leader in online banking, ATMs, loyalty programs (eBucks), and relationship management, while Standard Bank excelled in mobile app usability, branch services, and contact centre performance. Capitec and Absa also demonstrated strong performance in select categories. These findings underscore the tangible impact of digital tools and automation on measurable customer experience outcomes (Schreuder, 2025).

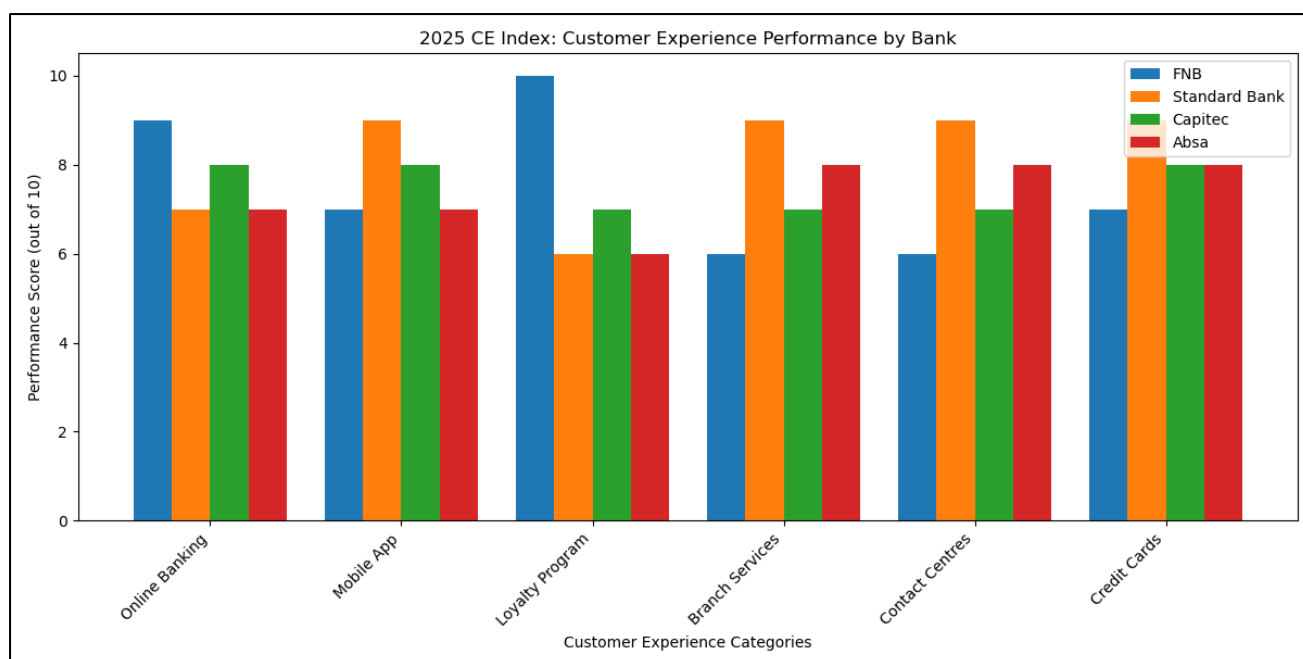


Figure 7 - Customer Experience by Bank, image created by Co-Pilot

Complementing this, the EY 2025 Banking Outlook emphasizes that resilience alone is no longer sufficient for financial institutions. Instead, banks must pursue reinvention through end-to-end digitisation of the customer journey, from onboarding to collections. The report advocates for a shift from branch reduction strategies to digital-first engagement models, embedding customer-centric design into every touchpoint. This aligns with the broader argument that automation should not merely streamline operations but should be strategically integrated to enhance the overall customer experience (EY, 2025).

These insights underscore the necessity of situating automation within a broader customer experience transformation strategy. They illustrate the competitive edge enjoyed by institutions that excel in customer experience, innovation - such as FNB, whose loyalty ecosystem exemplifies effective digital engagement. Moreover, these localized benchmarks further support the case for a balanced automation approach, one that integrates human touchpoints to enrich customer interactions and foster long-term satisfaction.

In the South African context, where digital maturity varies across institutions and customer segments, these insights underscore the importance of a hybrid service model. Financial institutions must balance automation with human touchpoints to build trust, improve satisfaction, and ensure inclusive access to digital services. Ultimately,

the success of automation in enhancing customer experience lies not in replacing human interaction, but in augmenting it - making service faster, more consistent, and more responsive to evolving customer expectations.

4.11 Findings conclusion

The study demonstrates a strong, statistically significant relationship between operational efficiency achieved through automation and improved customer experience ($\rho = 0.610$, $p < 0.001$). This supports the Task-Technology Fit framework, confirming that when automation is well-aligned with operational tasks, it enhances service speed, accuracy, and satisfaction.

The reliability of the measurement instrument was confirmed through a high Cronbach's Alpha score ($\alpha = 0.873$), and exploratory factor analysis revealed a dominant unidimensional structure, indicating that respondents perceive automation as a coherent construct with measurable impact.

Hypothesis testing led to the rejection of the null hypothesis (H_0), affirming that automation has a statistically significant effect on operational efficiency (H_2), as demonstrated by strong correlations with reduced processing times, error minimization, cost savings, and improved productivity.

Conversely, the relationship between automation adoption and customer experience (H_1) was found to be weak ($\rho = 0.161$, $p = 0.388$), suggesting that adoption alone does not guarantee improved customer outcomes. However, qualitative insights from open-ended responses and secondary research indicate that perceived usefulness and ease of use, core constructs of the Technology Acceptance Model (TAM) play a critical role in shaping user satisfaction and acceptance. These findings underscore the importance of thoughtful implementation, user-centric design, and strategic alignment in realizing the full potential of automation.

Chapter 5: Recommendations and Conclusion

5.1 Conclusion

This study set out to explore the influence of automation on operational efficiency and customer experience within South African financial institutions. Through a mixed-methods approach combining primary survey data and secondary desktop research, the study provides compelling evidence that automation technologies particularly Robotic Process Automation (RPA), AI, and machine learning are reshaping both internal processes and customer-facing services.

