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AI'S IMPACT ON SKILLS IN THE WHOLESALE & RETAIL SECTOR: NAVIGATING WORKFORCE CHANGE

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1.1 INTRODUCTION OF THE STUDY

Artificial Intelligence (AI) is a branch of computer science that focuses on creating machines that can do tasks that typically require human intelligence, such as perception, reasoning, and problem-solving (Almulhim & Aramco, 2024; Zhang Yue, Xianguo & Skibniewski, 2021), AI has transformed various sectors, such as wholesale and retail sectors, with innovative technologies that improve supply chain processes, customer engagement, and overall operations. However, these AI developments are altering crucial abilities, disrupting traditional occupations, and generating new ones, all of which are influencing the job market. (Bessen, 2019). This shift requires a reconsideration of the essential abilities that employees need to thrive in an increasingly changing labour environment, and may mean that employees must improve their adaptability and creative problem-solving abilities to succeed in AI-enhanced settings (Bobitan, Ilie & Dumitrescu, 2024; Hussain, 2024).

This shift has also sparked concerns about potential job cuts and the future of work, especially in South Africa, where significant unemployment rates are a major issue (Statistics South Africa, 2025). According to the World Economic Forum (2020) report, it is suggested that by 2025, approximately 85 million jobs may be at risk of being lost because of automation and AI, supporting this concern. There is, however, a possibility of creating 97 million new jobs that will correspond more effectively with the modified allocation of responsibilities between humans and technology, but appropriate training and improvement programmes need to be in place for these new roles to be properly adopted. Bridging the skills gap resulting from the emergence of AI necessitates significant investments in education and training, as well as collaboration among government, industry, and educational entities (Bessen, 2019; Manyika *et al*., 2017).

While there is excitement for AI to revolutionise the wholesale and retail industry, there is, however, a lack of data or knowledge about the relationship between AI and the retail sector.

This research, therefore, seeks to analyse how AI is influencing the necessary abilities in South Africa's wholesale and retail industry, to create strategies to adapt to these shifts, and build a strong workforce for the future.

1.2 PROBLEM STATEMENT

The fast incorporation of AI technologies in the wholesale and retail industry is changing the necessary skills of employees. Brynjolfsson and McAfee (2014) stated that the growing utilisation of AI tools in inventory management, customer service, and sales forecasting may result in certain unskilled workers being left behind. Bessen (2019) highlighted how AI provides benefits like enhanced productivity and reduced expenses, while also necessitating the acquisition of new skills such as data analysis,

proficiency in machine learning, and digital literacy due to the transformation of traditional job roles. This shift raises significant questions on how businesses and workers in the wholesale and retail sector can adapt to these changes, especially in regions with high unemployment rates like South Africa, where the retail industry is a major provider of jobs (Statistics South Africa, 2025; World Economic Forum, 2020). Burger, Kritzinger & Wittenberg (2020) also argue that lower-skilled retail workers encounter significant difficulties because of this technological transition, and that, specifically, entry-level retail employees might have a greater chance of being laid off and might not benefit from AI-driven growth without extra training.

Dube, Nhamo & Nyakudya (2021) posit that the rapid pace of technological progress in South Africa is outpacing the rate at which skills are being acquired, resulting in numerous workers lacking the necessary capabilities to effectively utilise AI systems. A shortage of skills can hinder the effective use of AI in retail, restricting its benefits and potentially increasing unemployment in entry-level retail jobs that are most at risk of automation (Moller, Arntz & Gregory 2022).

While AI is becoming increasingly important in the retail sector, limited research has explored its impact on skill requirements within South Africa's wholesale and retail industry. This study aims to address that gap by examining how AI influences skill needs, the consequences of insufficient skill development, the role of upskilling programmes, and the implications for workforce management and job creation in a rapidly evolving environment. The findings will guide businesses, policymakers, and educators in preparing for the workforce challenges and opportunities brought by AI adoption.

1.3 AIM AND OBJECTIVES OF THE STUDY

Aim of the study

This study explores the impact of artificial intelligence (AI) on skill requirements in South Africa's wholesale and retail sector through a comprehensive literature review

Objectives of the study

a) **Assess the current AI integration:** Examine the extent to which AI has been integrated into the wholesale and retail sector.
b) **Analyse changes in skills requirements**: Investigate how AI integration has altered the skills and competencies required by employees in the wholesale and retail sector. Identify emerging skills and competencies that are becoming essential due to AI advancements.
c) **Evaluate the impact on job roles**: Explore how AI is reshaping traditional job roles and responsibilities within the sector. Assess the potential displacement or creation of job roles as a result of AI implementation.

d) **Identify skills gaps and training needs**: Determine the current skills gaps that have emerged due to AI adoption.

e) **Assess the broader impact on sectoral growth**: Evaluate how the integration of AI is influencing the overall growth and competitiveness in the wholesale and retail sector. Explore the implications of AI on sectoral innovation and long-term sustainability.

1.4 SIGNIFICANCE OF THE STUDY

Studying the impact of AI on skills requirements in the wholesale and retail sector in South Africa is a complicated task. Initially, the findings can provide valuable insights into the impact of AI-based technologies on the workforce, helping businesses and policymakers better anticipate future requirements. Understanding the evolving skill requirements as artificial intelligence becomes more integrated into daily activities will help organisations create targeted training programmes to equip employees with the necessary skills. This will assist in narrowing the skills deficit, which is particularly important in a nation like South Africa, where unemployment and inequality persist as significant challenges.

2. LITERATURE REVIEW

This review examines previous studies on the present topic and evaluates scholarly research articles and other relevant sources that are directly related to the current research. Therefore, the following literature was reviewed in detail, and reliable sources such as PubMed and Science Direct were consulted to inform the literature below.

