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The Impact of Big Data Analytics in the South African Retail Industry.

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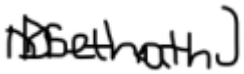
A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business

Johannesburg, 2023

DECLARATION

I, *Mohlahlami David Sethathi*, affirm that this research report is solely my own work, with exceptions noted in the references and acknowledgements sections. It is being submitted as part of the requirements for the Master of Management in Digital Business degree at the University of the Witwatersrand, Johannesburg. This work has not been previously submitted for any other degree or examination at this or any other university.

Name: MD Sethathi

Signature: 

Date: 22 / 02 / 2024

DEDICATION

This paper is dedicated to my beloved and endlessly amazing daughter. You are the driving force behind my pursuit of this qualification. Watching you grow has given me the ultimate motivation to persevere through life's challenges and see this journey through to the end. Thank you for being the unwavering anchor in my life. As we now have more time together, I eagerly anticipate filling our days with meaningful moments. You are not only the most precious gift, but also my greatest responsibility. Thank you for choosing me to be your father, my dear Kananelo. I love you more than words can express.

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Firstly, I extend my gratitude to God.

I would like to convey my heartfelt thanks to Dr. Nakuze Chalomba, my supervisor, for her unwavering support, guidance, and motivation throughout this journey.

I am grateful to all the participants for their valuable contributions and insights, and for generously offering their time.

Lastly, I express my profound appreciation to my Mother for her constant support and uplifting words. Thank you for always being there for me. My friend, Tankiso Pitso, thank you for your encouraging words during challenging times.

ABSTRACT

The utilisation of big data analytics has emerged as a promising way for companies to improve their performance, and more retailers are adopting this technology to enhance their customer service and competitive abilities. Despite the extensive exploration of the impact of big data analytics within the global retail context, a noticeable research gap exists with regard to its specific utilization by South African retailers to improve their competitiveness. The purpose of this study was to assess the impact of big data analytics in the South African industry. The research design employed in this study is qualitative; the data collection was done through semi-structured interviews with two South African retail organisations. The data was analysed using the thematic-analysis process to formulate codes and themes emerging from the study.

The study's findings revealed that the adoption of big data analytics in the South African retail industry is limited. However, those retailers leveraging this technology are gaining notable benefits, such as a better understanding of customers, effective inventory management, strategic pricing, and accurate forecasting. Conversely, challenges encountered by South African retailers in implementing big data analytics include insufficient skills, poor infrastructure, cost, and lack of support from top management.

The study's implications underscore the critical role of skill development, data utilization, infrastructure, and leadership support in successful big data analytics implementation within the South African retail sector. These findings provide a comprehensive framework for navigating the complexities of data-driven decision-making, offering valuable guidance for strategic investments and sustained competitiveness in an evolving technological landscape.

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KEYWORDS: Big Data, Analytics, Retail, & Impact.

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CHAPTER 1: INTRODUCTION

1.1. Purpose Statement

The purpose of this study is to assess the impact of big data analytics in the South African retail sector.

1.2. Background

The rapid development and introduction of advanced innovative technologies have transformed all industries, including the retail sector, on a global scale (Lutf et al., 2023). Youssef et al. (2022) show that one of these innovations is big data analytics, which has been used by numerous retailers to improve customer service and optimize business performance. The use of big data has emerged as a significant driving factor in the fourth industrial revolution, enabling organisations to make remarkable progress in harnessing the potential of data (Armstrong & Lee, 2021), and organisations consider big data analytics as an asset that helps them to make real-time decisions and high revenues (Lutf et al., 2023).

Therefore, numerous interpretations exist for the term ''big data,'' yet for the scope of this study, the definition put forth by Armstrong and Lee (2021) will be adopted. Big data refers to any data that, due to its unique characteristics, cannot be treated like traditional data; it requires unconventional approaches for its collection, storage, processing, and analysis. Armstrong and Lee (2021) further state that big data exhibits three key attributes, often referred to as the three Vs: Volume, Velocity, and Variety. Volume means that the dataset is so large that it cannot be stored, processed, or analysed like the traditional data; Velocity means that the data is generated at a significantly faster speed, and Variety means various types of data are generated, such as structured, semi-structured, and unstructured data. According to Watson (2013), analytics refers to the utilization of advanced algorithms and methods, often described as "rocket science," to identify and uncover patterns within data. Therefore, big data analytics is the practice of analysing massive amounts of data commonly known as big data (Chahal & Gulia, 2016).

The South African retail industry is a dynamic and diverse sector that plays a significant role in the country's economy, contributing to employment, GDP growth, and consumer spending. However, despite its economic importance, there remains a notable gap in research examining the impact of big data analytics within this sector, and this can present a challenge for South African retailers to effectively utilize big data analytics to make data-driven decisions that can improve their competitiveness. Hence, it is precisely in this context that the researcher aims to determine the impact of big data analytics in the retail industry in the South African context. In particular, this thesis aims to explore the current status of big data analytics in the South African retail sector, its challenges and opportunities. It is through understanding the current adoption of big data analytics, the challenges encountered when implementing this technology, and opportunities in the South African retail sector that the researcher can be in the best position to offer recommendations. Therefore, it is for this reason that there is a need to assess the impact of big data analytics in the South African industry.

1.3. Research Problem

In response to competition intensity within the retail landscape, retail companies have increasingly turned to the adoption of big data analytics as a strategic imperative (Youssef et al., 2022). Prominent global retailers like Zara have shown how valuable it can be to use data analytics to make their operations more efficient and to keep up with their rivals in the market (Silva et al., 2020).

As a result, the utilisation of big data analytics has emerged as a promising way for companies to improve their performance (Yadegaridehkordi et al., 2020), and it provides valuable insights for companies to understand customers' behaviour, increase transparency, and gain more value (Verma et al., 2017). The increasing use of big data analytics is made even more evident by the fact that more and more retailers are adopting this technology to enhance their customer service and competitive abilities (Youssef et al., 2022; Seetharaman et al., 2016).

Therefore, despite the extensive exploration of the impact of big data analytics within the global retail context, a noticeable research gap exists with regard to its

specific utilization by South African retailers to improve their competitiveness. Consequently, this presents a challenge for retailers to utilize big data analytics to enhance their competitiveness effectively. Hence, this study seeks to address this research gap by evaluating the extent of the adoption of big data analytics within the South African retail industry while also examining the opportunities and challenges associated with its implementation.

1.4. Research questions

This study aims to assess the impact of big data analytics in the South African retail industry by answering the following questions:

- What is the current level of big data analytics adoption in the South African retail industry?
- What are the benefits and challenges faced by South African retail businesses in adopting big data analytics solutions?
- How does the use of big data analytics in the South African retail industry impact customer insights and company performance?

1.5. Rational

The use of big data in the global retail market is expected to grow rapidly at a rate of 35% every year, and this growth indicates that there are significant opportunities in this field (Verma et al., 2020). Therefore, the interest in this particular topic was informed by the recognition of the growing importance of big data analytics in the retail industry and the need to understand its impact in the South African retail sector. Technological advancements have rapidly transformed the retail industry, leading to substantial changes and disruptions (Shankar et al., 2021). The advancements in technology have brought a vast amount of data which has presented benefits for retail organisations to gain valuable insights about customers, optimise their operations and improve decision-making. However, despite the increasing adoption of big data analytics by retail stores globally, there is a research gap on the implications and effectiveness of big data analytics in retail stores in the South African context.

The empirical rationale for this study stems from the need to explore how big data analytics initiatives are being implemented in South African retail stores, the challenges they face, and the outcomes they achieve. Akande and Van Belle (2013) indicate that the adoption and usage of technology still need to be improved in South Africa. Therefore, these varying levels of technological adoption and cultural differences can have an influence on the effectiveness and outcomes of implementing big data analytics in retail organizations in South Africa. Therefore, it is important to empirically examine the impact of big data analytics within the South African retail industry.

In order to examine this phenomenon, this theoretical proposition: "the adoption of big data analytics positively impacts the South African retail industry by enhancing firms' performance," will be tested. Yadegaridehkordi et al. (2023) point out that big data has emerged as a promising avenue for improving organisational performance, and Lutfi et al. (2023) also indicate that in their findings they observed that there is a positive relation between big data analytics adoption and firm performance. Based on these opinions, businesses that implement big data analytics perform better in terms of revenue and gaining large market share.

The outcomes of this research will offer valuable insights for retail organisations in South Africa, helping them understand the potential benefits and challenges associated with the adoption of big data analytics. Moreover, the findings of this study will contribute to the existing body of knowledge by expanding the understanding of the impact of Big Data analytics in the retail industry, particularly in the South African context.

1.6. Delimitations

South African retail sector consists of small, medium, large, and global retailers. Therefore, due to time and resource constraints, the study will have a limited sample size that focuses only on large retail stores in South Africa. Small, medium, and global retail stores will be excluded from this study. The findings of this study will not represent the entire industry within South Africa.

1.7. Definition of terms

Big Data: described as any data that cannot be treated like traditional data because of its unique characteristics (Armstrong & Lee, 2021)

Analytics refers to the utilization of advanced algorithms and methods, often described as "rocket science," to identify and uncover patterns within data (Watson, 2013)

1.8. Assumptions

It is assumed that businesses in the South African retail industry aim to improve customer insights, enhance operational efficiency, and drive competitive advantage through the use of big data analytics.

1.9. Chapter Outline

Chapter One has introduced the contextual background of the study. The research problem and objectives have been identified, and the value of such research has been argued. The delimitations, definitions of terms, and assumptions are discussed.

The second chapter will involve a comprehensive review of existing literature to explore the impact of big data analytics in the retail industry within the South African context, and the theoretical framework will be presented.

In Chapter Three, the justification for employing a qualitative inductive research approach will be provided, along with a discussion of the broader research design, including its limitations.

Chapter Four will present the findings of the study.` Chapter Five will provide a discussion of the findings from Chapter Four, and lastly, Chapter Six will outline the conclusion of the study, limitations, recommendations, and suggestions for future researchers.

CHAPTER 2: LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1. INTRODUCTION

This chapter reviews prior studies on the impact of big data analytics in the retail industry. The first section provides the background of the study. The second section focuses on prior studies concerning the current level of big data analytics adoption in the South African retail industry. The third section will provide prior literature on the benefits and challenges faced by retailers when implementing big data analytics. The fourth section will outline the existing literature on the impact of big data analytics on Customer Insights and Firm Performance. The theories underpinning this study and the conceptual framework will be discussed in the fifth section, and the conclusion will be presented in the sixth section.

2.2. BACKGROUND OF THE STUDY

The rapid development and introduction of advanced innovative technologies have transformed all industries, including the retail sector, on a global scale (Lutf et al., 2023). Youssef et al. (2022) show that one of these innovations is big data analytics, which numerous retailers have used to improve customer service and optimize business performance. The use of big data has emerged as a significant driving factor in the fourth industrial revolution, enabling organisations to make remarkable progress in harnessing the potential of data (Armstrong & Lee, 2021), and organisations consider big data analytics as an asset that helps them to make real-time decisions and high revenues (Lutf et al., 2023).

There are several definitions of big data, but for the purpose of this study, the definition by Armstrong and Lee (2021) will be adopted. Big data refers to any data that, due to its unique characteristics, cannot be treated like traditional data; it requires unconventional approaches for its collection, storage, processing, and analysis. Armstrong & Lee (2021) further states that the characteristics of big data are three Vs, which are Volume, Velocity, and Variety. Volume means that the dataset is so large that it cannot be stored, processed, or analysed like the traditional data; Velocity means that the data is generated at an extremely fast speed, and Variety means various types of data are generated, such as structured,

semi-structured, and unstructured data. According to Watson (2013) analytics refers to using advanced algorithms and methods often described as "rocket science," to identify and uncover patterns within data. Therefore, big data analytics is the practice of analysing massive amounts of data, commonly known as big data (Chahal & Gulia, 2016).

The South African retail industry is a dynamic and diverse sector that plays a significant role in the country's economy, contributing to employment, GDP growth, and consumer spending. However, despite its economic importance, there remains a notable gap in research examining the impact of big data analytics within this sector, and this can present a challenge for South African retailers to effectively utilize big data analytics to make data-driven decisions that can improve their competitiveness. Hence, it is precisely in this context that the researcher aims to determine the impact of big data analytics in the retail industry in the South African context. In particular, this thesis aims to explore the current status of big data analytics in the South African retail sector, its challenges and opportunities. It is through understanding the current adoption of big data analytics, the challenges encountered when implementing this technology, and opportunities in the South African retail sector that the researcher can be in the best position to offer recommendations. Therefore, it is for this reason that there is a need to assess the impact of big data analytics in the South African retail industry.

2.3. THE CURRENT LEVEL OF ADOPTION OF BIG DATA AND ANALYTICS IN THE SOUTH AFRICAN RETAIL INDUSTRY

2.3.1. Current Level of Big Data Analytics adoption in South Africa.

The adoption of big data analytics is a transformative factor in today's industrial landscape, enabling precise decision-making and maximising performance (Maroufkhani et al., 2020). In the retail industry, big data analytics is important for improving operations and creating value for businesses; retailers can reduce their marketing costs by using big data analytics. However, there are differences in how quickly different countries have adopted big data analytics (Youssef et al., 2022).

The variation in adoption rates can be explained by several factors, such as the market environment, government policies, and the leadership within the businesses (Abdelmoety et al., 2022; Agag & Eid, 2020). According to a recent study by Lutf et al. (2023), retailers still have a long way to go in adopting big data analytics because of their limited resources and a lack of understanding about the obstacles to adopting and using big data. The study also highlighted the scarcity of research on big data adoption in the retail sector.