The findings demonstrate that automation is perceived as a unified and effective tool for improving operational efficiency, reducing errors, and enhancing service delivery. The high internal consistency of the survey instrument (Cronbach's Alpha = 0.873) and the results of the exploratory factor analysis (EFA) support the reliability and one-dimensionality of the constructs measured. These results lend strong support to the rejection of the null hypothesis and affirm the positive impact of automation on both operational and customer experience dimensions.

Thematic analysis of open-ended responses further revealed that while automation is widely embraced, challenges such as resistance to change, system integration, and data quality persist. Additionally, customer feedback was shown to play a critical role in shaping automation strategies, particularly in enhancing personalization and responsiveness.

While the study found support for hypotheses H_1 and H_2 , which relate to automation adoption and customer satisfaction. Secondary research suggests that while chatbots are widely deployed, their effectiveness and adoption remain inconsistent, highlighting the need for more targeted, user-centric design and implementation.

Ultimately, this research contributes valuable insights to the fields of financial technology and operations management. It underscores the importance of aligning automation strategies with both employee capabilities and customer expectations. For South African financial institutions, the findings offer a roadmap for leveraging automation not just for cost savings, but for delivering meaningful, human-centred digital transformation. Future research could build on these findings by incorporating

direct customer feedback and exploring the evolving role of generative AI in financial services.

5.2 Practical Implications and Recommendations

The findings of this study are expected to offer actionable insights for South African financial institutions navigating digital transformation. First, by identifying which automation technologies yield the greatest improvements in operational efficiency, institutions can prioritize investments that deliver measurable returns. Second, understanding customer perceptions of automation will help institutions design user-friendly, accessible, and personalized digital services that enhance satisfaction and loyalty.

Survey responses revealed that employees view Robotic Process Automation (RPA) and Artificial Intelligence (AI) as the most effective technologies for improving operational efficiency, suggesting that institutions should prioritize these tools to streamline back-office operations and reduce costs.

Desktop research highlighted customer expectations for responsiveness and personalization, indicating that customer-facing automation should be enhanced through improved chatbot functionality and seamless integration with human support.

Resistance to automation, particularly among employees in traditional roles, was evident in the survey data, underscoring the need for targeted training and change management strategies to foster a culture of innovation.

Both data sources emphasized the importance of continuous improvement, supporting the recommendation that institutions institutionalise data-driven decision-making by monitoring key performance indicators and incorporating stakeholder feedback. Ethical and regulatory considerations, especially around data privacy and algorithmic bias, emerged as key themes in the desktop research, reinforcing the need for automation initiatives to align with compliance standards.

Finally, customer experience insights suggest that personalization drives engagement and loyalty, encouraging institutions to use behavioural data to segment users and tailor services accordingly. Collectively, these recommendations support a strategic,

human-centred approach to automation that balances efficiency with stakeholder needs.

5.3 Future Studies

Future studies could incorporate direct customer feedback to complement the secondary data used in this research, offering a more balanced view of automation's impact. Longitudinal research is also recommended to assess the sustained effects of automation over time. Comparative studies across different financial sectors such as banking, insurance, and investment could reveal sector-specific insights.

As generative AI and advanced automation tools evolve, future research should explore their influence on both employee roles and customer engagement. Additionally, studies focusing on employee digital literacy and change management could deepen understanding of adoption challenges. Ethical and regulatory implications, including data privacy and algorithmic bias, also warrant further investigation. Finally, examining hybrid service models that combine automation with human interaction could offer valuable insights into optimizing customer experience.

6. References

- Idha, K. (2024). Review of Improving Banking Operational Efficiency through AI and ML: Strategy, Implementation and Impact. *Jurnal Komunikasi Sains dan Teknologi*, 3, 270-278. doi:10.61098/jkst.v3i1.125
- Accenture. (2024). *South Africa Banking Consumer Study, Reignite human connections to discover hidden value*. Accenture. Retrieved May 31, 2025, from <https://www.accenture.com/content/dam/accenture/final/accenture-com/document-2/Accenture-Banking-Consumer-Study-South-Africa.pdf>
- Adonis, R., & Ngcamu, B. S. (2016). An empirical investigation into the information management systems at a South African financial institution. *Banks and Bank Systems*, 11(3), 58-65. doi:DOI:10.21511/bbs.11(3).2016.06
- Akilimalissiga, S., & Sukdeo, N. I. (2024). The effect of service delivery automation (SDA) on the South African banking industry. *South African Journal of Industrial Engineering*, 35, 1-13. Retrieved from <https://scielo.org.za/pdf/sajie/v35n2/03.pdf>
- Al-Hawari, M. (2022). The impact of artificial intelligence on customer experience in the banking sector: A systematic literature review. *Journal of Retailing and Consumer Services*, 65.
- Asenahabi, B. M. (2019, May). Basics of Research Design: A Guide to selecting appropriate research design. *International Journal of Contemporary Applied Researches*, 6(5), 76-89. Retrieved September 5, 2024, from https://www.researchgate.net/publication/342354309_Basics_of_Research_Design_A_Guide_to_selecting_appropriate_research_design
- BCG. (2022). *Winning Financial Institutions Build on Digital Strategy*. BCG. Retrieved from <https://www.bcg.com/publications/2022/digital-transformation-in-financial-services>
- Buccowich, B. (2016, nd nd). *What Is Robotic Process Automation?* Retrieved September 4, 2024, from Laserfiche: <https://www.laserfiche.com/resources/blog/what-is-robotic-process-automation-rpa/>
- Business Money. (2024). *How has digital banking changed in the last 10 years?* Retrieved from <https://www.business-money.com/announcements/how-has-digital-banking-changed-in-the-last-10-years/>
- BusinessTech. (2025, May 27). *The end of claims limbo – How automation is rewriting customer expectations*. Retrieved May 2025, from BusinessTech:

<https://businesstech.co.za/news/industry-news/825323/the-end-of-claims-limbo-how-automation-is-rewriting-customer-expectations/>