2.1. Current AI Integration in the Wholesale and Retail Sector

Globally, AI adoption is identified as one of the leading trends and the retail sector is placed fourth in potential advanced technology usage (Mykytenko & Rzaieva, 2024). Effective AI implementation requires not only technological investment but also organisational culture transformation, driving innovation and compelling employees to enhance their skills (Afanasiev, 2024; Kulkarni & Bansal, 2023). AI presents revolutionary possibilities, but these must be solved in an integrated manner to address existing issues. The South African adoption of AI in the wholesale and retail sector is gradually progressing; however, most firms remain at the stage of proof of concept for deploying AI, with no large-scale deployments (Mulongo, 2024).

The role of AI in enhancing sectoral competitiveness is increasingly a subject of current interest, with the wholesale and retail industry being the pioneering driver (Kulkarni & Bansal 2023). AI innovations drive process performance, customer experiences are optimised, and market differentiation and

innovation platforms are built. The wholesale and retail sectors are currently the fourth most feasible business to implement AI in the global market, which shows the potential of industry growth (Mykytenko & Rzaieva, 2024). Additionally, AI can enable retailers to offer customised shopping experiences, improve inventory management, and establish more substantial customer relationships. For example, augmented reality (AR) coupled with AI enables customers to virtually try and experience interactive shopping (Pakharuddin & Kamarudin, 2023). These are vital technologies for retailers who need to deal with a saturated marketplace.

The rapid rate of advancement of 4IR technologies, including AI, has also resulted in an enormous skills gap in the retail workforce in South Africa, and this skills gap poses a challenge to businesses intending to adopt AI tools effectively (Mafuratidze & Lubbe, 2023). In response to the skills deficit, several programs have been implemented to prepare South Africa for the AI industries. For example, Microsoft has committed to training 1 million South Africans in AI and cybersecurity by 2026 in sectors like retail (Reuters, 2025). The objective of this project is to fill this gap by equipping individuals with the technical skills to deploy AI, which is crucial for the wholesale and retail trade to compete in a highly dynamic market.

Furthermore, the existing education and training frameworks are not sufficiently aligned with the needs of AI technology, and the labour force is still unprepared (Schoeman & Seymour, 2022). Thus, South African universities are also faced with issues related to technology readiness, such as insufficient high-performance computing facilities and poor internet connectivity (Financial and Fiscal Commission, 2021; University of the Western Cape, 2024). Such limitations stifle the introduction of AI within the universities. Therefore, educational bodies as well as businesses will need to invest in building a talent pool knowledgeable on how to deploy AI technologies accurately. Also, among other initiatives, Mafuratidze and Lubbe's (2023) emphasise the need for work-integrated learning (WIL) programs that bridge the disparity between theoretical learning and the needs of the industry. These programs equip graduates with the ability to thrive during the 4IR era, despite challenges of securing placements and post-WIL employment.

Moreover, cultural fear of technology and AI also dissuades adoption; for instance, SMEs are reluctant to invest in AI, partly due to unfamiliarity and resistance to new technology (Small Enterprise Development Agency, 2021). Schoeman and Seymour (2022) also note that medium-sized South African companies are hesitant to adopt AI due to concerns that AI algorithms will dominate firm operations. This caution, combined with the application of informal decision networks, dissuades the utilisation of AI technology in the industry. To reverse these, businesses must invest in continuous learning and upskilling programs so that employees have the necessary skills to keep up with AI

technologies. Additionally, Akoh (2024) argues that establishing an accurate framework for AI uptake, particularly across industries like manufacturing, is imperative to fuel innovation and competitiveness.

To fully leverage the potential of AI and be competitive, South Africa must also prioritise workforce development. As argued by Maisiri Darwish and van Dyk(2019), a national skills development strategy, in combination with the needs of industry, is necessary to ensure that the workforce is competitive. There must be government and private sector cooperation to launch upskilling and reskilling programs, particularly for low-skilled workers, to address the danger of displacement. Public-private partnerships are at the core of this (Maisiri et al., 2019).

It is furthermore predicted that the use of AI in the wholesale and retail sector will be more efficient and customer-centric over time. However, despite the positivity that it can bring, the incorporation of AI in South Africa's wholesale and retail industry is not free of significant issues, such as data privacy (Malapane & Ndlovu, 2022). For instance, some retailers use AI in deciphering customer data and personalising marketing efforts, raising ethical concerns on data privacy, specifically under South Africa's Protection of Personal Information Act (POPIA) (Pick n Pay Annual Report, 2023; Business-Tech, 2024).

Furthermore, Mhlanga (2021) and Van der Merwe (2022) argue that there are also ethical considerations in the increasing adoption of AI within the retail industry. AI algorithms replicate social prejudices, particularly during hiring and customer segmentation, which raises issues for a country with an unequal past. Therefore, to ensure that AI adoption is not only effective but also ethical, firms need to make sure that transparency, accountability and fairness become their highest priority in adopting AI. Holistic solutions are also needed to overcome these barriers and facilitate the adoption of AI (Mhlanga, 2021; Van der Merwe, 2022).

2.2. AI-driven Changes in Skills Requirements

The adoption of AI by South African industries is bringing revolutionary changes in the talent skill requirements, necessitating policy, education and training plans to be revised accordingly. With the mundane tasks being overtaken by AI, the requirement for higher cognitive abilities such as critical thinking, problem-solving and flexibility is growing (Du, 2024; Calinescu & Tanașciuc, 2024; Yuan & Du, 2021). These transformations underscore the need for learning institutions to update their curricula to meet the changing requirements of AI-dominated worlds to equip students with solutions to imminent workplace problems by guaranteeing lifelong learning and skills acquisition in terms of technical competencies as well as interpersonal abilities (Bobitan et al., 2024; Calinescu & Tanașciuc, 2024).