Another study conducted by Lima and Delen (2020) discovered that the adoption and utilisation of big data analytics vary significantly across countries. This suggests that different countries have different levels of readiness and willingness to embrace big data analytics in the retail industry.

Furthermore, there have not been recent studies on how much big data analytics is used in the South African retail industry. The only study the researcher managed to access is the study by Matthew et al. (2015), which looked at the application of big data analytics within the South African retail sector. According to their findings, most South African retailers are not utilising big data analytics. However, a small number of retail stores are utilising big data analytics platforms to handle large amounts of data quickly and cost-effectively. The study also discovered that South African retailers struggle to find practical applications that would justify the investment required for implementing big data analytics. Therefore, this study aims to assess how much big data analytics is currently being used and its impact on the South African retail industry.

Big data analytics has emerged as a powerful tool for companies to enhance their operational and strategic capabilities, leading to improved efficiency and effectiveness (Maroufkhani et al., 2020). By employing big data strategies, organisations can convert a vast amount of data into valuable insights and actionable knowledge, thereby increasing their productivity (Youssef et al., 2022).

2.3.2. Factors Influencing the Adoption of Big Data in Retail Industry

The utilisation of big data analytics has gained significant interest among practical and theoretical communities due to the potential benefits and opportunities it offers (Lutfi et al., 2023). However, there are different factors influencing the adoption of big data analytics by the organisations in different sectors. Lutfi et al. (2023), in their findings, revealed that the technological aspect of relative advantage, organisational factors such as top management support and previous IT experiences, had substantial influence on the adoption of big data analytics. Retailers are more likely to embrace big data analytics when there is an alignment of company's IT infrastructure and the specific needs with big data analytics for successful adoption of this technology, and then they perceive it as a means to improve their competitiveness, enhance customer service, and create business opportunities (Youssef et al., 2021;Lutfi et al., 2023).

Youssef et al. (2021) identified environmental factors such as competition intensity and external support as the key influencers of big data adoption by retailers. They indicated that there is a positive relationship between competition intensity and big data adoption, and external support includes outsourcing of expertise. Lutfi et al. (2023) show that government regulations have a significant influence on the adoption of big data by retailers.

Furthermore, top management support has a strong influence on the adoption of new technology in any organisation. Lutfi et al. (2023) show that the adoption of big data analytics in the retail industry is highly influenced by top management support. In addition, Youssef et al. (2021) indicate that top-level managers can help create a supportive atmosphere for innovation and the adoption of new technology by identifying and showing the benefits it brings to the organisation.

Moreover, the human factor is one factor identified as a key factor that influences the adoption of big data by retailers, as the technological competencies of employees are crucial in driving innovation and the utilisation of new technology within the organisation, and it is vital for the company to have employees who

possess the necessary skills and knowledge to develop and effectively implement big data analytics (Youssef et al., 2021). Lutfi et al. (2023) have identified characteristics of big data volume, velocity, and variety as other factors that influence the adoption of big data analytics using resource-based view theory. Data volume is considered as an intangible resource enhancing firm performance through evidence-based decision-making and actionable insights; velocity, indicating that real-time data processing can significantly improve a firm's ability to handle high levels of data accuracy, and the ability of a firm to effectively utilise diverse data can positively contribute to value creation and encourage retailers to adopt big data analytics. Variety; the ability to effectively harness and integrate diverse data sources may serve as a strategic resource, contributing to competitive advantage and organizational capabilities. Therefore, the following proposition is proposed.

2.3.3. Proposition

P1: *The adoption of big data analytics is influenced by a combination of technological, organisational, and environmental factors*.

2.4. THE MAIN BENEFITS AND CHALLENGES FACED BY SOUTH AFRICAN RETAIL BUSINESSES IN IMPLEMENTING BIG DATA ANALYTICS SALUTATIONS.

2.4.1 The Benefits of Implementing Big Data Analytics

Big data brings about significant transformations across various sectors (Silva et al., 2020) and has emerged as an area of great potential for improving organisations' performance (Yadegaridehkordi et al., 2020). Over the next five years, the big data technology market is projected to experience a growth rate of 12.8% (Al-Sai & Abdullah, 2019). Therefore, there are numerous benefits that retailers in South Africa can gain from implementing big data analytics. Ying et al. (2020) indicate that implementing big data enables firms to gain valuable insights and enhance their competitiveness by uncovering new information.

The understanding of customer needs is the primary determinant for organisations to achieve success. The use of big data can help retailers understand customer

requirements and network buying patterns to obtain a more comprehensive perspective (Ying et al., 2020). For example, Zara, on a daily basis, utilizes big data mining to analyze and understand consumer desires, and the insights are subsequently transformed into tangible designs, allowing Zara to consistently meet customer expectations and stay ahead in satisfying the demand for current fashion trends (Silva et al., 2020). Al-Sai and Abdullah (2019) Indicate that big data is used by organizations to enhance their understanding of customer needs, lower expenses, make their processes more efficient, and proactively identify risks and detect fraudulent activities.

Al-Sai and Abdullah (2019) further indicate that big data analytics can also help in discovering customer behaviors, leading to the development of personalized systems that cater to the individual demands of each customer. Retailers can gather data on customer's behavior within the store, including factors such as time spent in various sections, and this data can be analysed to enhance store layout, optimise shelf positioning, and refine the product mix (Ying et al., 2020), and Silva et al. (2020) indicate that this lead to enhanced customer engagement and improving the overall shopping experience.

Moreover, big data presents a potential solution by offering more precise demand forecasts, and by leveraging big data analytics, organisations can find a balance in production that minimises waste and aligns with customer demands; for example, online clothing retail stores like Lesara utilise big data analytics to identify customer trends and strategies their product line, instead of relying on their designers attending fashion week events (Silva et al., 2020). Silva et al. (2020) further show that big data has the ability to shorten supply chains and enable retailers to gain a competitive edge.

Fashion retailers continue to face a significant financial struggle due to returns and access inventory, and as a solution to this challenge, retailers can use big data analytics to derive valuable insights from the return or refund data. This can not only reduce returns and enhance purchase rates but also make informed decisions regarding purchasing and manufacturing processes (Silva et al., 2020). In regard

to price optimisation, Ying et al. (2020) point out that, the use of big data analytics in the retail sector provides decision-makers with valuable insights for price optimisation by analysing market demands and product fluctuations, enabling them to make informed decisions based on the comprehensive market analysis. For example, H&M utilises big data analytics to effectively price their fashion products by analysing currency fluctuations and raw material costs to ensure that their pricing is aligned with the market changes (Silva et al., 2020).

Big data can offer unique opportunities to brands that are open to exploring and actively engaging with it (Silva et al., 2020). Ying et al. (2020) show that the utilization of big data enables organizations to enhance their business processes and achieve customer value objectives, with a potential profit increase of more than 60%. The utilisation of big data analytics provides significant benefits to retailers in enhancing their performance through a deeper understanding of customer needs. However, the implementation of big data analytics also brings various challenges for retailers to overcome.

2.4.2. The Challenges of Implementing Big Data Analytics

The unique characteristics of big data, such as volume, velocity, and Variety, introduce new complexities for organizations to navigate. Al-Sai and Abdullah (2019) show that these challenges include security, uncertainties, privacy, and ethical concerns surrounding data collection, technology, and organizational and human resources, which collectively impact the adoption of big data within the organization.

One main challenge that retail companies in the industry face when it comes to utilizing and handling big data is obtaining customers' permission to access their personal information (Ying et al., 2020). Moreover, in terms of security concerns, Reyes-Veras et al. (2021) point out that the absence of protocols to guarantee that there is no private or sensitive information regarding the users who generate the analysed data, together with the lack of protection and reliability of data, brings a serious concern. Reyes-Veras et al. (2021) further indicate that this concern has been identified as a challenge for both primary and secondary data, as it is difficult

to identify procedures that uphold the rights of individuals and companies generating personal and commercial data without violating them.

Many organizations are still not familiar with big data and perceive it as being in its early and evolving stage, and this shows the organization's lack of readiness to gain value from big data promises (Al-Sai & Abdullah, 2019). Reyes-Veras et al. (2021) as well show that, according to different sources, challenges faced by organisations in adopting big data include the initial costs associated with acquiring infrastructure, the cost of using and maintaining that infrastructure, as well as absence of financial planning by organisations for the implementation of new technologies.

The lack of skilled professionals and experts in the big data field poses a significant challenge to harnessing the value of big data (Al-Sai & Abdullah, 2019), and Reyes-Veras et al. (2021) state that this challenge has been identified for two primary reasons; first, the substantial cost associated with training employees to effectively utilise the technology, and secondly, the capacity of individuals to learn to use this technology. Therefore, the following proposition will be tested:

2.4.3. Proposition

P2: *Strategically investing in and overcoming big data challenges has a positive impact on the organisational performance.*

2.5. THE IMPACT OF BIG DATA ANALYTICS ON CUSTOMER INSIGHTS AND FIRM PERFORMANCE IN THE SOUTH AFRICAN RETAIL INDUSTRY

2.5.1. Impact of Big Data Analytics on Customer Insights in the South African Retail Industry

The utilisation of big data analytics has brought about significant impacts on customer insights. By leveraging the power of big data, companies gain a deep understanding of consumer purchasing behaviour, preferences, social media interactions, and other relevant information, and this comprehensive understanding enables firms to better understand consumer demands and market trends, serving as a foundation for decision-making processes related to product

development, pricing, and promotional activities (Liu et al., 2023). Notably, the consumer insights gained from the utilization of big data analytics have facilitated agile retail companies to introduce a substantial number of new items annually, ranging from 50,000 to 100,000, thereby enhancing their competitiveness in the market (Silva et al., 2020).

Furthermore, the use of big data analytics plays a pivotal role in improving market competitiveness for companies. By deriving customer insights from big data, organisations are able to enhance their product development process, ensuring the creation of offerings that resonate with customer preferences and demands (Liu et al., 2023). Additionally, the analysis of customer behaviour and related patterns throughout the entire business transaction lifecycle becomes more effective with the help of big data analytics, and this enables firms to effectively map and understand customer behaviours, allowing for the implementation of strategies that cater to their specific needs and preferences (Anitha &Patil, 2022).

The customer insights gained from big data analysis enable the firm to perform better in an intensive competitive environment. Maroufkhani et al. (2020) indicate that big data analytics has transformed business competition by offering advanced methods to uncover hidden patterns in raw data, and this enables accurate decision-making, improved productivity, knowledge generation, and enhanced innovation. Consequently, all these lead to improved firm performance.

2.5.2. Impact of Big Data Analytics on Firm Performance in the South African Retail Industry

Big data analytics guarantees the proper analysis and classification of data into useful business information, which is then transformed into substantial knowledge for more effective decision-making and, ultimately, better company performance. In his study, Samsudeen (2020) found that organizations equipped with both technological and managerial capabilities in big data analytics exhibit improved performance, a phenomenon facilitated by knowledge management (KM). Moreover, big data analytics holds the potential to transform the competitive landscape among businesses by facilitating better understanding, processing, and

utilization of vast amounts of data sourced from various internal and external channels. Furthermore, as firms enhance their proficiency in big data analytics, there is a noticeable increase in performance (Hussaina et al., 2021; Shabbir & Gardezi, 2020). This improvement is mediated by the effectiveness of decision-making and innovation capabilities. Naqvi et al. (2021) indicate that that Big Data Analytics positively influences an organization's ability to make decisions and its overall effectiveness. Additionally, Latif et al. (2023) in their study found that there are no significant statistical variances between large corporations and medium-sized enterprises regarding the links from Big Data analytics to successful decision-making.

Furthermore, big data holds significant operational and strategic potential in terms of generating business value and is widely regarded as the next major innovation. It generates actionable insights for improving firm performance and gaining a competitive edge (Singh & Del Giudice, 2019). Hallikainen et al. (2020) state that leveraging customer big data notably boosts sales growth, leading to monetary performance improvements, and strengthens customer relationship performance, resulting in non-monetary performance enhancements. Though the big data analytics play a big role in how Organizational Innovation (OI) affects both financial and non-financial performance, Arias-Pérez et al. (2022) state that the relationship is not completely clear on how OI impacts financial performance compared to non-financial performance.

Lastly, Chatterjee et al. (2023) state that the use of big data analytics helps the organizations with effective forecasting processes if data sets are reliable and accurate. Therefore, the following proposition is proposed:

2.5.3. Proposition

P3: *The adoption of big data analytics positively impact the retail industry by enhancing firm performance*.

2.6. ANALYSIS FRAMEWORK

2.6.1. Theoretical Framework

The foundational framework and concept utilised in this research consists of Technology Organisation Environment (TOE) Model and the diffusion of innovation (DOI) theory. Research has recommended combining both models in order to identify the most appropriate elements for technology adoption (Youssef et al., 2022). The TOE framework is a theory at the organisational level that describes how a company's adoption decisions are influenced by three distinct factors: technological context, organisational context, and environmental context, and these three factors are believed to have an impact on technological innovation (Baker, 2012). DOI model is widely regarded as a remarkable approach for studying user's intentions regarding the adoption of new technology. It is a sociological theory that effectively explains the patterns and processes behind the successful adoption of new technology (Shahadat et al., 2023).