- C.R.Kothari. (2007). *Research methodology methods and techniques*. New Delhi: New Age International (P) Limited, Publishers.
- Capgemini. (2024). *TechnoVision 2024: Financial Services*. Capgemini. Retrieved September 19, 2024, from <https://www.capgemini.com/wp-content/uploads/2024/04/TechnoVision-FINANCIAL-SERVICES.pdf>
- Cele, S. K., & Mlitwa, N. W. (2024). Fintechs in South Africa: Impact on regulation. *South African Journal of Information Management*, 26(1), 1-12.
doi:<https://sajim.co.za/index.php/SAJIM/article/view/1766>
- Cele, S. K., & Mlitwa, N. W. (2024). Fintechs in South Africa: Impact on regulation, incumbents and consumers. *South African Journal of Information Management*, 26(1), 2-8. doi:DOI:10.4102/sajim.v26i1.1766
- Christensen, C. M. (2002). The Opportunity and Threat of Disruptive Technologies. *MRS Bulletin*, 27, 278–282. doi:<https://doi.org/10.1557/mrs2002.81>
- Cooper, R. D., & Schindler, S. P. (2014). *Business Research Methods*. McGraw-Hill Education(12).
- Dantas, R. M., Firdaus, R., Jaleel, F., Mata, P. N., Mata, M. N., & Li, G. (2022). Systemic Acquired Critique of Credit Card Deception Exposure through Machine Learning. *Journal of Open Innovation: Technology, Market, and Complexity*, 3-15.
doi:<https://doi.org/10.3390/joitmc8040192>
- Davenport, T. H., & Ronanki, R. (2018, January). Artificial Intelligence for the Real World. *Harvard Business Review*. Retrieved from <https://hbsp.harvard.edu/product/R1801H-PDF-ENG>
- Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 319-340.
- Deloitte. (2025). *Finance 2025: Digital transformation in finance*. Retrieved from <https://www.deloitte.com/us/en/what-we-do/capabilities/finance-transformation/articles/finance-digital-transformation-for-cfos.html>
- Dwivedi, Y. K. (2023). Artificial intelligence (AI) in the financial services industry: A systematic literature review and future research agenda. *International Journal of Information Management*, 70.
- EY. (2023). *2023 Global Financial Services Regulatory Outlook*. Retrieved from <https://eyfinancialservicesthoughtgallery.ie/wp-content/uploads/2023/02/ey-2023-global-financial-services-regulatory-outlook.pdf>

- EY. (2025). *Global banking outlook 2025*. Retrieved from <https://www.ey.com/content/dam/ey-unified-site/ey-com/en-cn/insights/financial-services/documents/ey-global-banking-outlook-2025-en.pdf>
- Field, A. (2018). *Discovering statistics using IBM SPSS statistics*. SAGE Publications. Retrieved from <https://uk.sagepub.com/en-gb/eur/discovering-statistics-using-ibm-spss-statistics/book257329>
- Gartner. (2023, June 15). *Gartner Survey Reveals Only 8% of Customers Used a Chatbot During their Most Recent Customer Service Interaction*. Retrieved from Gartner: <https://www.gartner.com/en/newsroom/press-releases/2023-06-15-gartner-survey-reveals-only-8-percent-of-customers-used-a-chatbot-during-their-most-recent-customer-service-interaction>
- Gartner. (2025). *Gartner Predicts Agentic AI Will Autonomously Resolve 80% of Common Customer Service Issues Without Human Intervention by 2029*. Gartner. Retrieved May 31, 2025, from <https://www.gartner.com/en/newsroom/press-releases/2025-03-05-gartner-predicts-agentic-ai-will-autonomously-resolve-80-percent-of-common-customer-service-issues-without-human-intervention-by-20290>
- Gong, J., & Png, I. P. (2023, April 19). Automation Enables Specialization: Field Evidence. *Management Science*, 7(3), 1580-1595. doi:<https://doi.org/10.1287/mnsc.2023.4760>
- Goodhue, D. L., & Thompson, R. L. (1995). Task-Technology Fit and Individual Performance. *MIS Quarterly*, 19(2), 213–236. Retrieved from <https://dn720004.ca.archive.org/0/items/goodhue1995/goodhue1995.pdf>
- Hughes, J. L., Camden, A. A., Yangchen, T., Smith, G. P., Domenech Rodríguez, M. M., Rouse, S. V., . . . & Lopez, S. (2023). Guidance for Researchers When Using Inclusive Demographic Questions for Surveys. Retrieved from <https://research.usu.edu/irb/files/InclusiveDemographics.pdf>
- Iyamu, T., & Mlambo, N. (2023). Robotic Process Automation in South African Banks: Challenges and Opportunities. *Journal of Logistics, Informatics and Service Science*, 10(4), 123–135. Retrieved from <https://www.aasmr.org/liss/Vol.10/No.4%202023/Vol.10.No.4.10.pdf>
- Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 31–36. doi:<https://doi.org/10.1007/BF02291575>
- Komandla, V., & Perumalla, S. P. (2017). Transforming Traditional Banking: Strategies, Challenges, and the Impact of Fintech Innovations. *International Journal of*

- Multidisciplinary and Current Educational Research*, 1(6), 1-9. Retrieved from https://www.ijmcer.com/wp-content/uploads/2024/10/IJMCER_A0160109.pdf
- Kotler, P., & Keller, L. K. (2016). *Marketing Management* (15 ed.). Pearson Education.
- Kuyoro, M., Bagus, U., Benshir, A., & Bobat, Z. (2025). *Leading, not lagging: Africa's gen AI opportunity*. McKinsey. Retrieved May 31, 2025, from <https://www.mckinsey.com/capabilities/quantumblack/our-insights/leading-not-lagging-africas-gen-ai-opportunity>
- Louw, L. V. (2020). The impact of digital transformation on customer experience in the South African banking sector. *African Journal of Information Systems*, 12, 43-61. Retrieved from <https://ujcontent.uj.ac.za/esploro/outputs/journalArticle>
- Madakam, S., Holmukhe, R. M., & Jaiswal, D. K. (2019). The Future Digital Work Force: Robotic Process Automation (RPA). *Journal of Information Systems and Technology Management – Jistem USP*, 16, 4-8. doi:10.4301/S1807-1775201916001
- McKinsey . (2017). *The transformative power of automation in banking*. McKinsey. Retrieved from <https://www.mckinsey.com/industries/financial-services/our-insights/the-transformative-power-of-automation-in-banking>
- McKinsey. (2018). *Managing a Customer-Experience Transformation in Banking*. McKinsey. Retrieved May 2025, from <https://www.mckinsey.com/~media/McKinsey/Industries/Financial%20Services/Our%20Insights/Managing%20a%20customer%20experience%20transformation%20in%20banking/Managing-a-customer-experience-transformation-in-banking.pdf>
- McKinsey. (2023). *Consumer digital payments: Already mainstream, increasingly embedded, still evolving*. McKinsey. Retrieved May 2025, from <https://www.mckinsey.com/industries/financial-services/our-insights/banking-matters/consumer-digital-payments-already-mainstream-increasingly-embedded-still-evolving>
- McKinsey. (n.d). *Next-gen technology transformation in financial services*. Retrieved from <https://www.mckinsey.com/industries/financial-services/our-insights/next-gen-technology-transformation-in-financial-services>
- Mlambo, N., & Iyamu, T. (2023). The Adoption of Robotic Process Automation in a South African Banks. *Journal of Logistics, Informatics and Service Science*, 10, 138-153. doi:10.33168/JLISS.2023.0410
- Ndlovu, M., & Kanyane, M. (2020). The impact of automation on operational efficiency in South African banks. *Journal of Business Management and Economics*, 8(3), 45-