AI has, in South Africa established meaningful niches in various fields such as engineering, public administration, and banking (Mamela, Sukdeo & Mukwakungu, 2020). Bank employees, for example, must be able to operate machine learning and data analysis-driven technology if they are to remain pertinent amid the Fourth Industrial Revolution (Mamela et al., 2020). Similarly, in education, the fields of computer science and engineering are encouraged to integrate AI into their curricula to address 4IR needs (Pillay Maharaj & van Eeden2018). Non-STEM departments, such as public administration, are also beginning to realise the importance of AI competencies since Kamukapa, Lubinga, Masiya, and Sono (2024) suggest that AI literacy is developed to produce a digitally skilled public workforce.

At different levels of employment, the impact of AI on skills is extremely contrasting. For high-skilled employees, Bessen (2019) suggested that AI only enhances present capability by performing routine tasks, thus allowing workers to focus on innovative, strategic, and decision-making activities. Mid-level employees undergo more radical changes as automation diminishes the demand for repetitive and process-oriented tasks, necessitating the requirement to upskill in data analysis, AI management and process improvement (Autor, 2015). For less skilled workers, Acemoglu and Restrepo (2020) allude that robotics of manual labour creates space for soft skills such as adaptability, problem-solving, and communication. These inequalities imply the need for differential interventions which consider the unique needs of each level of employment. Despite this, the desire of South African companies to implement AI is also limited. Taljaard and Gerber (2022) discovered that more than half of South African companies have yet to initiate upskilling programs to prepare their employees for the effects of AI, highlighting a significant gap in strategic workforce development. Therefore, Maisiri et al. (2019) encourage an overall skills development strategy to cater to AI requirements in sectors and have a competitive workforce in South Africa.

The World Bank (2021) revealed that in South Africa, high unemployment, poor digital skills, and poor infrastructure worsen the effect of AI on employment. Fourie (2022) suggests that there must be sector-specific responses because sectors such as manufacturing and retail have special challenges. The retail sector in South Africa, for instance, is increasingly leveraging AI-based innovations like automated checkout and predictive analytics to manage inventory. Yet, the absence of digital skills among employees is a hindrance to proper AI integration. Thus, policy interventions need to be aimed at enhancing digital literacy, developing collaborations between companies and institutions of learning, thus providing reskilling schemes that are specific to the needs of various industries (Fourie, 2022).

There are efforts made to close the growing skills gap. For instance, the Government has initiated the National Digital and Future Skills Strategy 2023, in partnership with retail companies and schools to help overcome the skills gap (Retail Association of South Africa, 2024). By investing in employees' training and learning environment, the retail industry can instil competency in its employees to process and manage information from AI-empowered systems (Retail Association of South Africa, 2024). The National Development Plan (NDP) 2030 also underscores the need for transformation and partnership in education to build talent to embed AI in all industries, particularly retail (National Planning Commission, 2024). AI requires a deep transformation of capacity needs in South African industries with a focus on technical capacities, digital capacities and capacity to drive AI systems. Collective strategies of government, business and academe are all important to enable the workforce to thrive in AI-driven economies.

2.3. AI's Influence on Sectoral Growth and Competitiveness

Artificial Intelligence (AI) is at the forefront of transforming skills, with profound effects on numerous industries and professions. AI is transforming jobs, as routine tasks are now being automated, and this has made more complicated and multifaceted skills indispensable, mainly cognitive and soft skills. As accentuated by Du (2024), Calinescu and Tanaşciuc (2024) and Yuan and Du (2021), there would be a bigger need for non-routine cognitive abilities, such as problem-solving and critical thinking, in the age of AI. Other soft abilities such as teamwork, flexibility and emotional intelligence are also essential to cater to these high-tech, technologically led work environments. In addition, educational institutions play a pivotal role in preparing the workforce for AI-related evolutions because they are compelled to update curricula in a bid to focus on lifelong learning as well as proactive skill acquisition (Calinescu & Tanaşciuc, 2024; Bobitan et al., 2024). Reskilling and upskilling initiatives are also crucial in ensuring that employees possess the ability to deal with the demands of AI-driven industries. Babashahi, Mirzaei & Shafiei (2024) suggest that strategic reskilling programs be introduced by organisations, covering both technical skills and interpersonal competencies, to prepare workers for AI-enabled environments.

Furthermore, the influence of AI on skills needs to be understood in different ways across different levels of jobs. At the managerial and professional levels, AI is enabling the development of new tasks and skills, e.g., developing an AI strategy, data analysis, and making decisions based on AI-driven intelligence (Ford, 2021). Higher-level employees are assisted by AI integration since they carry out complex tasks that cannot be automated with ease and require a detailed grasp of technology and business processes. Low-skilled workers and recent hires have a different experience. In

manufacturing and retail industries, these workers are more exposed to job loss due to automation of routine tasks (Autor, 2015). For these workers, upskilling programs must be given priority so that they can move into new careers that require digital skills and AI-related skills (Morandini, Fraboni, De Angelis, Puzzo, Giusino & Pietrantoni, 2023). South Africa's schooling system, however, has been slow to integrate AI into the curriculum, as argued by Arntz, Gregory and Zierahn (2016) and Chibba and Luiz (2019), and this could limit the workforce from adapting to this shift.

AI is revolutionising sectoral growth and competitiveness by improving productivity, decision-making, and customer experience. Vasisht, Ranjan, Jadhav, Rasal, and Nrip (2022) believe that the application of AI in industrial activities, or "Industrial AI," allows businesses to address manufacturing issues and drive value creation. Vidas-Bubanja and Bubanja (2024) also point out that AI is key to surviving economic crises through sustainable development and operational efficiency. In retail and similar industries, AI is transforming customer service and logistics, with innovations like chatbots and virtual dressing rooms altering how customers engage (Kaur et al., 2020). AI-based tools also enable real-time product modification and more environmentally friendly business practices through the optimisation of resource allocation (Malik et al., 2022). However, challenges such as data privacy and the need for employee training must be addressed to fully realise AI's potential (Pakharuddin & Kamarudin, 2023; Recio-Román, Recio-Menéndez, & Román-González, 2024).