By integrating the technological context of DOI with the elements of the TOE model, a comprehensive research framework can be created, enhancing DOI's effectiveness in clarifying how innovation spreads within an organisation (Lutfi et al., 2023). Therefore, this study aims to assess the impact of big data analytics in the South African retail industry looking in the factors that influence the adoption of big data analytics in retail sector. Based on the TOE model and DOI theory, the present study introduced a conceptual model illustrated in Figure 1, utilising a blend of the TOE model and DOI model.

2.6.2. CONCEPTUAL FRAMEWORK

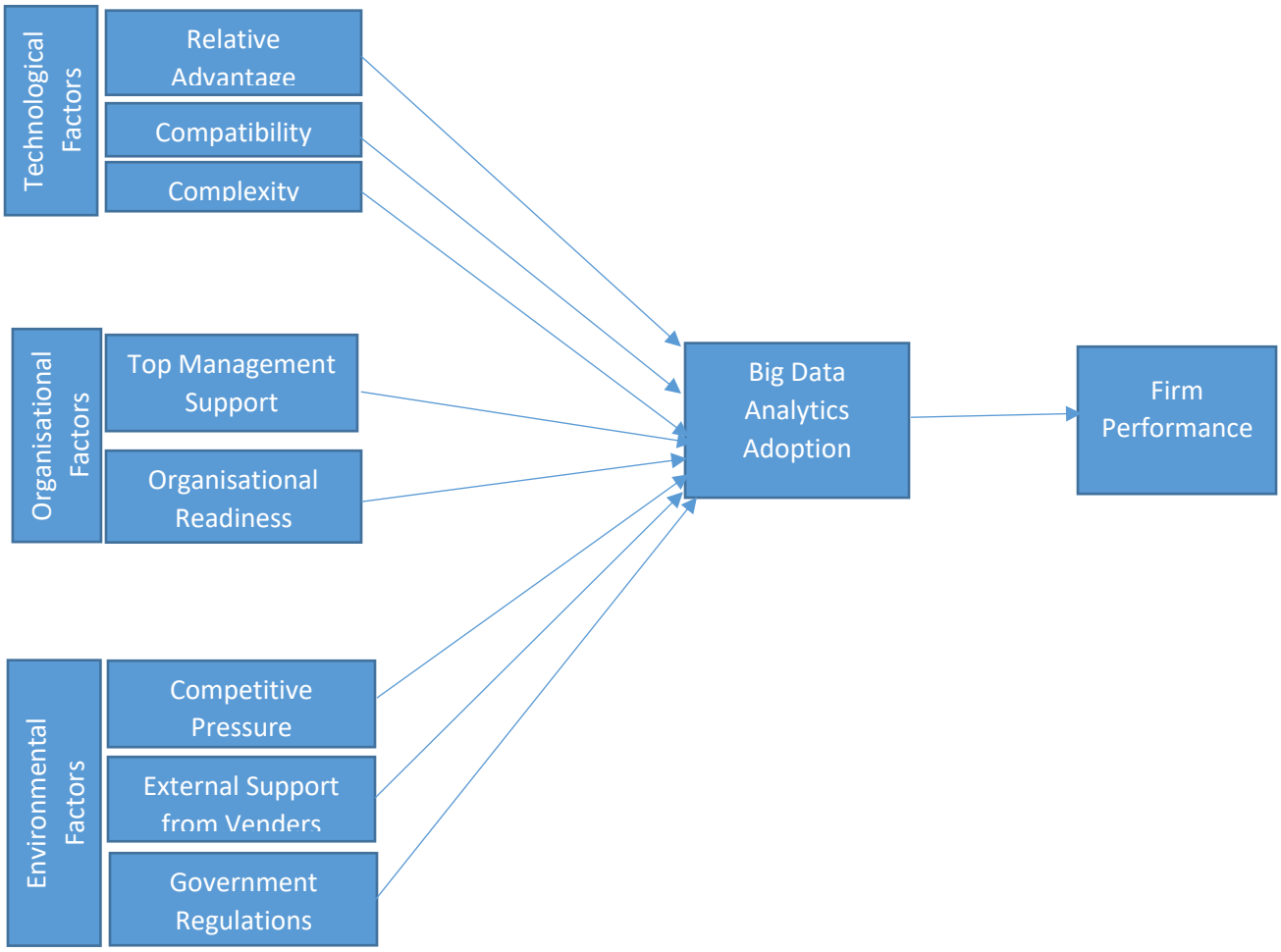


Figure 2.6.2: *A blend of TOE model and DOI model.*

2.7. Conclusion of Literature Review

The utilisation of big data analytics emerges as a pivotal tool in the contemporary industrial landscape, enabling precision decision-making and facilitating optimal performance (Maroufkhani et al., 2020). By harnessing the power of big data, companies gain access to invaluable insights that enhance their understanding of consumer behaviour and enable them to meet evolving customer needs, thus driving improvements in organisational performance. It is worth noting that the adoption of big data analytics varies across different countries, as indicated by Youssef et al. (2022). This variance can be attributed to technological, organisational, and environmental factors, all of which significantly influence the adoption of big data analytics. By paying attention to these factors, organizations can navigate the complexities associated with big data adoption and maximize their potential for informed decision-making and competitive advantage. Therefore, the following propositions are proposed in this study:

P1: *The adoption of big data analytics is influenced by a combination of technological, organisational, and environmental factors*.

P2: *Strategically investing in and overcoming big data challenges has a positive impact on the organisational performance*

P3: *The adoption of big data analytics positively impact the retail industry by enhancing firm performance*.

CHAPTER 3: RESEARCH METHODOLOGY

3.1. RESEARCH APPROACH

This study employed the qualitative approach. Qualitative research can be broadly defined as a range of research methods that generate findings without relying on numerical measurements of statistical analysis (Hamilton & Finley, 2019). Matthew et al. (2015) show that the reason to employ a qualitative research approach is its capacity to delve into individual perspectives and opinions.

The importance of assumptions lies in providing a foundation for the research approach and helping clarify the research focus (Matthew et al., 2015). The researcher has the assumption that employing big data analytics in the South African retail sector can produce beneficial outcomes.

3.2. RESEARCH DESIGN

A generic qualitative research design is adopted for this study. Generic qualitative inquiry examines individuals' accounts of their viewpoints, perspectives, convictions, or contemplations concerning their encounters with external phenomena (Percy et al., 2015). Big data is rapidly evolving, and there is limited research on its impact in the South African retail industry. Generic qualitative design is exploratory in nature; it facilitated the exploration of the current status of big data adoption, as well as the opportunities and challenges associated with big data. By adopting a generic qualitative approach, the researcher was able to delve into retailers' experiences, perspectives, and insights regarding the utilisation of big data, which allowed for a comprehensive and in-depth exploration of the topic.

This research design uses semi- or fully-structured interviews and questionnaires (Perrcy et al., 2015). Therefore, semi-structured interviews were employed to address research questions, and an inductive thematic analysis approach was utilized for the analysis of data.

3.3. DATA COLLECTION METHODS

The interviews were adopted as a method of data collection. According to Monday (2022), interviews are a more effective method of gathering data when compared to other techniques such as questionnaires; this is because interviews have the ability to extract narrative data that enables researchers to explore individuals' perspectives in a more comprehensive manner. Through the use of interviews, the research questions of this study were answered and provided a better understanding of the impact of big data analytics in the South African retail sector; the interviews were fifteen to thirty minutes long.

3.4. POPULATION

The population refers to the complete collection of units that exhibit the variable characteristics being studied and for which the research findings can be applied in a broader sense (Shukla, 2020). In this study, the population comprises large retail stores operating within the South African retail industry.

3.4.1 POPULATION SAMPLE

The population sample for this study comprised a subset of the broader population. Specifically, the study purposefully targeted retailers operating in Johannesburg. The interviewees were employees from the IT, marketing, business intelligence, supply chain, and sales departments of the identified organizations.

3.4.2 SAMPLE

A non-probability sampling of twelve interviews was targeted because the researcher's choice of sample lacks a scientific foundation, which can increase the likelihood of selecting a biased sample that does not adequately represent all the characteristics of the entire population. However, due to time constraints and the unavailability of some participants, the researcher managed to conduct ten interviews. According to Rahman (2023), when respondents cannot be selected with equal probability, a non-probability sampling method is recommended. Non-probability sampling techniques often offer the advantages of faster data collection and lower financial costs when compared to probability sampling techniques.

Additionally, purposive sampling of two retailers was identified to participate in this study.

3.5. THE RESEARCH INSTRUMENT

The interview guide was used as a research instrument for this study. According to Adosi (2020), utilizing an interview guide for data collection allows for flexibility in the questioning approach, enabling interviewees to address relevant topics promptly and pose inquiries based on responses received rather than solely relying on the predefined guide.

3.6. PROCEDURE FOR DATA COLLECTION

The letters requesting permission to conduct the study from the identified organizations were sent to the HR managers of those companies. The interviews were conducted offline and online, utilizing various platforms such as Microsoft Teams and Zoom. Participants were requested to provide their written and verbal consent before the interviews commenced. Their responses were handled confidentially, and identities (including their names and the name of the organization) are kept anonymous unless explicitly stated otherwise. Individual privacy is maintained in all written data resulting from the study.

3.7. DATA ANALYSIS STRATEGIES AND INTERPRETATION

The purpose of this research was to assess the impact of big data analytics in the South African retail industry. Therefore, to answer the research questions, the data was gathered through interviews with retailers, and the data obtained from the respondents was analysed using the inductive thematic analysis technique with Nvivo 14 software. Thematic analysis is an approach that allows for the systematic identification, organisation, and interpretation of meaningful patterns (themes) within a collection of data. It enables the researchers to uncover and provide insights into the underlying meanings and concepts present in the dataset (Braun & Clarke, 2012). The findings of this research were organised based on the primary themes identified in the literature review.

3.8. POSSIBLE LIMITATIONS AND CHALLENGES OF THE STUDY

- There is a lack of previous studies that focus on the usage of big data analytics in the South African retail industry.
- The scope and depth of the discussion might have been compromised due to the researcher's lack of experience.
- The researcher's lack of experience increased the likelihood of potential flaws in implementing the data collection method.

3.9. QUALITY ASSURANCE

To guarantee the reliability of this qualitative research, the following approaches were implemented: transferability, credibility, and dependability. According to Morse (2015), these approaches have been utilized to uphold rigor throughout the research process, serve as evaluation checklists, and gauge the quality of the research.

3.9.1. TRANSFERABILITY

Transferability occurs when readers perceive a connection between the research narrative and their own circumstances, leading them to naturally apply the research findings to their actions (Tracy, 2010). Therefore, the study focuses on the South African retail industry. However, the findings can potentially be transferable to industries such as finance, manufacturing, tourism, and hospitality. In addition to that, the findings can also be transferable to other emerging economies with a similar situation in the adoption of big data analytics.

3.9.2. CREDIBILITY

Credibility encompasses the reliability, authenticity, and believability of the research (Tracy, 2010). Therefore, the researcher employed the prolonged engagement and member checks strategies. Prolonged engagement refers to the extended and in-depth engagement with the participants in the research setting to identify potential biases and determine the significant aspects of the situation (Lincoln & Guba, 1986). The researcher had fifteen to thirty minutes of interviews with each respondent, and this long engagement allowed the researcher to

develop trust and a comprehensive understanding of the impact of big data analytics in the South African retail industry.

Member checks involve the ongoing and informal validation of information by seeking feedback from the participants regarding the researcher's understanding and interpretations of what has been shared or discovered (Lincoln & Guba, 1986). After the analysis of interview data, the researcher shared the findings and the interpretations with the participants, seeking their input and confirming whether the results aligned with their experience.

3.9.3. DEPENDABILITY

Dependability involves an external evaluation that necessitates the creation of a documented trail and an examination conducted by an impartial external auditor with the necessary expertise (Lincoln & Guba, 1986). The researcher used the audio recordings of interviews, with participants' consent, to ensure an accurate representation of participants' responses. These recordings can serve as a reference point for verification and provide evidence of the dependability of the data.

3.10. ETHICAL CONCIDERATION

According to the university guidelines, it is the researcher's responsibility to conduct the research in an ethical manner. Therefore, data collection was only done after the ethics certificate had been granted by the University Ethics Committee. The researcher was not involved in any Non-Disclosure Agreement without being approved by the University's Legal Adviser and Research Compliance Manager. The research was conducted online and offline, and the respondents were made aware of any risks involved in participating in the study. The interview responses were treated confidentially, and identities (including their names and the name of the organization) were kept anonymous unless otherwise expressly indicated. Individual privacy was maintained in all written data resulting from the study.

Table 3.1. Consistency table: research questions, propositions, data collection and data analysis

RQ #		State Research Question or Objective	Prop/ hyp #	State Proposition or Hypothesis	Data collection detail	Data analysis method
1		To assess the current status of big data and analytics adoption in the South African retail industry.	1	*The adoption of big data analytics is influenced by a combination of technological, organisational, and environmental factors*	Interview guide questions 1, 2, 3, 4, 5	Thematic analysis
1.1		To identify the benefits and challenges associated with the implementation of big data and analytics in the South African retail industry.	1.1	*Strategically investing in and overcoming big data challenges has a positive impact on the organisational performance*	Interview guide questions 6, 7, 8, 9	Thematic analysis
1.1		To examine the impact of big data and analytics on customer insights and customer behaviour in South African retail industry.	1.1	*The adoption of big data analytics positively impact the retail industry by enhancing* firm performance.	Interview guide questions 10, 11, 12, 13	Thematic analysis

CHAPTER 4: PRESENTATION OF RESEARCH FINDINGS

4.1. INTRODUCTION

Intense competition and technological disruptions pose significant challenges in the global retail industry, leading to a widespread adoption of big data analytics as a solution. While there is extensive exploration of the impact of Big Data analytics within the global retail context, a noticeable research gap exists concerning the specific utilization of big data analytics by South African retailers to enhance their competitiveness. This study aims to fill this research gap by assessing the current extent of big data analytics adoption within the South African retail industry. This chapter presents the research findings, and it is organised as follow: The first section provides the background information of the participants of the study. The second section presents the data analysis process, and the third section outlines the research findings regarding the three research questions. The last section will provide the summary of the research findings for each research question.