55. Retrieved from <https://www.academicjournals.org/journal/JBME/article-full-text-pdf/FB9F6F565773>
- Onwuegbuzie, A. J., & Leech, N. L. (2005, 12 1). On Becoming a Pragmatic Researcher: The Importance of Combining Quantitative and Qualitative Research Methodologies. *International journal of social research methodology*, 8(5), 375-387. Retrieved from https://scholar.google.com/citations?view_op=view_citation&hl=en&user=r4bGn_wAAAAJ&citation_for_view=r4bGn_wAAAAJ:2osOgNQ5qMEC
- Peeters, J. M., & Harpe, E. S. (2020, August). Updating conceptions of validity and reliability. *Research in Social and Administrative Pharmacy*, 1127-1130. doi:<https://doi.org/10.1016/j.sapharm.2019.11.017>
- Pinnacle. (2025, June 26). *The ROI of AI in IT services – driving cost reduction, speed and productivity*. Retrieved from Techcentral: <https://techcentral.co.za/the-roi-of-ai-in-it-services-pinnacle/265734/>
- Pretorius, L., & Steyn, A. (2021). Exploring the role of automation in enhancing customer experience in South African financial institutions. *South African Journal of Business Management*, 52(1), 1-12. Retrieved from <https://sajbm.org/index.php/sajbm/article/view/393>
- PwC. (2021). *PwC's 2021 Digital Banking Consumer Survey*. PwC. Retrieved 2025, from <https://www.pwc.com/us/en/industries/financial-services/library/digital-banking-consumer-survey.html>
- PwC. (2025). *Retail Banking 2025 and Beyond*. PwC. Retrieved May 31, 2025, from <https://www.pwc.com/gx/en/industries/financial-services/publications/financial-services-in-2025/retail-banking-2025.html>
- Scheibenreif, D. (2025, May 27). Podcast | The Future of Customer Experience: AI Agents, Machine Customers and What CEOs Must Know. (A. Wierenga, Interviewer) Retrieved May 31, 2025, from <https://www.gartner.com/en/podcasts/thinkcast/the-future-of-customer-experience-ai-agents-machine-customers-and-what-ceos-must-know>
- Schober, P. B. (2018). Correlation coefficients: Appropriate use and interpretation. *Anesthesia & Analgesia*, 126(5), 1763–1768.
- Schreuder, A. (2025). *New Customer Experience Index raises the bar for Consumer Banking*. CE-Index. Retrieved from <https://www.ce-index.com/post/new-customer-experience-index-raises-the-bar-for-consumer-banking>
- Sedgwick, P. (2014). Spearman's rank correlation coefficient. *BMJ*.

- Sidani, S., & Sechrest, L. (1995). *The design and conduct of research in the human services*. Sage Publications.
- South African Government. (2013). *Protection of Personal Information Act 4 of 2013*. Retrieved from <https://www.gov.za/documents/protection-personal-information-act>
- Tew, M., & Budree, A. (2023). *Investigating the factors driving adoption of RPA in South African banking: A qualitative analysis*. Retrieved from https://www.academia.edu/89165154/Investigating_the_factors_driving_adoption_of_RPA_in_South_African_banking_a_qualitative_analysis
- Thottoli, M. M., Islam, A., bin Yusof, M. F., Hassan, S., & Hassan, A. (2023, December 20). Embracing Digital Transformation in Financial Services: From Past to Future. *Sage*, 1-20. Retrieved from <https://journals.sagepub.com/doi/pdf/10.1177/21582440231214590>
- Valerio, M. A., Rodriguez, N., Winkler, P., Lopez, J., Dennison, M., Liang, Y., & Turner, B. J. (2016). Comparing two sampling methods to engage hard-to-reach communities in research priority setting. *BMC Medical Research Methodology*. doi:<https://doi.org/10.1186/s12874-016-0242-z>
- Villar, A. S., & Nawaz, K. (2021, May 27). Robotic process automation in banking industry: a case study on Deutsche Bank. *Journal of Banking and Financial Technology*, 5, 71–86. Retrieved from <https://link.springer.com/article/10.1007/s42786-021-00030-9>
- Westerman, G., Bonnet, D., & McAfee, A. (2014). *Leading Digital: Turning Technology into Business Transformation*. Harvard Business Review Press.
- Williams, B., Onsman, A., & Brown, T. (2010). Exploratory factor analysis: A five step guide for novices. *Journal of Emergency Primary Health Care*, 1-13. doi:<https://journals.sagepub.com/doi/pdf/10.33151/ajp.8.3.93>
- Williams, B., Onsman, A., & Brown, T. (2010). Exploratory factor analysis: A five-step guide for novices. *Journal of Emergency Primary Health Care*, 8(3), 1-13. Retrieved from <https://journals.sagepub.com/doi/pdf/10.33151/ajp.8.3.93>
- Williams, B., Onsman, A., & Brown, T. (2010). Exploratory factor analysis: A five-step guide for novices. *Journal of Emergency Primary Health Care*, 8(3). Retrieved from <https://journals.sagepub.com/doi/pdf/10.33151/ajp.8.3.93>
- Zainudin, A. (2015). Analyzing the Measurement Model. Retrieved from www.researchgate.net

Glossary of Terms

Term	Definition
Artificial Intelligence (AI)	The simulation of human intelligence processes by machines, especially computer systems, including learning, reasoning, and self-correction.
Automation	The use of technology to perform tasks with minimal human intervention, often to improve efficiency and accuracy.
Chatbot	A software application used to conduct an online chat conversation via text or text-to-speech, often powered by AI.
Customer Experience (CX)	The overall perception and satisfaction a customer has with a company's products, services, and interactions.
Digital Transformation	The integration of digital technology into all areas of a business, fundamentally changing how it operates and delivers value to customers.
Exploratory Factor Analysis (EFA)	A statistical method used to uncover the underlying structure of a relatively large set of variables.
Generative AI (GenAI)	A type of AI that can generate new content, such as text, images, or code, based on learned patterns from existing data.
Kaiser-Meyer-Olkin (KMO) Test	A measure of sampling adequacy used to examine the appropriateness of factor analysis.