AI adoption in South Africa is plagued with training models, education inhibitions and infrastructure. Even though AI has the capacity to create sectoral growth, the labour force within the country lags because schools and institutions are not equipped with extended training on AI. Chibba and Luiz (2019) cited that few of South Africa's training programs target higher-level digital literacy, never mind the AI or machine learning education that would be needed to equip workers to work with AI. Moreover, industry responses to AI adoption also differ. Kemp (2021) postulates that Manufacturing and selling have been most amenable to AI use in logistics, customer service, and sales forecasting, with sectors like health and education lagging in AI adoption. In addition, while South African managerial and professional classes are likely to benefit most from the implementation of AI, those who earn the lowest incomes, particularly those in retail and manufacturing occupations, are most likely to face job losses from automation (Autor, 2015). Unless halted by an inclusive policy, Mnguni (2021) indicates that this imbalance can worsen economic disparities.

2.4. **The impact of Artificial Intelligence (AI) in Business**

AI is revolutionising business operations across all industries with improved efficiency, decision-making, and customer experience. Through AI applications in marketing, finance, and operations,

businesses are able to conduct better data analysis, predictive analysis, and one-to-one customer experiences (Majeed, 2024; Adesoga et al., 2024). For example, AI applications facilitate trend recognition in the market, automation of supply chains, and optimisation of planning and forecasting and resources and thereby gaining operational effectiveness (Adesoga et al., 2024; Yadav et al., 2024). According to Taramov et al. (2024), challenges to integrating AI, for instance, are ethics, job loss, and robust data governance to prevent algorithm bias. Therefore, corporations should be vigilant with the ethical implementation of AI in a manner that it can utilise its maximum benefit under the regulatory mechanism and the aspect of sustainable development (Majeed, 2024; Taramov et al., 2024).

According to Mulongo (2024) and Taljaard and Gerber (2022) AI is also being regarded as a transformative force in South Africa, particularly in the retail and fast-moving consumer goods (FMCG) sector. AI adoption in South Africa is, however, slow due to reasons that range from poor IT infrastructure, lack of availability of skills, to regulatory challenges. Ridzwan and Zainuddin (2024) argue that AI enhances customer experience via automation of services, product descriptions in more detail and personalised marketing, which are critical for retail competitiveness. Second, Hirsch et al. (2024) argue that AI facilitates supply chain resilience so that retailers can cope with disruptions such as those caused by the COVID-19 pandemic. Despite the potential for the adoption of AI in the South African retail e-commerce sector, restraining factors like privacy and the absence of a facilitating regulatory environment constrain high-scale implementation (Malapane & Ndlovu, 2022). To attain these challenges, collaborative strategies should be employed if maximum gains from AI in retailing are to be obtained.

Naudé and Kreuser (2022) reveal that the pace of AI adoption is low in South Africa because of several factors, like a lack of skills, an ineffective training and education system, and insufficient funds to retrain the workforce. South Africa's education system has traditionally lacked proper provision of digital literacy, particularly among the poor communities. This shortage is further fuelled by obsolete curricula that are not fully aligned with AI or technology-advanced courses, especially at basic levels of education (Naudé & Kreuser, 2022). Accordingly, Manda et al. (2022) confirm that the country lacks expertise in AI professions, limiting business development and innovation. Furthermore, the prohibitively high cost of AI technology and low digital literacy rates are serious hindrances to small enterprises. Small and medium-sized enterprises (SMEs), constituting a substantial part of the South African economy, are hindered from implementing AI by an insufficiency of adequate knowledge, training, and easily accessible access to the technology. Retail and manufacturing would benefit from AI innovation, but cannot do so through such constraints (Manda et al., 2022).

The incorporation of AI in business, according to Kane (2020), necessitates changing skills at all levels of employment. On the managerial level, there is a need for capable digital and analytical leaders to integrate AI technology into business strategy. The technical ability to accomplish this should be complemented with the strategic wisdom to ensure the meeting of AI, business processes, and customer interactions (Kane, 2020). At entry and mid-levels, Fourie (2023) shows that employees frequently must reskill or upskill to operate alongside AI technologies efficiently. In South Africa, where the ability to access quality digital education is uneven, such a skill deficit may serve to intensify work-related inequalities. For instance, retail workers displaced by automation facilitated by AI need to undergo training in order to be deployed in more complex technology-enhanced functions. However, the lack of proper programs or clear-cut channels for skills transfer inhibits the capacity of the workers to adapt to the changing face of work (Fourie, 2023). However, different sectors in South Africa pose unique challenges for AI adoption. The retail sector, for example, can revolutionise operations, supply chain management, and customer service through AI. Underinvestment in technology and an unskilled labour force are hindering the adoption of AI, thwart its mass adoption (Fourie, 2023). Bank and financial services have proceeded even further with AI adoption compared to the previously mentioned industries, but they have data privacy legislation and security concerns as well.

Moreover, Manda et al. (2022) argue that policy responses to AI adoption in South Africa have been reactive rather than proactive. There have been attempts by the government of South Africa through initiatives such as the Fourth Industrial Revolution (4IR) Commission, whose objective is to establish an enabling environment for AI adoption. But implementation has been gradual and the lack of sectoral policies addressing the special needs of the retail, manufacturing and education sectors, among others still lingers (Manda et al., 2022). The Technology Acceptance Model (TAM) provides a valuable model for South African AI adoption. TAM proposes that technology usefulness and ease of use are critical adoption drivers (Davis, 1989). In South Africa, the perceived simplicity of AI and poor digital skills decrease its perceived utility, particularly in sectors such as retail and manufacturing. Education and training programs, along with user-friendly AI systems, can increase AI adoption by eliminating technical as well as psychological barriers.