4.2. BACKGROUND INFORMATION

4.2.1. Background Information of the Research Participants and the Organisations.

The organisation's data collected from the participants includes the position of the Participant in the organisation, the number of years the Participant has been with the organisation, the industry in which the organisation operates, and the number of employees each organisation has.

Table 4.1. Background information of the participants and the organisations.

P	ROLE	No. of Years in the Organisation.	Industry	No. of Employees
P1	Sales Channel Manager	5+	Retail 1	45,000 +
P2	Sales Analyst	6+	Retail 1	45,000 +
P3	IT Manager	3+	Retail 1	45,000 +
P4	Marketing Manager	12+	Retail 2	6000 +
P5	Business Intelligence Officer.	3+	Retail 2	6000 +
P6	Marketing officer	5+	Retail 1	45,000 +
P7	Business Intelligence Officer	4+	Retail 2	45,000 +

P8	Supply Chain Manger	3+	Retail 1	6000 +
P9	IT Administrator	5+	Retail 1	45,000 +
P10	Market Research Analyst.	3+	Retail 2	6000 +

Notes*: P* – Participants; *Role* – The position Participant holds in the organisation*; No. Of Years in the Organisation* – The number of years the Participant has been with the current organisation; *Industry* – The industry the organisation is operating in; *Number of employees* – total number of employees working in the organisation.

The biographical data on the participants indicates the following: (i) the total number of the respondents in the study is 10; (ii) the roles are the following: Marketing Manager, Market Research Analyst, Supply Chain Manager, Sales Channel Manager, Sales Analyst, two Business Intelligence Officers, IT Manager, and IT administrator, (iii) number of years participants have been with the organisation ranges between 3 years to 12 years.

The background data on the organizations include the following: (i) the study targeted only one industry, which is the retail industry; (ii) the total number of employees ranges from 6000 to 45,000.

4.3. DATA ANALYSIS USING THEMATIC ANALYSIS PROCESS

In this research, the data analysis used the inductive thematic-analysis method outlined by Barun and Clarke (2006). This method aims to find patterns and themes in qualitative data (Barun and Clarke, 2006).

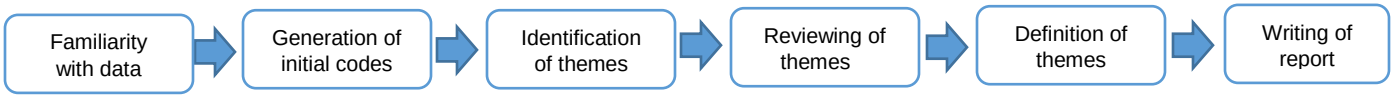


Figure 4.1. *Diagrammatic representation of the thematic-analysis process, adapted from Braun and Clarke, 2006.*

4.3.1. Familiarity with data and Generation of initial codes

The interviews were recorded and transcribed. After that, the researcher read through what was transcribed and listened to the recordings to understand the

information better. Utilizing a data-driven approach, the researcher employed Nvivo 14 software to derive 35 codes directly from the collected data, with the research questions serving as primary codes. The meticulous process involved extracting relevant information from the data, and these 35 codes were specifically crafted to address and answer the research questions. Each code is closely connected to the content of the data and plays a crucial role in providing insights and responses aligned with the predefined research questions. In constructing these codes, for example, when the participants were asked what the current level of big data analytics adoption in the South African retail industry, they used words such as, there is a small number of retailers using it; the adoption is slow; not many retailers are using it. Based on this information, the code the researcher created that represents this information is *limited adoption*. This systematic method ensured that the codes not only reflected the essence of the data but also effectively addressed the overarching research questions.

In response to research question one, what is the current level of big data analytics adoption in the South African retail industry? The seven codes were generated with forty-six case counts from the data linked to them. For research question two, what are the benefits and challenges faced by South African retail businesses in adopting big data analytics solutions? Twenty-two codes were generated to answer this research question, with eighty-seven case counts from the data linked to them. Finally, in response to the last research question three, how does the use of big data analytics in the South African retail industry impact customer insights and firm performance? Five codes were generated with forty-four case counts from the data linked to them.

4.3.2. Identification of Themes

After the codes were developed, the themes were identified. The researcher exported the codes from the Nvivo software to an Excel sheet and reviewed the individual codes to look for recurring ideas among the codes. This involved the grouping of similar codes together on a Microsoft Word document, and fifteen overarching themes were formulated. Six themes generated address research

question one, five themes respond to research question two, and the last four themes address research question three.

4.3.3. Review and Finalisation of Themes

The researcher ensured that each code aligned with its respective theme. Refining and adjusting were made where necessary in order to maintain coherence and relevance. The continuous comparison and contrast of codes and themes was made throughout the process to ensure accuracy and consistency. The hierarchy charts of codes were also captured to establish a hierarchical structure among the themes to identify the dominant themes using the pie chart. Therefore, for research question one, the dominating themes are the current level of adoption, expectation and future outlook, Success and facilitating factors, and understanding and definition. For research question two, the dominating themes are business advantages, challenges, and operational improvement. Lastly, for research question three, the dominating themes are customer insights enhancement, performance metrics, and privacy consideration. The following sections will cover these dominating themes in detail.

4.4. FINDINGS PERTAINING TO RESEACH QUESTION ONE

This section will provide the findings for research question one: What is the current level of big data analytics adoption in the South African retail industry?

4.4.1. Understanding and Definition

This theme refers to insights gained from participants regarding their understanding and conceptualization of big data analytics within the context of the South African retail industry. It involves extracting information related to how participants articulate and perceive the definition of big data analytics. In essence, before coding participant responses, the Understanding and Definition theme sets the stage by identifying and categorizing expressions, descriptions, or interpretations participants offered about what big data analytics means to them within the specific domain of South African retail.

The statements below are quotes from participants on their understanding of big data analytics.

Participant 3

“It is the feedback we get from the customers. You check what customers want and what they are not happy about, and you fix that.”

Participant 4

“I would say that it is a very widely used term. And it is all about looking at what data you have and analysing it.”

Participant 5

"From my understanding, big data analytics is data from multiple sources, which can be information from your point of sale system to social media. Advertising from competitors and all those places. And the analytics thereof could be seeing what the trends are and then adapting the services and products you provide to adapt to what will sell."

Participant 7

"I think it is the gathering of information that would be beneficial for the company, in terms of when the customers paying, that data is being collected. So it makes the company's job to be easy, even the customers' way of purchasing to be easy."

Participant 8

"Big data analytics in retail involves the collection and analysis of data to gain insight into customer behaviour. Like what customers like and what they do not like, which helps retail as to what they can order in and they should not order."

Participant 9

"According to my understanding, big data analytics is a process of examining data sets to draw conclusions about the information that retailers have about the customers. For example, big data analytics helps retailers to personalize promotions based on previous customer buying behaviour."

Participant 10

> *"This is the data companies collect about the customers and analyse it in order to understand the customer behaviour, or understanding the customers better so that they can give them the product they want."*

Participants uniformly perceive big data analytics in the South African retail industry as a multifaceted process involving the collection and analysis of data from different sources. They emphasize its role in understanding customer behaviour, adapting to market trends, and simplifying business operations. The consensus highlights the strategic use of big data analytics for personalized promotions, improved customer experiences, and data-driven decision-making in the retail sector.

4.4.2. Current level of adoption

This theme provides the prevailing state of big data analytics adoption within the South African retail industry. It provides a foundational understanding of the landscape, offering insights into the extent to which retail organizations have embraced or lagged in adopting big data analytics. Below are the statements from the participants regarding the current level of big data adoption in the South African retail industry.

Participant 1

> *“Yeah, we have a small number of companies that are using it, like us we are using it.”*

Participant 3

> *“Yeah. There are companies that use big data analytics in the industry to understand their customers better, especially those that have the online presence or online stores.”*

Participant 4

> *“I think few retailers are using it, and I definitely think they are using it to their advantage, especially if you look at probably pick n pay in terms of ordering. And*

checkers in terms of customer service, Dis-Chem as well, in terms of customer service, and they can package together what you buy frequently or what works for you frequently."

Participant 5

"I don't think a lot of companies do it. Some of them, like Checkers, most definitely they do it, so adoption is slow, but I think it's going to pick up."

Participant 6

"They are using it because, because companies like Checkers they've got their smart shopper card, even pick n pay."

Participant 7

"I think recently companies are using it. As I said, it makes purchasing much easier for the customers and also for the companies as well. So I think even though most companies don't know about it, but those who know about it, I think it is productive on their side."

Participant 9

"Currently I would say there are only few retailers using the big data analytics but there has been a growing interest in awareness of big data analytics among South African retailers and one other thing that is increasing the interest in big data analytics is the rise of e-commerce. So South African retailers have shown the interest in big data analytics to enhance their online platforms."

Participant 10

"I don't think we have a big number of companies collecting and analysing data in order to understand the customer needs. I think this is because some retailers still don't understand what this big data analytics and how it can help them perform better."

Based on the responses above, the participants shared insights revealing a mixed scenario regarding adopting big data analytics in South African retail. While all

participants acknowledged the presence of retail organizations using big data analytics, seventy-five percent emphasized that the number of adopters is not substantial, and twelve percent specifically noted a slow current adoption rate. Additionally, twenty-five percent highlighted that a lack of knowledge or understanding is a significant reason behind limited adoption. Despite these challenges, twelve percent expressed optimism, noting a growing interest and awareness of big data analytics among South African retailers.

Therefore, the overall picture suggests a limited and slow adoption of big data analytics in the South African retail industry, primarily attributed to a lack of understanding among retailers. However, the increasing awareness indicates a potential shift toward greater adoption in the future.

4.4.3. Success and facilitating factors

The Success and facilitating factors theme represents a category of codes that capture insights related to elements that contributed to retailers' successful adoption and implementation of big data analytics in South Africa. These factors are considered facilitators because they play a positive role in fostering the effective use of big data analytics within retail organizations. This theme had nine code counts and nine case counts attached to it; nine codes were derived from nine transcripts of nine participants. Below are the responses from the participants when they were asked about the factors that contributed to the Success of the adoption of big data analytics by South African retailers:

Participant 1

“It's the right skills, the right infrastructure and the support from the management.”

Participant 4

“Accurate data. That's a key. Your data needs to be accurate, and needs to be accessible.”

Participant 5

> *"Factors that contribute to the Success thereof. Definitely, programs and processes which the company has in place; if they don't have the right programs and processes in place, then they will definitely fail to do the analytics."*

Participant 7

> *“The organizations that implemented it have the resources and the skills to capitalize on that; that’s why it is successful.”*

Participant 8

> *"I think they had clear business goals; they strategized, and they were able to develop and implement business goals that they are going to work on as far as the big data analysis is concerned. The other thing can be that they have relevant data sources that they implemented to avoid duplication of data as well as getting unimportant results. So, if you're going to use big data analysis, you need to have something that you work on that will provide specific or accurate information that is going to benefit the company. The data or the sources that are going to be used need to be complete so that the data is correct, all the information required is complete and correct, and nothing is missing. So those are the factors that can lead to the Success of big data analysis."*

Participant 9

> *“They have the right talent and expertise, and I think they have reliable and high quality data. Also the leadership support within the organisations plays a crucial part in the success of big data analytics implementation because when they understand it, it becomes easier to allocate resources for the success big data analytics.”*

Participant 10

> *“……..And the factors that I think they contributed to the success of this technology can be good processes in place that allowed them to implement that; they have right expertise and enough money to invest in that technology.”*

Based on the responses above, fifty-seven percent emphasized skills as one of the factors that contributed to the successful implementation of big data analytics by South African retailers. Additionally, forty-three percent indicated that retailers in South Africa have successfully implemented big data analytics because they have the right infrastructures. The common words from the participants include; *infrastructure, programmes,* and processes. Moreover, forty-three percent also indicated that accurate data is the other factor that contributed to the successful implementation of big data analytics by South African retailers. The common words used by these participants include *accurate data, relevant data sources*, and *reliable and high-quality data*. Twenty-nine percent of participants, based on the responses provided, identified the support from the leadership of the organization as one of the factors that contributed to the Success of the implementation of big data analytics by retailers in South Africa.

Furthermore, fourteen percent of the respondents added that some of the factors that contributed to the successful implementation of big data analytics by the South African retailer were that they had clear business goals and they strategically implemented big data analytics. Lastly, they also highlighted having enough capital to invest in new technology as the other factor that can contribute to the successful adoption of big data analytics by retailers in South Africa.

The analysis indicates that the successful implementation of big data analytics in South African retail is attributed to a combination of factors. These include possessing the right skills, utilizing appropriate data sources, establishing robust infrastructure, receiving support from leadership, setting clear business goals, adopting strategic approaches, and having adequate capital. These factors collectively contributed to the effective integration of big data analytics by retailers in South Africa.

4.4.4. Expectations and future outlook

Expectations and future outlook themes represent the participants' perspectives on the anticipated trajectory of big data analytics adoption in the South African

retail industry. This theme provides insights into participants' expectations regarding the future prevalence and impact of big data analytics within the industry.