Machine Learning (ML)	A subset of AI that enables systems to learn and improve from experience without being explicitly programmed.
Operational Efficiency	The ability of an organization to deliver products or services in the most cost-effective manner without sacrificing quality.
Robotic Process Automation (RPA)	The use of software robots to automate highly repetitive and routine tasks normally performed by humans.
Task-Technology Fit (TTF)	A theoretical framework that evaluates how well a technology supports a specific task.
Technology Acceptance Model (TAM)	A model that explains how users come to accept and use a technology, based on perceived usefulness and ease of use.

APPENDIX A

Participant Information Sheet (PIS)

Dear Sir / Madam

My name is Thotyelwa Magaqa. I am a Masters student in Business Administration at the University of the Witwatersrand, Johannesburg. My supervisor is Dr Yvonne Saini. I am conducting a research study about the influence of Automation on the operational efficiency and customer experience in South African Financial Institutions.

I am inviting you to take part in a questionnaire. If you decide to take part, your participation in this research study will last about 15 minutes. The survey will take place online.

The survey 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 decide 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.

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), telephone +27(0) 11 717 1408, email hrecnon-medical@wits.ac.za.

Yours sincerely,
T Magaqa

Researcher:

Thotyelwa Magaqa, 9810317a@students.wits.ac.za, 083 248 4353

Supervisor:

Dr Yvonne Saini, yvonne.saini@wits.ac.za, 011 717 3586

APPENDIX B

Research Consent Form

Title of project

The influence of Automation on the operational efficiency and customer experience in South African Financial Institutions

Name of researcher Thotyelwa Magaqa

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 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 C

Automation impact on operational efficiency and customer experience in SA finance institutions – Survey questions

1 Section A - Demographic information What is your occupation in the organisation (Hughes, et al., 2023)?

- ☐ Executive
 - ☐ Senior Manager
 - ☐ Middle Manager
 - ☐ Junior Manager
 - ☐ General employee
-

2 In which functional area does your role belong?

- ☐ Information Technology
 - ☐ Operations
 - ☐ Human Resource
 - ☐ Finance
 - ☐ Risk & compliance
 - ☐ Customer Service
-

3 How many years of experience do you have in the financial industry?

- ☐ Less than 1 year
 - ☐ 1-3 years
 - ☐ 4-6 years
 - ☐ 7-10 years
 - ☐ More than 10 years
-

4 **Section B: Automation Practices & Operational Efficiencies** Which types of automation tools does your institution currently use (Davenport & Ronanki, 2018)? (Select all that apply)

- ☐ Chatbots
 - ☐ Robotic Process Automation (RPA)
 - ☐ AI Analytics
 - ☐ Automated Customer Relationship Management (CRM)
 - ☐ Workflow Automation Software
 - ☐ Data Extraction and Processing Tools
 - ☐ Other
-

5 How long has automation been implemented in your institution?

- ☐ Less than 1 year
 - ☐ 1-2 years
 - ☐ 3-5 years
 - ☐ More than 5 years
 - ☐ Not sure
-

6 What percentage of your institution's operations are automated?

- ☐ 0-25%
 - ☐ 26-50%
 - ☐ 51-75%
 - ☐ 76-100%
 - ☐ Not sure
-

7 Please rate the following statements regarding operational efficiency after implementing automation (Davenport & Ronanki, 2018):

	1 - Strongly Disagree	2 - Disagree	3 - Neutral	4 - Agree	5 - Strongly Agree
Automation has reduced operational costs	☐	☐	☐	☐	☐
Automation has decreased processing times	☐	☐	☐	☐	☐
Automation has minimized errors in transactions	☐	☐	☐	☐	☐
Automation has improved employee productivity	☐	☐	☐	☐	☐

8 Section C: Customer Experience Please rate the following statements regarding customer experience after implementing automation, (Gong & Png, 2023):

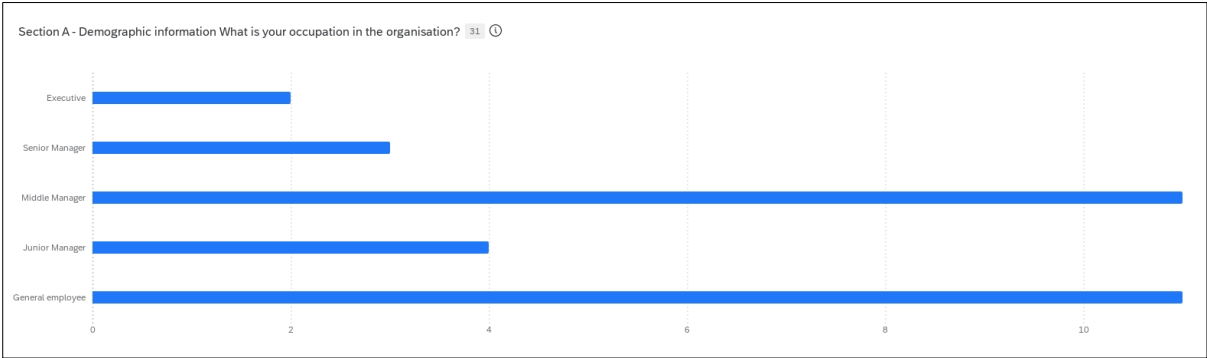
	1 - Strongly Disagree	2 - Disagree	3 - Neutral	4 - Agree	5 - Strongly Agree
Customers are satisfied with automated services	☐	☐	☐	☐	☐
Automation has improved the overall customer experience	☐	☐	☐	☐	☐
Customers have reported fewer complaints since automation was implemented	☐	☐	☐	☐	☐