Pillay (2022) added that integration of AI within business operations has with it certain paramount ethical challenges, foremost of which is employment. AI might increase efficiency in processes, but also might displace workers, especially on the lower rungs. At a point where unemployment within South Africa already exists, it may even widen social disparities. An equitable approach to accepting AI should balance the benefits of efficiency and the social impacts. Furthermore, AI systems can also

enhance inherent bias in data that the systems learned from and discriminate against future employees to be hired and customers to be served, for instance. To be transparent about the AI algorithms and representative sets of data capturing the diverse groups of South Africa is to follow an ethical AI strategy (Pillay, 2022).

2.5. Impact of AI on Skills and Competencies

The use of artificial intelligence (AI) in retail and wholesale companies has, in some way, changed the competence and capacity of employees. AI innovations are gaining greater recognition for optimal operation maximisation, customer service enhancement, and effectively maintaining inventory, compelling staff to acquire new competencies necessary in an AI system (Rahman et al., 2023; Recio-Román et al., 2024; Kulkarni & Bansal, 2023). With the advent of AI transforming these sectors, workers need to possess new competencies such as data analysis, machine learning skills, and digital competency to be able to cope with the new situation (Recio-Román et al., 2024; Mykytenko & Rzaieva, 2024). Soft competencies such as flexibility, teamwork and ethical sensitivity become increasingly in demand with workers having to integrate AI into routine activities and decision-making (Bonetti et al., 2022; Recio-Román et al., 2024).

One of the main issues, nonetheless, is making certain that staff members can effectively work with AI systems and decipher the data presented by such tools. While employees are compelled to interact more with AI systems, Taljaard and Gerber (2022) assert that this requires data interpretation skills, decision-making based on AI-driven insights and the ability to partner with automated processes. This shift from human to AI-based operations has brought about a necessity for retail workers to develop skills in areas of cybersecurity, customer experience management, and programming (Kulkarni & Bansal, 2023). Additionally, increased reliance on AI for operational efficiency and customer satisfaction also increases the necessity for reskilling workers in cognitive and digital competencies.

The effect of AI on work is experienced at different levels of work, depending on the skills required by the job. At the basic level, employees are increasingly being required to be technologically literate so that they may co-exist with AI technologies such as automated checkout systems and customer service chatbots (Tegmark, 2017). Mid-level roles require higher-level competencies, such as data analysis skills and the ability to work with AI tools in order to automate customer interactions and supply chain processes. Staff at this level must be proficient in interpreting insights offered by AI and in making data-driven decisions for maximising operational efficiency (Recio-Román et al., 2024; Taljaard & Gerber, 2022). Furthermore, on the management front, strategic mindset with regard to AI adoption and ethical leadership are surfacing as critical competencies. Managers will need to be able to analyse how AI could best be harnessed as part of business strategy, abide by ethical requirements and resolve

potential AI-linked risks, such as issues surrounding data privacy and algorithmic prejudice (Brynjolfsson & McAfee, 2014). At each level, the ability to keep pace with the rate of technological upgradation and follow the process of continuous learning has turned into a vital competency in an AI-based retail environment.

There are certain challenges in the wholesale and retail sectors in South Africa regarding employee readiness for the implementation of AI. The existing socio-economic disparities in the country, together with the common skills shortages, hinder employees from adjusting to an AI environment (StatsSA, 2021). While South African companies realise the necessity of upskilling and reskilling their workforce to embrace AI, the practice is in its infancy (Taljaard & Gerber, 2022). The majority of employees lack exposure to education and training that helps them acquire digital and cognitive skills for the integration of AI technology. Government policy measures, such as the National Digital and Future Skills Strategy, have sought to address the challenges by creating digital literacy and re-skilling the workforce (Department of Telecommunications and Postal Services, 2020). Moreover, the policy has been unevenly implemented, with rural areas behind urban areas in acquiring training. This has reinforced deeper-seated disparities and created a digital divide, where most employees are excluded from realising the maximum advantages of AI integration (Department of Telecommunications and Postal Services, 2020).

The Skill-Biased Technological Change (SBTC) theory (SBTC) posits that technological progress, such as AI, mainly benefits better-educated and better-skilled workers and reduces the need for lower-skilled workers (Autor, 2015). This is evident in South Africa, where high-level retail career positions increasingly require expertise in AI, data analysis, and other high-level digital competencies, and junior employees are under the threat of losing their jobs through automation (Rahman et al., 2023; Taljaard & Gerber, 2022). Field-based case studies of South Africa bear witness to the two-pronged impact of AI on staff capacity building. Woolworths, for example, has integrated AI into its supply chain operations to optimise and reduce wastage (BusinessTech, 2023). The shift, however, has generated job loss anxiety among less qualified employees who are unable to transition to AI-driven jobs (Ndlovu, 2022). Similarly, Shoprite has introduced AI-powered customer care solutions, compelling employees to shift into new roles operating these systems but also highlighting the need for effective retraining programs to avoid job loss (BusinessTech, 2023).

The integration of AI presents possibilities and difficulties for sectoral competitiveness in the South African retail sector. In one way, AI technology has the potential to drive operational efficiency, enhance customer experiences and automate supply chain management, helping businesses remain competitive domestically and internationally (Majeed, 2024). On the other hand, Moodley and Naudé

(2020) stated that South African retailers are bound by capital, which restricts them from investing in AI technologies to the extent necessary to compete with foreign counterparts. Therefore, government initiatives like the National Skills Development Plan have tried to address these challenges, but more concerted efforts are needed to encourage AI adoption among retailers (Moodley & Naudé, 2020). Ethics is also another crucial dimension for AI adoption, particularly in a country like South Africa, where the retail sector must balance innovation with equity and accountability. AI systems will unwittingly replicate biases in recruitment, pricing, and customer service, which goes against the objectivity of AI-generated decision-making (Smith & Anderson, 2019). In addition, there are also issues related to data privacy, especially since the Protection of Personal Information Act (POPIA) has been promulgated, which governs the processing and handling of customer information (Mhlanga, 2021).