Below are the excerpts from the participants regarding the future trajectory of big data analytics in the South African retail industry.

Participants 1

“I see companies adopting it as they become more knowledgeable about it.”

Participant 2

"In the future, more retail companies will adopt the use of big data analytics, as they will want to engage with customers in order to improve their products and services. I definitely see it growing because these days' things are getting to be digitised and customers will prefer buying online rather than going to the physical stores."

Participant 3

“Even though we still have retailers that are not using it now, but in the future, definitely they will because of competition. “

Participant 4

“Definitely is going to grow, as the companies see how other companies are doing it. They will start using it.”

Participant 5

“Definitely companies are going to adopt it because, with the big data and the analytics thereof, a company can see how to adapt to what the people want.”

Participant 6

“I think they will use it because I think they can see that it's working for other companies.”

Participant 7

> *“I think they are going to implement it because, as I said, it's so beneficial to the customers and also to the companies. So it will make life easier for both parties now.”*

Participant 8

> *"Yes, they are going to adopt it because it makes things relevant and easier for the customer; like with Checkers now, you are able to order online. You are able to order anything you want, and that gets delivered to you. So I think in terms of competition, more retail companies will opt to use this big data analytics because it makes things easier for them and more efficient, and it generates customer satisfaction and also sales growth. There's a possibility or likeliness that more and more retailers will opt for this."*

Participant 9

> *"Yes, more companies will adopt big data analytics; as I indicated earlier, there has been a growing interest and awareness of big data analytics among South African retailers. As the awareness increases, more South African retailers will seek to understand and implement this technology. Also, the advancements in technology such as cloud computing and data processors, as I mentioned earlier, can make data analytics more accessible and cost-effective for South African retailers."*

Participant 10

> *"Definitely more companies are going to adopt it, more especially when they realize that some of the organizations are using it and they are competitive, they will adopt it, and the other thing is that the competition is getting intense in the industry, and I believe that organizations using this technology are able to compete better. So they are going to use it, though the adoption is slow now. We will get there. "*

In summary, all participants expressed a positive outlook on the growing adoption of big data analytics within the South African retail industry. The primary driver for future adoption, highlighted by sixty percent of participants, is intense competition.

Among this group, thirty percent emphasized using big data analytics as a direct response to competition, twenty percent mentioned adoption when others in the industry adopt it, and ten percent focused on adapting to consumer preferences.

Furthermore, twenty percent of participants foresee increased adoption once retailers gain more knowledge about big data analytics. Another ten percent highlighted the role of technological advancements, specifically in cloud computing and data processors, making data analytics more accessible and cost-effective. The remaining ten percent emphasized that the perceived benefits of implementing big data analytics will serve as a compelling factor for adoption.

In essence, the expectation is that more South African retail organizations will adopt big data analytics, driven by increased knowledge, competitive pressures, and technological advancements. These factors collectively contribute to a landscape where retailers leverage big data analytics to stay competitive and responsive in an evolving industry.

4.5. FINDINGS PERTAINING TO RESEACH QUESTION TWO

This section will provide the findings for research question two, which is, what are the benefits and challenges faced by South African retail businesses in adopting big data analytics solutions?

4.5.1. Business Advantages

The business advantage theme reveals how big data analytics serves as a valuable tool for South African retailers, contributing to their overall Success and market competitiveness. This theme provides a nuanced understanding of the tangible benefits and advantages that arise from leveraging data analytics in the retail sector, contributing to a comprehensive narrative of the impact of big data on business operations and growth.

Below are the excerpts from the participants regarding the benefits and advantages that South African retailers gain from using big data analytics.

Participant 1

> *"Organisations are able to offer competitive pricing to customers and improved services to help customers to save time and money, which can result in convenience."*

Participant 2

> *"I think the benefit is the growth of our business because we are getting more customers who are coming to our stores because of the improved services that we provide for them, and the other thing is our pricing is good, and we are able to save them money."*

Participant 3

> *“Understanding the customer needs and wants better and meeting those needs helps us improve. For example, maybe if I didn't have this product, and from the use of big data, I would be able to see which product should be in store to meet the customers' needs. That's where we will say, maybe now we must start selling specific products because they are in demand."*

Participant 7

> *“It improves the customer experience and the company performance.”*

Participant 8

> *"Retailers are able to analyse large amounts of customer data to understand customer preferences and behaviour. It also helps with marketing strategies, how you target customers, how you engage or how you bring the customers into the store, as well as the product recommendations.*
>
> *Big data analytics helps retailers to predict customer demands more accurately; they get to know which products are more appealing to customers than others. This helps to minimise the overstocking of products that customers do not need to avoid having products in the store that do not sell. It helps with good inflow and*

outflow of stock, and also helps with implementation of competitive pricing strategies."

Participant 9

"They understand customers better and meet the customer expectations, and this helps the retailers to be competitive and remain profitable."

Participant 10

"The organizations that use this technology are able to understand the customers better and offer them the products and the services they need, which leads to a company performing better in terms of having improved sales."

Based on the responses provided above, participants highlighted the significant benefits of adopting big data analytics in South African retail organizations. Fifty-seven percent noted an improved understanding of customers' needs, while forty-three percent indicated its positive impact on overall business growth. Additionally, the same percentage highlighted the ability of organizations with big data analytics to craft competitive pricing strategies and enhance customer services. Furthermore, fourteen percent emphasized advantages such as targeted customer engagement, efficient inventory management, minimized overstocking, and the utilization of data for demand forecasting, personalized product recommendations, and effective marketing strategies.

Overall, South African retail organizations leveraging big data analytics experience advantages, including strategic pricing, effective marketing, enhanced understanding of customer needs, improved services, optimized inventory management, precise demand forecasting, personalized recommendations, and overall business growth.

4.5.2 Challenges

The Challenges theme represents the various obstacles and difficulties that South African retail organisations encounter in implementing big data analytics solutions. It highlights the barriers and hurdles that organizations face when adopting and

integrating big data analytics into their operations, providing insights into the complexities and limitations that need to be addressed for successful implementation in the retail industry.

Below are the excerpts from the participants regarding the challenges that South African retailers face when implementing big data analytics.

Participant 1

"Most of the organisations do not have a good infrastructure for big data analytics. The lack of skills and support are the challenges."

Participant 2

“I think lack of infrastructure, lack of skills, and no support from the management. That can be the impact.”

Participant 3

“Lack of right skills can be one of the challenges that can be faced by the South African retailers when implementing the big data analytics.”

Participant 4

“Cost, cost to clean up your data, especially because if your data was never ready for future use, it’s just there. That could be a hindrance.”

Participant 5

"One big factor that can hinder it is definitely the cost thereof. Umm. Since most companies that provide these services are US-based or internationally based. With the exchange rate being so volatile, it's costly. Aside from the cost and maybe the expertise of the locals. Talent pool, if I can call it like that."

Participant 8

"Because big data analytics works with a technology, it revolves around technology. Most retailers do not have relevant technology or updated technology, which will not be efficient in using big data analytics."

Participant 9

> *"There are issues of infrastructure, and connectivity is a challenge in South Africa. There is limited access to advanced technology and high-speed internet in South Africa, and this can hinder the implementation of big data analytics, particularly in rural places. The other thing is the issue of the digital divide in South Africa, where certain segments of the population have limited access to technology, and this can impact the inclusivity and richness of big data initiatives. Also, the cost of implementing this technology is high, and some of the organizations cannot afford to implement this technology."*

Participant 10

> *"I think the common challenge the organizations face in our country when trying to implement this technology can be cost and expertise. This technology requires a heavy initial investment, so most of the companies do not have enough money to do that."*

According to the responses provided above, the challenges faced by South African retailers in implementing big data analytics are multifaceted. Seventy-five percent of participants highlighted the prominent challenge of inadequate infrastructure, emphasizing the lack of relevant technology and connectivity. Sixty-three percent pointed to the scarcity of relevant skills as a significant hurdle in adopting big data analytics. Additionally, thirty-eight percent underscored the financial aspect, citing the cost of implementation, including upskilling and data cleaning expenses. This challenge is amplified by the volatility in exchange rates, as most big data analytics service providers are internationally based. Furthermore, twenty-five percent identified a lack of support from top management with insufficient knowledge about big data analytics as a hindrance. Lastly, thirteen percent brought attention to the digital divide in South Africa, impacting the inclusivity and reach of big data initiatives.

In essence, the challenges encompass insufficient infrastructure, skills, management support, the cost of implementing big data analytics, and the digital divide, collectively shaping the challenges faced by South African retailers in the implementation of big data analytics.

4.5.3 Operational improvement

The Operational Improvements theme suggests the practical steps that South African retail organizations should take in order to overcome challenges and maximise the benefits of big data analytics. These operational improvements should be strategically implemented to address challenges and enhance the overall effectiveness of big data analytics within the retail industry.

Below are the excerpts from the participants regarding the measures that South African retailers should take in order to overcome the challenges they are facing when implementing big data and maximise the benefits.

Participant 1

"Have good infrastructure, and give training to the employees, and make sure they become more knowledgeable about big data analytics."

Participant 2

"If they can give us training or give its people training and improving infrastructure and getting support from the management, I think that can be the way to."

Participant 3

"Take people through the training to learn new skills to overcome this problem. Make sure they know everything they need to know."

Participant 4

"From the start of implementation of any programme they are going to collect data, you need to see what your end result is and what you want to achieve from it. So you can work on your back end and how you are going to filter that data that comes through your store."

Participant 5

> *"Well, to overcome the skill sets challenges, the companies can invest in their employees and upskill them with the different technologies and things that they can then use within the company to adopt the right infrastructure."*

Participant 7

> *“I think training should be provided to upskill the people.”*

Participant 9

> *"They should make sure they get consistent and quality data from various sources. They also have to provide training to the employees to use and interpret the analytics tools."*

Participant 10

> *"One of the ways to overcome this challenge is by upskilling people and making sure that there are right processes in place that can support the implementation of this technology."*

To effectively tackle the challenges of implementing big data analytics, participants strongly recommend that South African retail organizations focus on upskilling their workforce, with eighty-eight percent highlighting this as a key measure. Additionally, sixty-three percent believe that improving infrastructure is vital for retail organizations to fully benefit from big data analytics. Support from top management is emphasized by thirty-eight percent of participants, with thirteen percent stressing the importance of management becoming knowledgeable about big data analytics. Another twelve percent suggested maintaining consistent and high-quality data sources, while a strategic approach with clear business goals to overcome challenges in implementing big data analytics is highlighted by the same percentage.

In summary, participants suggested that South African retailers can overcome challenges and maximize the benefits of big data analytics by investing in employee upskilling, improving infrastructure, gaining knowledge about big data

analytics, obtaining support from top management, setting clear business goals, and maintaining consistent, quality data sources.

4.6. FINDINGS PERTAINING TO RESEACH QUESTION THREE

This section will provide the findings for research question three, which is, how does the use of big data analytics in the South African retail industry impact customer insights and company performance?

4.6.1. Customer insights enhancement

The Customer Insights Enhancement theme underscores the transformative impact of big data analytics on understanding customer behaviour and meeting their needs in the South African retail industry. This theme encompasses the analysis of customer behaviour and the understanding of their needs, emphasizing how big data analytics enhances retailers' understanding of their clientele, leading to improved services and products.

Below are the excerpts from the participants regarding the impact of customer insights on South African retailers when using big data analytics.

Participant 1

"The retailers use big data to understand customers better in order to improve their customer service."

Participant 2

"The implementation of big data analytics has helped the organisations to better understand the customers' needs, and this helps the organisations to better improve their products and services."

Participant 3

"The companies are able to understand what customers need and they are able to offer that, through customer buying patterns. They are able to improve the service they offer to the customers. I believe the companies take each and every comment very seriously."

Participant 4

> *“I think that they definitely are able to offer better deals. Especially when it comes to clearing stock, and package it and advertise it in the right way.”*

Participant 5

> *"The implementation thereof, the companies which have implemented it. They understand the customers more by knowing more about what they want and when they want it. So they are able to basically sort of predict their customers' actions and provide them with the product or service when they need it, for example, with Checkers with their extra savings card. They see which products are most popular, not even only for specific customers but throughout the entire company. And then they can negotiate with their suppliers for specials for things which will drive their customers to purchase."*

Participant 8

> *"If they've got relevant data from different sources and analyse it, it makes it easy for them to understand how the market trends work, how the customers behave, and that automatically leads to them operating efficiently and gaining more instead of losing."*

Participant 9

> *"It has helped them understand the consumer preferences and better understand the market trends. For example, they are able to provide personalized marketing campaigns and promotions, and this leads to customer loyalty. It also helps them better predict consumer demand, which helps the retailers with better inventory management as it minimizes inventory cost."*

Participant 10

> *"Retailers are able to understand what customers need and their buying behaviour, and that helps the retailers to put the right product in front of the customer. Having the right product for customers helps the retailers to not overstock products that*

are not going to sell, and through understanding customer insights, they are able to know which product sells and which one does not."

Based on the responses provided above, sixty-three percent indicated that customer insights have impacted how the retailers understand the customers' needs and are able to provide exactly what customers want. Fifty percent of the participants showed that through the customer insights gained from the use of big data analytics, South African retailers are able to improve their products and services in order to meet customers' demands. Moreover, thirteen percent highlighted that through customer insights, retailers are able to offer better deals, clear stock, and package and advertise in the right way. Furthermore, another thirteen percent cited that gaining customer insights from the use of big data analytics helps retailers to accurately predict customers' actions, and they are able to provide the products and services customers want. Additionally, the same percentage highlighted that customer insights help retailers understand market trends better and efficiently manage their inventory.