9 Open-Ended Questions What are the biggest challenges your institution faces with automation (Davis, 1989)?

10 How has customer feedback influenced your institution's automation strategies, (Villar & Nawaz, 2021)?

APPENDIX D

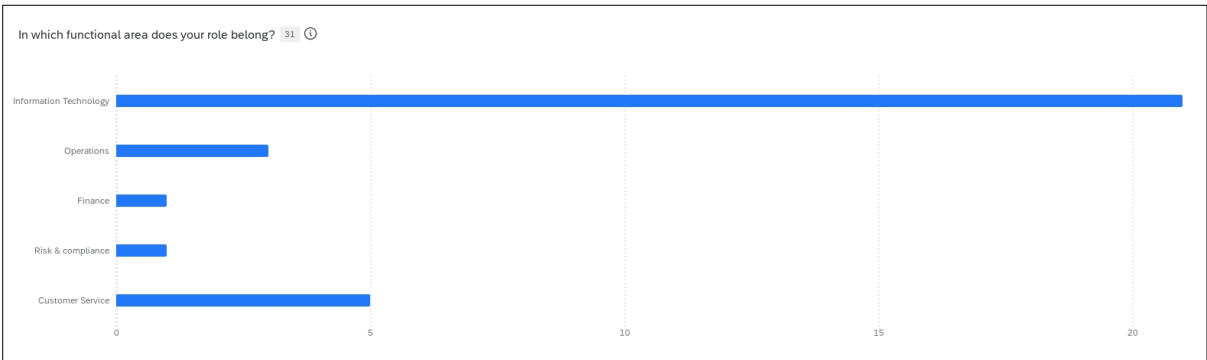
Automation impact on operational efficiency and customer experience in SA finance institutions – Survey responses, images taken from Qualtrics



Section A - Demographic information What is your occupation in the organisation? 31 ⓘ

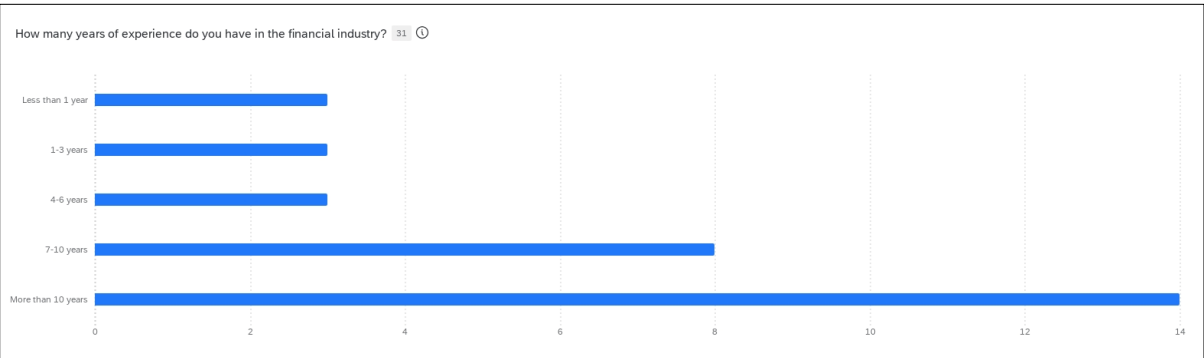
1 - Section A - Demographic information What is your occupation in the organisation?

	Count	Count
Executive	6%	2
Senior Manager	10%	3
Middle Manager	35%	11
Junior Manager	13%	4
General employee	35%	11



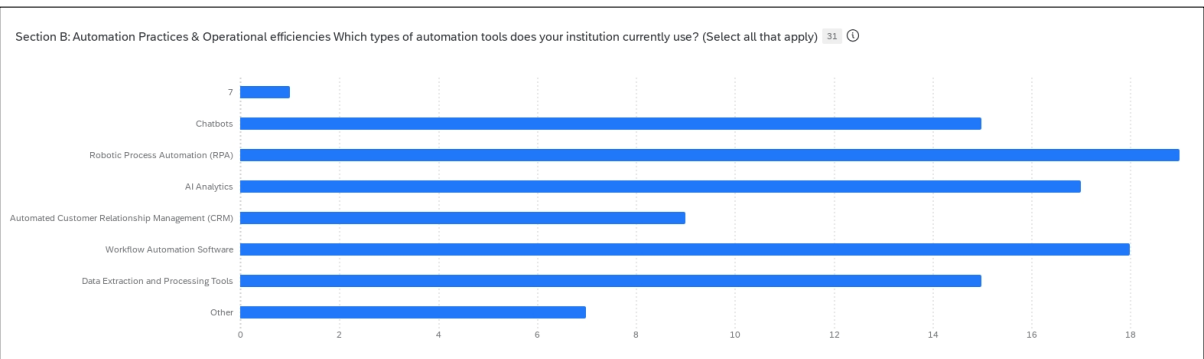
In which functional area does your role belong? 31 ⓘ

2 - In which functional area does your role belong?	Average (2 - In which functional area does your role belong?)	Minimum (2 - In which functional area does your role belong?)	Maximum (2 - In which functional area does your role belong?)	Count
Customer Service	6.00	6.00	6.00	5
Finance	4.00	4.00	4.00	1
Information Technology	1.00	1.00	1.00	21
Operations	2.00	2.00	2.00	3
Risk & compliance	5.00	5.00	5.00	1