2.6. How AI is reshaping traditional job roles and responsibilities within the sectors

Jadhav and Banubakode (2024) and Bera, Pillai and Pathak(2024) highlight that Artificial Intelligence (AI) is greatly redefining usual job activities and functions in the various industries into job disruption as well as emerging jobs. Since the AI technologies take over the routine and repetitive jobs, such as manufacturing jobs, logistics, and customer care jobs, a majority of existing jobs can be replaced (Jadhav & Banubakode, 2024; Bera et al., 2024). However, Jadhav and Banubakode (2024) and Du (2024) hold that the transition also creates new job types, most notably in technology-dependent fields such as AI development, data analysis, and protection, which require high technical competence and analytical ability. As Bera et al. (2024) and Gulati et al. (2024) contend, embracing AI involves reshuffling the skills demand in a way that digital literacy, problem-solving skills, and non-technical skills like emotional intelligence with less automation potential take centre stage. To offset the adverse effect of job displacement, Jadhav and Banubakode (2024) and Gulati et al. (2024) believe that effective reskilling and upskilling programs are needed, which enable workers to adapt to the shifting job landscape and be competitive. Therefore, even as AI produces challenges, it also presents potential for innovation and human capital development, necessitating visionary responses by policymakers and corporate leaders (Raj, 2024; Du, 2024).

Adhikari (2024) and Jadhav and Banubakode (2024) argue that Artificial Intelligence (AI) is changing traditional job duties and tasks dramatically in various businesses in South Africa, introducing the replacement of jobs as well as the generation of new job prospects. As technology advances, AI automates repetitive tasks, particularly in the manufacturing, logistics and customer services industries, which have the potential to cause job displacement in industries likely to be automated (Adhikari, 2024; Jadhav & Banubakode, 2024). Subudhi (2024) and Raj (2024) state that although AI

automates work, it also sparks productivity and innovation, resulting in the need for new job opportunities in fields such as software engineering, data analysis and cyber security. Adhikari (2024) puts emphasis on the fact that AI adoption calls for employees with diverse skill sets, and reskilling and upskilling programs are essential to prepare employees to meet the evolving job landscape. Additionally, ethical considerations of AI adoption emphasise the requirement for policies to ensure mounting equitable distribution of AI dividends and mitigate economic inequality threats and job loss (Jadhav & Banubakode, 2024; Adhikari, 2024). Thus, while AI poses risks, it also holds promise for growth and reorganisation in the South African labour market.

In the manufacturing industry, AI-driven robotics and automation systems have taken over tasks that were once performed by humans (Khan & Hagglund, 2025). This has resulted in huge job losses, particularly in assembly lines and other labour-intensive operations. Similarly, in the customer service sector, AI-driven chatbots and virtual assistants are replacing human agents, doing away with the need for large customer service teams (Jadhav & Banubakode, 2024). While AI enhances productivity and reduces operational costs, it also raises concerns about job losses and economic inequalities, especially in countries like South Africa, where socio-economic inequalities are already pronounced (Khan & Hagglund, 2025).

One of the main ethical issues with AI implementation is the use of biased algorithms for hiring and promotion decisions. AI technologies are information-driven decisions, and if the data used to train algorithms includes historical bias, AI then perpetuates and even escalates discriminatory practices. For example, AI-powered recruitment software can discriminate against women, minorities, or those from lower socio-economic groups if the data they are founded upon reflects historical discrimination in the hiring of employees (Khan & Hagglund, 2025). This bias not only perpetuates discrimination but also limits the choices for oppressed groups to progress in their working lives. AI systems used in the recruitment process must be transparent, fair, and open to continuous monitoring to detect and remove discriminatory impact. Another pressing ethical issue is the privacy of data, where data used in monitoring employees and security through biometric data should be respected. Most businesses are embracing AI technologies based on biometric data, including facial recognition, fingerprints, and voice business operations like monitoring attendance or security (Idoko et al.,2024). The widespread use of the same, though, does pose issues of invasion into employees' privacy rights. Biometric data is personal in nature, and its abuse can lead to intrusive surveillance practices, where employees are constantly in the mindset of being monitored, essentially eroding the trust relationship between employees and managers. Furthermore, data collection and storage of biometric data are more prone

to leaks, hence the need for organisations to have strong data security systems in place to protect employees' personal information (Idoko et al.,2024).

Jadhav and Banubakode (2024) contend that all such ethical issues must be addressed by developing holistic policy frameworks amidst the requirements of technological innovation and labour rights protection. The upskilling and reskilling initiatives are required to offer workers new job opportunities created in AI development, data analysis, and AI system management. With the growth of AI, emerging occupations that entail monitoring, maintenance, and moral regulation of AI are coming to the fore, opening opportunities for workers to move to more skilled occupations. Collaboration between industry and government can create training programs to equip workers to thrive in an AI-driven economy (Jadhav & Banubakode, 2024). In addition to reskilling programs, policy must address transparency and accountability in AI uptake, specifically in recruitment and employee management uses. Organisations must be pushed to conduct regular audits of AI systems to recognise and rectify biases in hiring algorithms and data privacy laws are followed (Subudhi, 2024). Clear regulations regarding the ethical application of biometric data, including consent procedures and data storage, must be established to prevent abuse and to maintain employee privacy.

Furthermore, Patnaik (2024) observes that moral responsibilities need to extend even to ensuring that AI adoption does not further consolidate already existing inequalities. Low-wage workers and minority groups are most vulnerable to being negatively affected by AI-powered job automation. In South Africa, where the economy is inequality-based, special caution must be exercised to create social safety nets and inclusive AI policies that provide equal opportunity to all workers. Governments can also pressure companies to use AI in a way that supports inclusive growth, and the advantages of AI are distributed equitably in society (Patnaik, 2024). Additionally, there also needs to be an equilibrium in the embracing of AI so that its economic benefits are equitably shared and social and ethical requirements fulfilled. AI can inspire growth and innovation, but not at the expense of labour rights, privacy, and dignity. Through embracing effective policies towards ethical AI processes, South Africa can be guided towards a sustainable and equitable tomorrow in the competitive job market by averting threats like labour automation, biased algorithms, and data breaches.