In general, the customer insights gained from the use of big data analytics help South African retailers understand their customers better, offer improved products and services, provide better deals, and package and advertise effectively. Retailers can predict customers' actions, comprehend market trends, and manage inventory efficiently.

4.6.2. Performance Metrics

The Performance Metrics theme focuses on assessing the overall company growth resulting from the impact of big data analytics in the South African retail industry. This theme explores how key metrics and indicators are utilized to measure and understand the broader performance and Success of retail organizations as influenced by the adoption of big data analytics.

Below are the excerpts from the participants regarding the overall company growth resulting from the adoption of big data analytics in the South African retail industry:

Participant 5

> *"With the adoption of big data, they can, as I said earlier, predict what the customers want when they want it and offer it to them. This will drive up sales. Customer retention, and overall growth for the company."*

Participant 6

> *“They are performing better because they are able to compete better with the competitors.”*

Participant 8

> *"Retailers get to understand customer needs better, and that increases customer satisfaction, which leads to customer loyalty. As a result, the sales improve."*

Participant 9

> *“The organisations become competitive because they are able to understand what customers need and their behaviours, and that leads to improved sales”*

Participant 10

> *"Because big data analytics helps organizations with a better understanding of customers, it leads to improved revenue and remaining competitive. In general, it improves the firm's performance."*

By analysing the responses provided above, it becomes evident that eighty percent of the participants strongly emphasize improved sales as a key indicator when assessing the impact of big data analytics in the South African retail industry. They highlight that retailers adopting big data analytics can understand customer needs, leading to customer satisfaction and ultimately improved sales. Moreover, customer loyalty and retention were mentioned by forty percent of the participants as performance indicators when evaluating the impact of big data analytics on South African retailers. This suggests that big data analytics provides retail organizations with the capability to accurately predict and meet customer preferences, fostering loyalty and retention. Another forty percent of the

participants identified competitiveness as a key indicator when evaluating the impact of big data analytics on the retail companies that have adopted it. They emphasize that retail organizations leveraging big data analytics are more competitive than those that did not implement it, contributing to the overall growth of the retail sector.

In essence, the key performance indicators when assessing the impact of big data analytics in the South African retail industry include improved sales, customer loyalty and customer retention, competitiveness of the company, and lastly, the overall company growth.

4.6.3. Privacy Considerations

The Privacy Considerations theme underscores the insights gathered from participants regarding the ethical and privacy aspects associated with the implementation of big data analytics in the South African retail industry. It involves examining participants' perspectives on how individual privacy is protected or compromised in the context of utilizing big data analytics.

Below are the excerpts from the participants regarding the ethical considerations associated with the implementation of big data analytics by South African retailers.

Participant 4

"Well, it depends on how you guys are analysing it. Analysing it as anonymous, A customer doing ABCD, or if customer Linda is going through ABC, maybe she doesn't want you to know what she's purchasing on an individual level. So those are the privacy things that we need to consider."

Participant 5

"One thing I can think of is the use of customer personal information, like with certain things an ID number or cell phone number is linked, and with ransomware and spyware and all those things with cybersecurity, that's a big risk. And with them having the confidential information like that, I think that's a big ethical challenge."

Participant 7

> *"It comes to where our staff needs to be trained that they shouldn't disclose any customers' information. Yeah. So, once the information is within us, we are not allowed to share it. We have to comply with the Poppia Act to protect customer information."*

Participant 8

> *"We did mention earlier that customers need to grand in their concerns before any information is being used for any process of data implementation is being processed. They need to give consent to say we agree to this. They need to be made aware of what is happening before they can even engage in anything. Also, the retailers must make sure that no information is being leaked, no confidential information is being leaked, and as far as customer needs or customer service is concerned."*

Participant 10

> *“Yes, there can be several ethical considerations and challenges, and they can include data privacy; the retailers should make sure that the data collected is used responsibly and with explicit consent from the customers. The data should not be used for purposes other than the ones for which it was collected, and it should not be shared with other organisations.”*

Analysing the participants' responses helps in understanding important ethical considerations for retailers to consider when implementing big data analytics. Sixty percent of participants stressed the importance of maintaining customer information confidentiality and anonymity. This is driven by the recognition that some customers prefer not to disclose personal purchase details. Another significant aspect, emphasized by twenty percent of participants, is the need for customers to express concerns about their information before its utilization, emphasizing transparency and customer agency. Concurrently, the same percentage of participants raised concerns about cybercrime, highlighting the potential vulnerabilities created by the extensive collection and storage of sensitive

customer data in the digital landscape. Additionally, there was consensus among twenty percent of participants that retail organizations should not share customer information among themselves. The data collected should only be used for the purpose it was collected for.

In essence, the ethical landscape surrounding big data analytics in the South African retail industry demands careful attention. Retailers must prioritize customer privacy, obtain explicit consent, and be vigilant against the rising threat of cybercrime. It's important to handle customer information responsibly, which means not sharing it with other companies in the industry. Taking these various steps makes sure that ethical concerns match the changing technology world. It helps build trust between retailers and customers when making decisions based on data.

4.7. SUMMARY OF FINDINGS

4.7.1. Summary of Findings in Relation to Research Question One

Big data analytics is an important tool for organisations' growth. Participants uniformly perceived big data analytics in the South African retail industry as a multifaceted process involving the collection and analysis of data from different sources. Therefore, when assessing the current level of big data analytics adoption in the South African retail industry, the researcher found that there is currently just a small number of retailers in South Africa that have adopted big data analytics. This indicates that there is limited and slow adoption of big data analytics in the South African retail industry, which is attributed to a lack of understanding among retailers. Though the adoption is slow, the researcher found that there is an increasing awareness of big data analytics, which indicates a potential shift toward greater adoption in the future.

Moreover, there are several factors that are identified that contributed to the successful implementation of big data analytics by those South African retailers that are currently leveraging big data analytics, and these factors include possessing the right skills, utilizing appropriate data sources, establishing robust infrastructure, receiving support from leadership, setting clear business goals,

adopting strategic approaches, and having adequate capital. Furthermore, it is expected that in the future, more South African retailers will adopt big data analytics due to increased knowledge, competitive pressures, and technological advancements.

4.7.2. Summary of Findings in Relation to Research Question Two

There are several benefits identified that South African retailers gain from leveraging big data analytics; these include strategic pricing, effective marketing, enhanced understanding of customer needs, improved services, optimized inventory management, precise demand forecasting, personalized recommendations, and overall business growth. Though there are advantages to implementing big data analytics, there are also challenges that South African retailers face when implementing big data analytics. These challenges include insufficient infrastructure, skills, management support, the cost of implementing big data analytics, and the digital divide.

However, for South African retailers to overcome these challenges and maximize the benefits of big data analytics, participants suggested that retailers should invest in employee upskilling, improve infrastructure, gain knowledge about big data analytics, top management should support big data analytics initiatives, set clear business goals, and maintain consistent, quality data sources.

4.7.3. Summary of Findings in Relation to Research Question Three

The customer insights gained from the use of big data analytics have helped South African retailers to understand their customers better, offer improved products and services, provide better deals and packages, and advertise effectively. They are able to predict customers' actions, comprehend market trends, and manage inventory efficiently. There are key performance indicators that are identified when assessing the impact of big data analytics in the South African retail industry; these include improved sales, customer loyalty, customer retention, the competitiveness of the company, and, lastly, the overall company growth.

Analysing data and gaining customer insights to understand customers' needs and behaviour and driving business growth is crucial; there are ethical considerations

and challenges that South African retailers should pay attention to; they include prioritizing customer privacy, obtaining explicit consent, and being vigilant against the rising threat of cybercrime. The importance of handling customer information responsibly, which means not sharing it with other companies in the industry. By taking these various steps, retailers can make sure that ethical concerns match the changing technology world, and this can help build trust between retailers and customers when making decisions based on data.

CHAPTER 5: DISCUSSIONS OF THE FINDINGS

5.1. INTRODUCTION

This research aimed to assess the impact of big data analytics in the South African retail industry. The impact of big data analytics was evaluated by interviewing employees in different roles from two retail organizations in South Africa in order to gain their interpretation of the impact of big data analytics. Therefore, this chapter will discuss the findings presented in chapter four. The first section will provide discussions concerning the first research question, the second section will provide discussions regarding research question two, the last question will provide discussions regarding research question three, the implications of the study, and lastly, the summary. All the sections will have the following sub-sections: summary of findings, interpretation of findings, and findings and existing literature connection.

5.2. DISCUSSION ON RESEARCH QUESTION ONE

This section will discuss the findings relating to research question one: What is the current level of adoption of big data analytics in the South African retail industry?

5.2.1 Summary of Findings

The dominant themes in the findings relating to research question one included limited adoption; the majority of participants indicated a limited current adoption of big data analytics in the South African retail industry. The second theme was success factors; in this theme, participants highlighted various success factors that contributed to the successful implementation of big data analytics by South African retail organizations that have embraced big data analytics. These factors include possessing the right skills, leveraging relevant data sources, establishing robust infrastructure, receiving support from leadership, defining clear business goals, and having adequate capital. Lastly, future adoption expectation: In this theme, participants foresee a growing interest and awareness of big data analytics in the South African retail industry, anticipating increased adoption in the future, particularly driven by factors like competition and advancements in technology.

In addressing the research question, the research findings indicate a limited current level of adoption of big data analytics within the South African retail industry. Despite this limited adoption, notable success factors have been identified that have contributed to the successful implementation of big data analytics by retail organizations in South Africa that are leveraging big data analytics. Participants expressed optimism regarding the future of big data analytics adoption in the South African retail industry, foreseeing a shift towards greater integration driven by factors such as competition and technological advancements. This suggests a dynamic landscape with the potential for significant growth and development in the utilization of big data analytics within the South African retail sector.

5.2.2. Interpretation of Findings

Based on the findings of the study, the researcher assumes that there might be variations in how people conceptualise or define big data analytics. This is because when the participants were asked about the definition of big data analytics, some seemed not able to define it, while some defined it as feedback from customers. However, the majority of participants seemed knowledgeable about the concept of big data analytics, and they did not show any negative associations. Furthermore, the findings revealed that a small number of South African retail organizations have adopted big data analytics, and based on these findings, the researcher speculates that, though these retailers have adopted big data analytics, they might not be using it to their full potential. Brkanic (2020), in his study, also discovered that the full potential of big data analytics is not being realized by South African retailers, and the benefits it provides are being utilized in a limited manner.

The findings point towards a set of key factors that underpin the successful implementation of big data analytics in South African retail. The crucial elements include possessing the necessary skills, utilizing suitable data sources, establishing a robust infrastructure, securing support from leadership, defining clear business goals, and adopting strategic approaches. According to Adrian et al. (2017), successful implementation of big data analytics hinges on an

organization's capacity to strategically and effectively manage the process. This involves possessing the necessary IT infrastructure and analytics tools to convert vast amounts of big data into valuable information. Additionally, the presence of individuals with both technical and managerial capabilities plays a crucial role in the overall success of big data analytics implementation. Therefore, it's evident that the synergy of these factors played an important role in facilitating the effective integration of big data analytics by retailers in South Africa.

Furthermore, the analysis anticipates a growing trend where more South African retail organisations will embrace big data analytics. This shift is expected to be driven by an increasing understanding of the technology, competitive pressures within the industry, and ongoing technological advancements. Collectively, these factors create an environment in which retailers are motivated to leverage big data analytics as a strategic tool, enabling them to stay competitive and responsive in a dynamically evolving industry. This expectation aligns with the broader trajectory of technology adoption in the retail sector, reflecting a proactive stance among South African retailers in embracing data-driven approaches for sustained competitiveness.

5.2.3. Findings, Existing Literature and Conceptual Framework

The findings of the study revealed that more people have an understanding of the concept of big data analytics, and they also showed that the adoption of big data analytics in the South African retail industry is limited. A few retail organizations have implemented big data analytics. This shows a positive shift from what the researcher found in the literature, where Matthew et al. (2015) conducted a study on the usage of big data analytics by South African retailers and found that most people in the retail industry lack an understanding of big data analytics, and found that most of the South African retailers are not utilizing big data analytics. However, they found that a small number of retail stores were utilising big data analytics platforms to handle large amounts of data quickly and cost-effectively.

The TOE framework suggests that the combination of technological, organizational, and environmental factors leads to the successful implementation

of big data analytics (Shahadat et al., 2023; Lutfi et al., 2023). This aligns with the findings in relation to factors that contributed to the successful implementation of big data analytics by South African retailers. The findings revealed technological factors such as possessing the right skills, utilising appropriate data sources, and establishing robust infrastructure. In terms of organizational factors, the findings showed the following factors: support from the leadership, setting clear business goals, adopting strategic approaches, and having adequate capital. However, no factors that were explicitly mentioned in the findings that relate to the environmental factors that contributed to the successful implementation of big data analytics by the South African retailer.

The findings showed that in the future, more retail organizations will adopt big data analytics due to competition intensity and technological advancements. Competition intensity is one of the factors that fall under environmental factors, meaning that this is in line with the TOE framework as it identified environmental factors such as competition intensity and external support as the key influencers of big data adoption by retailers (Lutfi et al., 2023).

5.3. DISCUSSION ON RESEARCH QUESTION TWO

This section will discuss the findings relating to research question two: What are the main benefits and challenges faced by South African retail businesses in implementing big data analytics solutions?