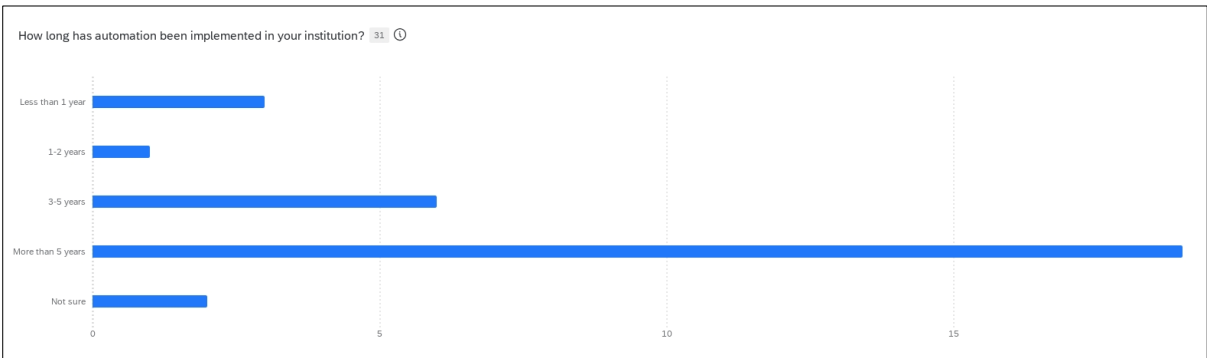
How many years of experience do you have in the financial industry? 31 ⓘ

3 - How many years of experience do you have in the financial industry?	Count	Count
Less than 1 year	10%	3
1-3 years	10%	3
4-6 years	10%	3
7-10 years	26%	8
More than 10 years	45%	14



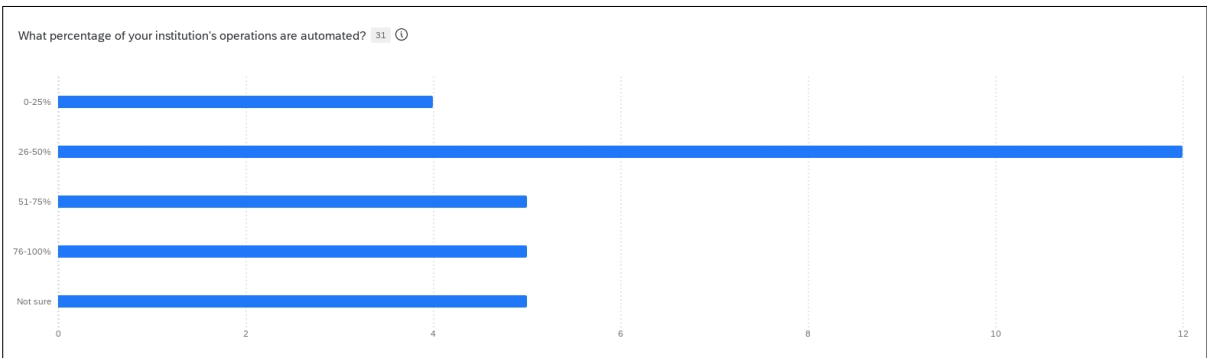
Section B: Automation Practices & Operational efficiencies Which types of automation tools does your institution currently use? (Select all that apply) 31 ⓘ

4 - Section B: Automation Practices & Operational efficiencies Which types of automation tools does your institution currently use? (Select all that apply)	Count	Count
7	3%	1
Chatbots	48%	15
Robotic Process Automation (RPA)	61%	19
AI Analytics	55%	17
Automated Customer Relationship Management (CRM)	29%	9
Workflow Automation Software	58%	18
Data Extraction and Processing Tools	48%	15



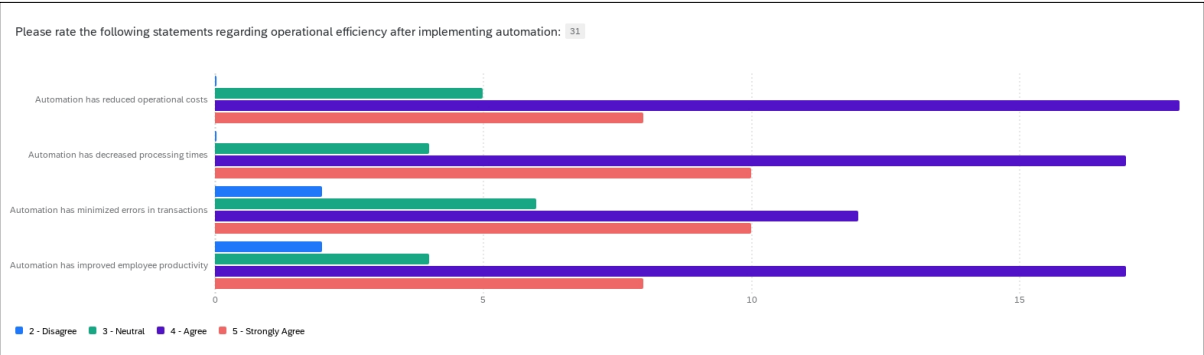
How long has automation been implemented in your institution? 31 ⓘ

5 - How long has automation been implemented in your institution?	Count	Count
Less than 1 year	10%	3
1-2 years	3%	1
3-5 years	19%	6
More than 5 years	61%	19
Not sure	6%	2

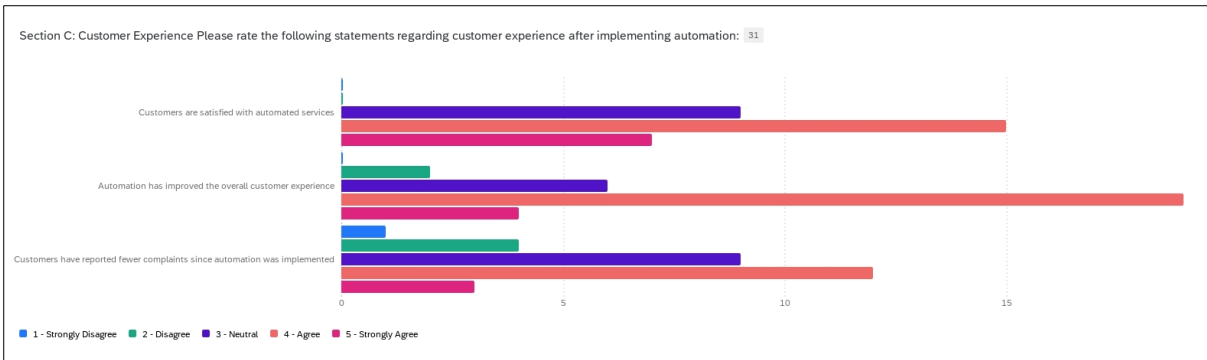


What percentage of your institution's operations are automated? 31 ⓘ				
6 - What percentage of your institution's operations are automated?	Average (6 - What percentage of your institution's operations are automated?)	Minimum (6 - What percentage of your institution's operations are automated?)	Maximum (6 - What percentage of your institution's operations are automated?)	Count
0-25%	1.00	1.00	1.00	4
26-50%	2.00	2.00	2.00	12
51-75%	3.00	3.00	3.00	5
76-100%	4.00	4.00	4.00	5
Not sure	5.00	5.00	5.00	5