2.7. Training needs and skills gaps that have emerged due to AI adoption

The rapid adoption of AI in the majority of industries, including wholesale and retail, has caused fundamental changes in the type of work and employees' abilities to remain competitive. Jarrahi, Kenyon, Brown, Donahue & Wicher (2023) argue that this has created significant skills gaps that need to be closed immediately, particularly given that AI technologies rely extensively on big data and machine learning algorithms to optimise functions. The demand for higher-order digital literacy and

data analysis skills has risen, and employees who used to perform manual or repetitive tasks must now learn AI-based technologies such as automated stock systems and customer support chatbots (Luo & Wu, 2022). This transition emphasises the importance of employees possessing technical as well as problem-solving skills, and thus reskilling takes priority.

With increased use of AI in customer service and supply chain management, new areas of expertise such as cybersecurity and the ethics of AI usage have also become essential. Smith and Johnson (2023) observe that workers are now expected to know the risks entailed in data confidentiality, algorithmic bias, and AI application ethics. This calls for the imperatives of reskilling programs in these priority sectors, such that employees will be in a position to deal with AI-associated risks. As Gogate et al. (2023) discuss, there is a need for specialised training programs to upskill employees to keep pace with the evolving AI-driven wholesale and retail trade environment.

In South Africa, the implementation of retail AI has also revealed the country's particular skills gap. Ngwenya and Dube (2023) indicate that the immediate shortage is in employees acquiring advanced digital skills, particularly data analysis and machine learning. Technologies used in retail, such as demand forecasting with predictive analytics and chatbots for customer service, require employees to understand how to process, analyse, and leverage data. Further, Du Plessis and Jooste (2023) share the view that improving the utilisation of AI for supply chain management requires employees to work with sophisticated AI equipment and identify and rectify system defects.

One of the most critical skills shortages in South Africa is a lack of cybersecurity skills, as noted by Mabunda et al. (2024). The application of AI increases the risk of data breaches, and retailers must train staff to handle sensitive consumer data carefully. Staff must also learn the ethical implications of AI, privacy and bias in AI-based decision-making. Mbatha (2024) also argues that South African retailers are faced with the challenge of bridging the digital divide, especially in poor-resource areas, where employees may not even possess elementary digital literacy skills, in addition to technical skills at a higher level. The bridging of the divide is central to ensuring equitable access to AI-facilitated opportunities and employee capability development.

Globally, the skill deficits created by AI implementation have created more focus on upskilling and reskilling initiatives. Rahman et al. (2023) recognise the greater need for digital literacy, like being able to use AI platforms and comprehend data-driven insights. Cybersecurity and ethical AI skills are becoming more and more important as businesses deal with data privacy and ethics. By not fulfilling these training needs, businesses will fall behind in AI adoption and be plagued by severe ethical issues with data privacy and algorithmic equity (Bonetti et al., 2022). In response to such challenges, businesses across the globe have been introducing training programs to bridge the skills gap. For

example, global retail giants Walmart and Amazon have introduced mass-scale digital training in AI and data analytics to prepare their employees for the future (Brynjolfsson & McAfee, 2014). The same is true in South Africa, though more slowly due to limited means and existing skill shortages (Taljaard & Gerber, 2022). Retailers are increasingly recognising the need for continuous workforce upskilling and offering internal and external training programs to empower workers to work their way out of AI-driven worlds (StatsSA, 2021).

Moreover, best practices in addressing AI-related skills shortages emphasise lifelong learning, collaboration with educational organisations, and government support. In countries like Singapore and Germany, governments have worked together with business leaders to establish nationwide reskilling programs targeted at AI-related competencies (Majeed, 2024). They seek to offer AI-powered education to employees and encourage culture for ongoing learning. Similarly, in the US, companies such as Microsoft and Google are investing in workers' development programs to prepare employees for AI technology. Industry-academia collaboration is necessary for developing relevant curriculum and certification courses based on the evolving requirements of AI (Taramov et al., 2024). Businesses that adopt these global best practices are better positioned to harness AI's potential while minimising workforce displacement. Briefly, AI commitment in the labour force has revealed fundamental skills deficiencies in digital literacy, data analytics and cybersecurity. Firms are addressing these needs with targeted training, but success depends on collaboration with business and government. International best practice demands continuous upskilling and reskilling to mitigate AI-generated challenges and maximise its benefits.

2.8. How the integration of AI is influencing overall growth and competitiveness in the wholesale and retail sector

The integration of AI in the wholesale and retail sector is driving exceptional growth and competition through the facilitation of innovation and operational effectiveness. Artificial intelligence technologies like predictive analytics and machine learning are revolutionising retailers' retail businesses from supply chain management optimisation to automating inventory management and personalised customer experiences (Pakharuddin & Kamarudin, 2023; Recio-Román et al., 2024). They allow companies to respond to evolving technology-enabled consumer behaviours and compete in an increasingly volatile market. AI also facilitates data-driven decision-making, which is critical with regard to reacting to market trends, as well as leveraging control of resources, both of which are critical towards long-term development of the industries (Kaur et al., 2020; Malik et al., 2022).

In the South African retail and wholesale trade, AI is becoming a driver of growth and competitiveness. Predictive analytics and self-service supply chain management are among the technologies enhancing

operating efficiency by saving costs and improving inventory accuracy. Ngwenya and Dube (2023) believe that AI is also enabling the personalised customer experience since, with retailers now being able to personalise their products to suit the individual requirements of their consumers and build customer loyalty, they are in a position to cement their market niche. AI is also facilitating innovation by creating new business models, such as AI-based logistics and e-commerce platforms, that improve service delivery and increase market reach (Botha & Nyemba, 2023). However, AI adoption in South Africa also has challenges. Du Plessis and Jooste (2023) recognise job displacement problems and data privacy concerns as concerns, highlighting the need for reskilling programs and ethical frameworks to ensure sustainable development.