5.3.1 Summary of Findings

The dominant themes for research question two are business advantages, challenges, and operational improvements. Business advantages represent the benefits South African retailers gain from the implementation of big data analytics, and challenges represent several challenges that participants identified that South African retailers face when implementing big data analytics. Lastly, the operational improvement theme encompasses measures South African retailers can take to overcome challenges and maximize the benefits of big data analytics.

In connection to research question two, the business advantages theme directly addresses the benefits experienced by South African retail businesses through the implementation of big data analytics, providing insights into how these advantages contribute to their overall success. The challenges theme delves into the obstacles faced by South African retail businesses, offering a comprehensive view of the challenges that may impact the effectiveness of the adoption process. The operational improvements theme provides the strategic actions that retailers can undertake to address challenges and optimize the benefits derived from big data analytics, linking directly to the practical aspect of implementation.

5.3.2. Interpretation of Findings

Based on the findings, the researcher found that South African retail organizations that are leveraging big data analytics are experiencing a number of advantages such as strategic pricing, effective marketing, enhanced understanding of customer needs, improved services, optimized inventory management, precise demand forecasting, personalized recommendations, and overall business growth. However, though there are benefits that the retailers gain from using big data analytics, the researcher assumes that South African retailers do not use real-time data analytics; they only analyse data when it reaches their systems. The researcher is making this assumption because when looking at Brkanic's (2020) study, where he was looking into the influence of big data on retail activities and retail performance, his findings revealed that South African retailers generally do not employ real-time data monitoring, resulting in a delay in data processing after it enters the system. Brkanic (2020) further indicated that retailers exclusively rely on structured data, with no integration of unstructured data into their monitoring and processing practices.

This study found that South African retailers commonly face several challenges when implementing big data analytics. These challenges include not having the proper infrastructure in place, meaning that the basic technology needed for this kind of data analysis is lacking. The shortage of skills was also identified, which indicates that it is important to provide training programs to help people gain the

necessary know-how. Getting support from the top management is crucial, showing that leaders in the organization need to actively encourage and back the use of big data. In their study, Raut et al. (2021) highlighted various barriers to implementing big data analytics, including insufficient resources, privacy concerns, limited financial support, unclear return on investment, skills gaps, and lack of top management support.

The high costs associated with implementing big data analytics emerged as a significant challenge. Retailers need to carefully consider the financial aspects and potential benefits before deciding to invest in these technologies. Additionally, the digital divide points to differences in access to and use of technology, indicating that efforts to bridge this gap are necessary for successful implementation.

5.3.3. Findings, Existing Literature and Conceptual Framework

The findings of the study showed that South African retail organizations leveraging big data analytics experience advantages, such as strategic pricing, effective marketing, improved understanding of customer needs, improved services, optimized inventory management, precise demand forecasting, personalized recommendations, and overall business growth. This is in alignment with the literature because what the researcher found in the literature is that big data analytics is used by organizations to improve their understanding of customer needs, lower expenses, make their processes more efficient, and proactively identify risks and detect fraudulent activities (Al-Sai & Abdullah, 2019). Furthermore, these findings align with technological factors of the TOE framework, as big data analytics represents the technological innovation being adopted by these organizations. The advantages such as strategic pricing, effective marketing, and precise demand forecasting, are enabled by the features and capabilities of big data analytics tools and techniques.

Moreover, Ying et al. (2020) point out that the use of big data analytics in the retail sector provides decision-makers with valuable insights for price optimization by analysing market demands and product fluctuations, enabling them to make informed decisions based on the comprehensive market analysis. In addition to

that, Silva et al. (2020) also indicated that this leads to an improved overall shopping experience, which means that big data analytics helps retailers offer better services to their customers.

The literature suggests that challenges faced by organizations in adopting big data include the initial costs associated with acquiring infrastructure, the cost of using and maintaining that infrastructure, as well as absence of financial planning by organizations for the implementation of new technologies (Reyes-Veras et al., 2021). This is in alignment with the findings of this study, where the participants indicated that one of the challenges South African retailers face when implementing big data analytics is the cost. Al-Sai & Abdullah (2019) also indicated the lack of skilled professionals and experts in the big data field, which poses a significant challenge in harnessing the value of big data, and this is also in alignment with the findings of the study, where the participants indicated that one of the challenges in implementing big data analytics in the South African retail industry is lack of skills.

Furthermore, the literature identified other challenges when implementing big data analytics, such as obtaining customers' permission to access their personal information (Ying et al., 2020). Security concerns as there are no regulations to guarantee that the customers' private or sensitive information is protected (Reyes-Veras et al., 2021). However, the findings of this study did not explicitly reveal obtaining customers' permission to access their personal information and security concerns as the challenges South African retailers face when implementing big data analytics.

5.4. DISCUSSION ON RESEARCH QUESTION THREE

This section will discuss the findings relating to research question three: How does the use of big data analytics in the South African retail industry impact customer insights and firm performance?

5.4.1 Summary of Findings

The dominant themes for research question three include customer insights enhancement, performance metrics, and privacy considerations. Customer insights enhancement represents how big data analytics significantly enhances customer insights, allowing retailers to understand customers' needs better. Performance metrics encompass performance key metrics that are influenced by the implementation of big data analytics, while privacy considerations emerged as the theme, with participants highlighting the importance of keeping customer information confidential.

In addressing the research question, the customer insights enhancement theme directly addresses the positive impact of big data analytics on customer insights, showcasing how this technology contributes to a deeper understanding of customer behaviour and preferences. The performance metrics theme provides insights into the various performance indicators influenced by big data analytics, revealing how the technology positively affects firm performance. Finally, the privacy considerations theme underscores the ethical dimensions associated with big data analytics, demonstrating the need for responsible management of customer information to foster trust and align with evolving technological landscapes.

5.4.2. Interpretation of Findings

These findings show the substantial positive impact of big data analytics on South African retailers. Customer insights derived from this big data analytics empower retailers to gain a deeper understanding of their customer base. This understanding translates into tangible benefits, including the ability to offer improved products and services, provide enticing deals, and execute effective packaging and advertising strategies.

The advantages extend further as retailers can anticipate customer actions, understand market trends, and enhance inventory management. The identified key performance indicators highlight the broad spectrum of positive outcomes attributed to the implementation of big data analytics in the South African retail

industry. These indicators encompass improved sales, increased customer loyalty and retention, enhanced competitiveness, and overall company growth.

However, among these benefits, the ethical dimension of employing big data analytics in the South African retail sector emerges as a crucial consideration. It is vital for retailers to navigate the ethical landscape by prioritizing customer privacy, obtaining explicit consent for data usage, and actively safeguarding against the growing threat of cybercrime. Responsible handling of customer information involves refraining from sharing it with other companies in the industry, fostering trust between retailers and customers in the evolving technological landscape.

5.4.3. Findings, Existing Literature and Conceptual Framework

The findings suggest that customer insights help South African retailers to better understand their customers, and this aligns with the literature, where Liu et al. (2023) indicated that by leveraging the power of big data, companies gain a deep understanding of consumer demands and their preferences. Liu et al. (2023) again point out that big data analytics enables retailers to understand customer purchasing behaviour and market trends, and this aligns with the findings as the participants indicated that the use of customer insights helps retailers understand market trends and customers' actions.

Furthermore, the use of big data analytics plays a pivotal role in improving market competitiveness for companies (Liu et al., 2023). This is in alignment with the findings as it has been found that organizations that have adopted big data analytics are able to improve their competitiveness in the market. Moreover, the findings revealed that the use of customer insights from big data analytics positively influences the overall company performance, and the literature supports these findings as it indicates that the outcomes derived from big data analytics improve the company performance because they optimise external factors influencing consumer behaviour, guiding them towards making optimal decisions and maximising their utility (Zhang & Tan, 2020).

Moreover, the findings also align with organizational factors under the TOE framework, as the adoption of big data analytics reflects the influence of

organizational resources and top management support. Additionally, the technological context is represented by the advanced capabilities of big data analytics that provide relative advantage and compatibility with existing systems. Lastly, the environmental context is evident as big data analytics help South African retailers to navigate market dynamics.

Additionally, the findings of the study revealed that the retailers using big data analytics experience improved sales, customer loyalty, and customer retention. Therefore, this is in alignment with the literature because the literature states that leveraging customer big data notably boosts sales growth, leading to monetary performance improvements, and strengthens customer relationship performance, resulting in non-monetary performance enhancements (Hallikainen et al., 2020). All these indicate the overall performance of the company that has successfully implemented big data analytics.

5.5. IMPLICATIONS OF THE STUDY

The study's findings shed light on key insights crucial for the successful implementation of big data analytics in the South African retail sector. Emphasizing the important role of possessing the right skills, leveraging appropriate data sources, establishing robust infrastructure, and securing leadership support, the study highlights these factors as foundational pillars for success. The lessons drawn from the research are closely connected, showcasing a dynamic connection among skill development, effective data utilization, infrastructure strength, leadership support, clear business goals, strategic approaches, and capital adequacy. This interconnectedness forms a comprehensive framework, underlining how these elements work together harmoniously in the realm of big data analytics implementation in the South African retail industry.

In examining the implications, the study aligns with broader trends observed in similar studies such as Adrian et al. (2017), where they looked at the factors that influence the successful implementation of big data analytics, and Surbakti et al. (2020), where they looked into factors influencing the effective use of big data analytics, and many other studies across various industries. However, it

demonstrates a strong awareness of the unique context of the South African retail sector. Specific considerations, such as the importance of skills development and the details of infrastructure, are seamlessly integrated into the lessons learned. This contextual approach acknowledges and embraces the distinctive characteristics of the local retail landscape, making the study a valuable resource for retailers navigating the evolving landscape of big data analytics integration. As South African retail progresses into an era defined by technological advancements, these implications stand as a guiding compass, urging strategic investments and offering a roadmap for sustained competitiveness, responsiveness to market dynamics, and the fostering of growth through data-driven decision-making.

5.6. SUMMARY OF THE DISCUSSION

In summary, concerning the first research question, the current level of big data analytics in the South African retail industry is limited, but it is expected to grow due to the intensity of competition and technological advancements. On the second research question, several advantages were identified that South African retailers gain from leveraging big data analytics; these advantages include understanding customers better, accurately predicting customer demands, understanding market trends, overall business growth, and effective inventory management, among others. Furthermore, on the last research question, the impact of customer insights on the retailers was determined; retailers use consumer insights to realize the mentioned benefits of adopting big data analytics. There are ethical considerations that were also identified in the last research question; these include keeping customer information confidential, obtaining explicit consent from the customers in regard to their data, and not sharing the customer data with other retailers.

CHAPTER 6: CONCLUSION, RECOMMENDATIONS AND LIMITATIONS

6.1. INTRODUCTION

This chapter offers conclusions, recommendations, and limitations based on the study. The first section will provide the Conclusion related to the research questions, and the second section will provide the recommendations. The subsequent section will discuss the study's limitations, and the final part will propose ideas for future research.

6.2. RESEARCH CONCLUSION

6.2.1. Conclusion pertaining to research question one

Research Question: What is the current level of adoption of big data analytics in the South African retail industry?

The results of the study indicate that the current level of big data analytics in the South African retail industry is limited. There are success factors that have been identified that have contributed to the successful implementation of big data analytics by the few South African retail organisations that have implemented big data analytics. These factors include possessing the right skills, utilizing appropriate data sources, establishing robust infrastructure, receiving support from leadership, setting clear business goals, adopting strategic approaches, and having adequate capital.

However, the expectation is that more South African retail organizations will adopt big data analytics, driven by increased knowledge, competitive pressures, and technological advancements.

6.2.2. Conclusion pertaining to research question two

Research Question: What are the main benefits and challenges faced by South African retail businesses in implementing big data and analytics solutions?

There are several benefits that South African retailers using big data analytics gain from leveraging this technology. The benefits include strategic pricing, effective marketing, enhanced understanding of customer needs, improved services, optimized inventory management, precise demand forecasting, personalized

recommendations, and overall business growth. However, there are also challenges that South African retailers commonly face when implementing big data analytics, including insufficient infrastructure, skills, management support, the cost of implementing big data analytics, and the digital divide.

In order to overcome these challenges and maximize the benefits of big data analytics, the participants suggested investing in employee upskilling, improving infrastructure, gaining knowledge about big data analytics, obtaining support from top management, setting clear business goals, and maintaining consistent quality data sources.

6.2.3. Conclusion pertaining to research question three

Research Question: How does the use of big data analytics in the South African retail industry impact customer insights and firm performance?

The results of the study revealed that the customer insights gained from the use of big data analytics help South African retailers understand their customers better, offer improved products and services, provide better deals and packages, and advertise effectively. Retailers can predict customers' actions, comprehend market trends, and manage inventory efficiently. Moreover, there are performance metrics that were identified as the key indicators of the company's overall performance when using big data analytics; these key indicators include improved sales, customer loyalty, customer retention, and competitiveness of the company.

However, there are ethical concerns that are highlighted surrounding big data analytics in the South African retail industry, which demands careful attention. These ethical concerns include the prioritization of customer privacy, obtaining explicit consent, being vigilant against the rising threat of cybercrime, and not sharing customers' data with other retailers.