What percentage of your institution's operations are automated? 31 ⓘ		
6 - What percentage of your institution's operations are automated?	Count	Count
0-25%	13%	4
26-50%	39%	12
51-75%	16%	5
76-100%	16%	5
Not sure	16%	5



Please rate the following statements regarding operational efficiency after implementing automation: 31 ⓘ				
Please rate the following statements regarding operational efficiency after...	2 - Disagree	3 - Neutral	4 - Agree	5 - Strongly Agree
Automation has reduced operational costs	0	5	18	8
Automation has decreased processing times	0	4	17	10
Automation has minimized errors in transactions	2	6	12	10
Automation has improved employee productivity	2	4	17	8



Section C: Customer Experience Please rate the following statements regarding customer experience after implementing automation: 31

Section C: Customer Experience Please rate the following statements regard...	1 - Strongly Disagree	2 - Disagree	3 - Neutral	4 - Agree	5 - Strongly Agree
Customers are satisfied with automated services	0	0	9	15	7
Automation has improved the overall customer experience	0	2	6	19	4
Customers have reported fewer complaints since automation was implemented	1	4	9	12	3

Open-Ended Questions What are the biggest challenges your institution faces with automation? 32 ⓘ

Open-Ended Questions What are the biggest challenges your institution face...

I think there's fewer regression methods in place to ensure the error margins of these automation processes are as minimal as possible.

Adoption and change people's mindset

Adoption from people who are used to doing things manually

It's data quality, if the day in the system is not of good standard, sometimes it can be bypassed in the system and send out incorrect information.

How has customer feedback influenced your institution's automation strategies? 32 ⓘ

How has customer feedback influenced your institution's automation strategi...

I'm not too certain how they address those complaints- I do know that there are issues though, those processes are not perfect at all.

There is a bit of uptake although a bit slow. Each business area follow their own strategy around automation and hence the delay

It assisted in making sure that we can somehow resolve customer complaints quicker than before.

There were less customers complains since we automated strategies

We value out customers input and complaints. So we try as much as possible to attend to any issues that they have raised.

APPENDIX E

SPSS Cronbach output

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.873	.882	7

Figure 8 -SPSS Cronbach output

Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.787
Bartlett's Test of Sphericity	Approx. Chi-Square	98.547
	df	21
	Sig.	<.001

Figure 9 - SPSS KMO & Bartlett output

The image below provides a view of the variance breakdown.

Total Variance Explained						
Component	Total	Initial Eigenvalues		Extraction Sums of Squared Loadings		
		% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.114	58.770	58.770	4.114	58.770	58.770
2	1.004	14.349	73.119	1.004	14.349	73.119
3	.678	9.679	82.798			
4	.499	7.122	89.920			
5	.336	4.798	94.718			
6	.191	2.725	97.443			
7	.179	2.557	100.000			
Extraction Method: Principal Component Analysis.						

Figure 10 - Variance Explanation

Survey #	Survey Question	Corrected Item-Total Correlation	Cronbach's Alpha
7_2	Automation has reduced operational costs	0.671	0.854
7_3	Automation has decreased processing times	0.807	0.838
7_4	Automation has minimized errors in transactions	0.542	0.872
8_1	Automation has improved employee productivity	0.656	0.854
8_2	Customers are satisfied with automated services	0.690	0.850
8_3	Automation has improved the overall customer experience	0.659	0.853
9	Customers have reported fewer complaints since automation was implemented	0.625	0.861

Table 5 - Cronbach Alpha

Item	Survey Question	Principle Component 1	Principle Component 2
7_2	Automation has reduced operational costs	0.779	0.205
7_3	Automation has decreased processing times	0.876	0.251
7_4	Automation has minimized errors in transactions	0.675	0.627
8_1	Automation has improved employee productivity	0.741	0.029
8_2	Customers are satisfied with automated services	0.786	-0.104
8_3	Automation has improved the overall customer experience	0.762	-0.482

Table 6 - Principle Component results

Reliability and Validity Calculations

Composite Reliability (CR)

Formula: $CR = (\sum \lambda)^2 / [(\sum \lambda)^2 + \sum (1 - \lambda^2)]$

Sum of loadings ($\sum \lambda$): 5.351

Sum of squared loadings ($\sum \lambda^2$): 28.633

Sum of error variances ($\sum (1 - \lambda^2)$): 2.886

Composite Reliability (CR): 0.908

Average Variance Extracted (AVE)

Formula: $AVE = \Sigma(\lambda^2) / n$

Sum of squared loadings ($\Sigma\lambda^2$): 4.114

Number of items (n): 7

Average Variance Extracted (AVE): 0.588

Factor Loadings Table

Item	Loading (λ)	Squared Loading (λ^2)	Error Variance ($1 - \lambda^2$)
Automation has reduced operational costs	0.779	0.607	0.393
Automation has decreased processing times	0.876	0.767	0.233
Automation has minimized errors in transactions	0.675	0.456	0.544
Automation has improved employee productivity	0.741	0.549	0.451
Customers are satisfied with automated services	0.786	0.618	0.382
Automation has improved the overall customer experience	0.762	0.581	0.419
Customers have reported fewer complaints since automation was implemented	0.732	0.536	0.464

Table 7 – Factor Loadings Table

Spearman's Correlation Matrix

Correlations					
Spearman's rho	Auto_Adoption		Auto_Adoption	Ops_Excellence	Customer_Exp
		Correlation Coefficient	1.000	.002	.161
		Sig. (2-tailed)	.	.993	.388
		N	31	31	31
	Ops_Excellence	Correlation Coefficient	.002	1.000	.610**
		Sig. (2-tailed)	.993	.	<.001
		N	31	31	31
	Customer_Exp	Correlation Coefficient	.161	.610**	1.000
		Sig. (2-tailed)	.388	<.001	.
		N	31	31	31

** . Correlation is significant at the 0.01 level (2-tailed).