6.2.4 General Research Conclusion

As stated in Chapter One, the purpose of this study was to investigate the impact of big data analytics in the South African retail industry. To this end, the impact of big data analytics was assessed by investigating the current level of big data

analytics adoption, the benefits, and challenges facing South African retailers when implementing big data analytics, and the impact of customer insights and firm performance. The findings revealed that the adoption of big data analytics within the South African retail industry is limited. However, it is expected that the level of adoption of big data analytics will increase in the future due to competition pressures, technological advancements, and the increased knowledge of big data analytics. Moreover, the findings revealed advantages such as strategic pricing, effective marketing, enhanced understanding of customer needs, improved services, optimized inventory management, precise demand forecasting, personalized recommendations, and overall business growth, for those retailers in South Africa that have adopted big data analytics. Challenges such as insufficient infrastructure, skills, management support, cost of implementing big data analytics, and the digital divide were identified as the main hindrances to the successful adoption of big data analytics by South African retailers. Lastly, the findings revealed that customer insights gained from the use of big data analytics help retailers understand their customers better, offer improved products and services, provide better deals, package, and advertise effectively. The key indicators, such as improved sales, customer loyalty and retention, and competitiveness of the company, were identified as performance metrics to show how big data analytics impact the firm's performance.

6.3. RECOMMENDATIONS

Retail Executives and Decision-Makers

The identified challenge of insufficient support from top management in embracing big data analytics highlights the need for proactive measures within South African retail organizations. The limited knowledge about big data analytics among top management poses a hurdle in resource allocation. Therefore, decision-makers within retail organisations should respond to the study's findings by acquiring a comprehensive understanding of big data analytics. This entails gaining insights into success factors, addressing challenges, and strategically planning the adoption of big data analytics. By enhancing their knowledge, decision-makers can play a pivotal role in steering their

organizations toward successful implementation, fostering innovation, and ensuring the optimal utilization of resources.

Government Bodies and Industry Regulators

Considering the study's revelation of potential ramifications on the wider economy, it is imperative for government bodies and industry regulators to take a keen interest in the findings. This insight can serve as a foundation for the formulation of policies that promote the responsible adoption of big data analytics within the South African retail sector. By understanding the challenges faced by retailers, regulatory authorities can develop frameworks that provide guidance, foster ethical practices, and ensure a harmonious integration of big data analytics. This proactive approach not only supports the retail industry but also contributes to overall economic growth by fostering innovation and sustainable business practices.

Educational Institutions

The study revealed a lack of skilled professionals in the field of big data analytics as one of the major challenges facing retailers in South Africa. Therefore, institutions providing education and training in business, data analytics, and related fields should take note of the study. They can adapt their curriculum to ensure that future professionals are equipped with the necessary skills to navigate the evolving landscape of big data analytics in the retail sector. This can help in addressing the skill shortage in the field of big data analytics, and it can make it easier for more retailers to adopt this technology.

Technology Providers

Given the study's findings that the predominant providers of top-tier big data analytics solutions are international companies, it has revealed a significant cost challenge for South African retail organizations. This challenge is attributed to the inherent exchange rate volatility, making the adoption of these solutions more financially heavy for local retailers.

In light of this, it is strongly recommended that local companies specializing in big data analytics solutions and technology services pay close attention to the study findings. By

understanding the challenges faced by potential clients, the South African retailers, these local service provider companies can strategically tailor their offerings. This customization is crucial for developing cost-effective solutions that specifically cater to the unique needs and financial constraints within the South African retail industry. Local providers have an opportunity to bridge the gap, offering competitive, affordable, and locally tailored big data analytics solutions to support the industry's growth and technological advancement.

6.4. LIMITATIONS

The study's limitations mainly stem from the research approach and the challenge of identifying appropriate participants, both of which will be explored in the following sections.

6.4.1. Limitations due to the Methodology

Inability to generalise the study findings

The study employed a qualitative empirical research design, gathering data through interviews with ten participants from two retail organizations in South Africa. While the research is thorough by qualitative standards, the limited data and sample size hinder the generalizability of the study's findings.

Qualitative research is not statistically representative

Because qualitative research does not focus on statistics, and this study follows that approach, it's not statistically representative. The absence of mathematical analysis makes this research unique and likely difficult to recreate.

Time constraints

The research design of this study imposed considerable time constraints on data collection, transcription, and data analysis. As a result of this limitation, the study could not achieve a substantial sample size.

6.4.2 Limitations due to the availability of participants

Access

This research required four large retail organisations in South Africa, but the researcher only got an access to two organisations.

6.5. SUGGESTIONS FOR FUTURE RESEARCHERS

The suggestions for the future researchers stem from the study's findings, the researcher's recommendations, and the limitations of the study.

Integration of Qualitative and Quantitative Approaches

As discussed in the limitations that the qualitative approach does not focus on the statistics, a combination of qualitative insights with quantitative data can provide a holistic understanding of the impact of big data analytics in the South African retail industry. Employing mixed-methods research can offer a richer and more comprehensive perspective.

Technological Infrastructure Studies

In the conclusion, it has been indicated that technological infrastructure is one of the major challenges facing South African retailers when implementing big data analytics. Future researchers can delve into the technological infrastructure readiness and requirements for successful big data analytics implementation. This could include an assessment of data storage capabilities, cloud computing usage, and the scalability of existing systems.

Employee Training and Adoption

The lack of skilled professionals in the field of big data analytics has been identified as one of the challenges facing retailers in South Africa. Therefore, future researchers can investigate the role of employee training programs and initiatives in facilitating the adoption of big data analytics within retail organizations. Understand the impact of workforce skill development on successfully implementing analytics solutions.

Policy Implications

Future researchers can also explore the policy landscape concerning data privacy and security within the South African retail industry, examining how regulatory frameworks affect the implementation of big data analytics and suggesting potential improvements.

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APPENDIX A: INTERVIEW GUIDE

INTERVIEW GUIDE

1. How would you describe big data analytics?
2. How would you describe the current level of big data analytics adoption in the South African retail industry?
3. Can you provide example of retail organisations in South Africa that have successfully implemented big data analytics? What factors do you think contributed to their success?
4. In your opinion, what are the key factors the drive or hinder the adoption of big data analytics in the retail industry?
5. How do you see the future trajectory of big data analytics adoption in the South African retail industry?
6. What specific benefits or advantages have you observed or experienced through the implementation of big data analytics in the retail industry?
7. Could you describe any challenges or obstacles that organisations commonly face when implementing big data analytics in the South African retail industry?
8. How do you think the organisations can overcome these challenges and maximise the benefits of big data analytics in the retail industry?
9. Are there any unique benefits or challenges associated with implementing big data analytics in the South African context?
10. How has the implementation of big data analytics influenced the understanding of customer insights and behaviour in the South African retail industry?
11. Can you share any specific examples of how big data analytics has impacted the way retailers understand and respond to customer behaviour?
12. In your opinion, how has the use of big data analytics affected customer engagement and satisfaction in South African retail industry?

13. Are there any ethical considerations or challenges that arise when using big data analytics to analyse customer behaviour in the retail industry?

APPENDIX B: CODE BOOK

Name	Description	Files	References
(RQ1)The current level of adoption of big data analytics in the South African retail industry	1. What is the current level of adoption of big data and analytics in the South African retail industry?	4	14
Big Data Analytics Definition	The participants understanding of the term big data analytics.	1	1
Future Adoption Expectation	The participants in this code indicate that there will be high adoption of big data analytics in the future as more retailers become more knowledgeable about it.	4	4
Knowledge Gap	This code indicates that there is lack of knowledge regarding big data analytics in the South African retail industry	3	3
Limited Adoption	This code means that there are few companies that has adopted the use of big data analytics in the South African retail Industry	3	3
Success Factors	This code is about the factors that contributed to the success of the implementation of big data analytics by retail stores in South Africa.	3	3
(RQ2)Challenges and benefits faced by south African retail businesses in implementing big data analytics solutions	2. What are the main benefits and challenges faced by South African retail businesses in implementing big data and analytics solutions?	4	40
Business Growth	Highlighting the observed growth in the business as an advantage due to increased customer visits resulting from improved services and competitive pricing.	1	1
Competitive Pricing	The participants here indicates that big data analytics helps the retailers to offer cheap prices to the customers.	3	4

Convenience and Customer Satisfaction	The participants in this code indicate that the big data analytics helps retailers to provide convenience to customers and increase their satisfaction.	2	2
Customer - Driven Inventory Management	Recognizing the approach of managing inventory based on customer preferences and demand patterns to streamline product offering through the use of big data analytics.	2	3
Customer Satisfaction	Emphasizing the overall positive impact on customer satisfaction resulting from improved services, cost savings, and efficient delivery.	2	3
Data Cleaning Costs	Identifying the hindrance posed by the expenses associated with cleaning and preparing data for future use.	1	1
Data-Driven Product Decisions	Highlighting the use of big data insights to make informed decisions about product offerings based on customer demand and preferences.	1	1
Effective Advertising Impact	Emphasizing the role of advertising in presenting deals effectively to customers, enhancing their appeal and sales potential.	1	2
Efficient Delivery	The participant highlighted the advantage of quick delivery within 48 hours as a key factor influencing customer satisfaction and loyalty due to the adoption of big data analytics.	1	1
Employee Training and Skill Development	Suggested action of providing training and knowledge enhancement programs to employees to improve their understanding and expertise in big data analytics.	3	3
Enhanced Product Selection	Noting the ability to improve product selection in stores by leveraging big data insights to identify and fulfil customer demands effectively.	1	1
Inadequate Infrastructure	The participants indicated that the retailers lack the good infrastructure to be able to adopt big data analytics.	2	2
Infrastructure Improvement	Suggested action of enhancing or establishing better infrastructure to support big data analytics within retail organisations.	2	3

Lack of Management Support	Identifying a shortfall in support from higher management or leadership within retail organizations for the implementation of big data analytics.	2	3
Management Support Solution	Suggested action of obtaining backing and support from higher management or leadership to overcome challenges related to technology adoption.	1	1
Service Enhancement	The participants indicated that the big data analytics helps the retailers to offer improved services to the customers.	3	3
Skill Deficiency	Observing a lack of necessary skills or expertise among personnel within the retail organisations, hindering big data analytics utilization.	3	5
Strategic Data Collection	Highlighting the need to plan and initiate data collection from the outset of program implementation.	1	1
(RQ3) The impact of big data analytics on consumer insights and firm performance in South African retail industry	3. How does the use of big data and analytics in the South African retail industry impact customer insights and customer behaviour?	4	15
Behaviour Analysis Through Feedback	Recognizing the utilization of customer feedback to analyse and understand customer behaviour for better services and product offering.	1	1
Customer Needs Understanding	Emphasizing the use of social media data to understand and address customer needs, facilitating products and service enhancements.	3	9
Individual Privacy Protection	Emphasizing the necessity to respect individual privacy.	1	1
Product and Service Improvement	Highlighting the outcome of utilizing social media data for improving product and services based on the understanding of customer needs.	2	4

APPENDIX C: CONSENT FORM

Title: The Impact of Big Data Analytics in the South African Retail Industry

The Researcher: Mohlahlami David Sethathi

I, ……., agree to participate in this research project.

I agree to the following:

(Please circle the relevant options below)

The research study was explained to me. I understand what this study is about. YES NO

I understand that I can volunteer to take part in the study YES NO

I agree that the interview activity may be audio recorded YES NO

I agree that direct quotations from my interview activity may be used by the researcher in their research report. 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) YES NO

I agree that other researchers may use the information I provide in my interview 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)

…… (signature)

…… (name of researcher/person seeking consent)

…… (date)

APPENDIX D: ETHICS CLEARANCE

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg

Wits Business School

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

Ethics Clearance Certificate

Ethics protocol number: WBS/DB1757629/543
This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).

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

Project title	The impact of big data analytics in the South African retail industry
Investigator / Researcher	Mr Mohlahlami Sethathi
Nature of Project	MM (Digital Business)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed confidentialty.
Issue Date of Certificate	2023/10/03
Expiry date	Date of submission of the project / research report
Chairperson	Dr Pius Oba ☎ +27 11 717 3976 +27 82 733 6587 pius.oba@wits.ac.za

Declaration by Researcher

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

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

Signature

03/10/2023
Date:

APPENDIX E: PERMISSION LETTER

Dear Sir/Madam,

My name is Mohlahlami David Sethathi. I am studying for a Master of Management in Digital Business in the Wits Business School at the University of the Witwatersrand. I am seeking permission to do research at your organization.
I am conducting research on the impact of Big Data analytics in South African retail industry. The aim of the research is to assess the current status of big data and analytics adoption in the South African retail industry, and to identify the benefits and challenges associated with the implementation of big data and analytics.

I kindly request a permission to conduct interviews with four employees from your esteemed organisation. The proposed interviewees include two individual from the IT department and another two from the Marketing department. The interviews will be conducted online during the working hours, with an estimated duration of approximately 20 minutes each. It is important to note that the responses will be audio recorded for accurate analysis.

Participants will be asked to give their written or verbal consent before the research begins. Their responses will be treated confidentially, and identities (their names and the name of the organisation) will be anonymous unless otherwise expressly indicated. Individual privacy will be maintained in all published and written data resulting from the study. The findings of the research will be compiled and presented in a thesis report, which will be shared with your organization upon its completion.
The research participants will not be advantaged or disadvantaged in any way. They will be reassured that they can withdraw their permission at any time during this project without any penalty. There are no foreseeable risks in participating in this study. The participants will not be paid for this study. All research data will be securely destroyed after the thesis has been compiled and submitted.
I therefore request permission in writing to conduct my research at your organization. The permission letter should be on your organization's headed paper, signed and dated, and specifically referring to myself by name and the title of my study.

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

Yours sincerely,
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