Globally, the effect of AI on the wholesale and retail sector has been transformative. Predictive analysis, automated inventory management, and targeted customer service have assisted firms in streamlining their operations, improving decision-making, and satisfying customers more effectively (McKinsey, 2021). The innovations assist in creating considerable cost savings, enhanced inventory handling, and general competitiveness. For example, AI-based demand forecasting enables retailers to maximise stock levels, which minimises stockouts and surplus stock, hence greater profit margins and better market performance (PwC, 2020). Nevertheless, in comparison to more advanced economies, South Africa remains in its infancy regarding the use of AI in retailing. While countries like the U.S. and Germany have progressed in embracing AI in retail operations, South Africa is faced with infrastructural inadequacies, limited exposure to AI experts, and investments in advanced technology at lower rates (Deloitte, 2022).

Despite these issues, some encouraging signs of progress are observed. A limited number of bigger South African retailers have already begun implementing AI in optimising supply chains and customer data analysis, though at a slower pace than global competitors (Accenture, 2021). For spurring the take-off of AI and making competitiveness, South Africa needs to strategically invest in digital infrastructure and capability (Accenture, 2021). AI can also be used in the quest for industry sustainability, for example, in maximising energy usage in warehouses and stores, lowering operational costs, and improving environmental performance. Uptake of AI also, though, comes with inbuilt ethical and human resource issues. Du Plessis and Jooste (2023) refer to data privacy, loss of jobs, and the digital divide. As AI becomes more integrated into retail operations, firms have to put in place robust data protection policies to protect customer information and address ethical challenges of AI biases. Additionally, automation of activities that were traditionally done by people raises the risk of job loss, primarily of lower-skilled retail employment. In a measure to solve these issues, businesses must make an investment in training and upskilling programs that equip their employees

with the required capabilities to work effectively in AI-based environments. This includes not only technical competence, such as data analysis and AI system management, but also in the realms of ethical usage of AI and data privacy (Du Plessis & Jooste, 2023).

In South Africa, there is untapped potential for skill development in AI as well. With growing adoption of AI technologies, a huge gap in AI-specific training and digital literacy among workers is present (World Economic Forum, 2020). The skills gap is a major constraint to the increased application of AI and holds back the industry from achieving maximum output from AI. Planned investment in training that is related to AI would make South Africa's retail sector more robust (BusinessTech, 2022). Although AI can automate routine work, value comes from the human potential to fuel these machines and interpret advanced data insights. Developing AI-focused capabilities will enable staff to employ AI tools for boosting customer interaction, supply chain operations, and stock forecasting (Oxford Insights, 2021).

To fill these skills gaps and drive competitiveness, collaborations among government, industry, and educational institutions are essential. Such collaborations are likely to foster AI skills development programs that cater to the specific needs of the retail industry. International best practices in filling AI-related skills gaps prioritise lifelong learning, industry-academia partnership and government policy support. Singapore and Germany have already established national reskilling initiatives focused on AI skills, which prepared workers with training to address AI technologies (Majeed, 2024). South Africa's retail sector can also gain from collective action to ensure that workforce development is synchronised with the rapid development of AI technologies (IDC, 2021). Through coordinating the skills of the workforce with AI-led innovation, South Africa's wholesale and retail industry is able to grow its global competitiveness and achieve stable growth in an increasingly digitalised economy.

3. RESEARCH METHODOLOGY

3.1 Research approach and design

This study employs both qualitative and quantitative methods, integrating a sequential explanatory design. Explanatory sequential design includes combining quantitative and qualitative research, where the quantitative phase precedes the qualitative phase in both data collection and analysis (Fetters, Curry & Creswell, 2014). The researcher first conducted quantitative research, followed by qualitative interviews. Using different sources of data allowed for the use of triangulation to improve comprehension and confirmation of the research findings. Additionally, using different sources of data is useful for gaining a deeper understanding of unexpected or complex quantitative results.

3.2 Quantitative aspect of the study

A quantitative approach was applied to provide initial insights into how AI is affecting the skills needed in the wholesale and retail industry in South Africa. The primary goal of quantitative research was to gather, analyse, and interpret numerical data to identify patterns, relationships, and trends (Apuke, 2017).

3.2.1 Sampling

The study employed a non-probability convenience sampling method to access participants for the study. Non-probability convenience sampling is when, in this instance, whoever sees and chooses to complete the online survey completes it. It is based on ease of access, not on a statistically random selection process. Notably, those with related opinions and experiences in the retail sector were more likely to participate in the survey.

3.2.2 Data collection

To collect data, a structured online self-administered questionnaire comprising both closed-ended and open-ended questions was used. To develop the questionnaire, the researcher was guided by the study's research objectives and literature. Closed-ended questions utilised Likert scales, multiple-choice, and ranking formats to quantify respondents' perceptions and experiences. Open-ended questions allowed participants to provide detailed insights into how AI has influenced their roles in the wholesale and retail sector. These include details on employment trends, skills needed, and training needs. Self-administered questionnaires were appropriate because the targeted participants have a high level of reading, writing ability, alongside other qualifications. Therefore, it was easier for them to self-administer a questionnaire.

3.2.3 Data analysis

The data collected through the self-administration of questionnaires was analysed using descriptive statistical methods (including frequency distributions, means, medians, modes, standard deviations, variances, ranges, and percentages). These methods helped to summarise and describe the main features of the data, providing a clear understanding of trends and patterns within the data.

3.2.4 Reliability and validity

Reliability is the term used to describe the consistency of a tool's measurements across repeated uses (Heale and Twycross, 2015). Joppe (2000) defined reliability as the degree to which results stay uniform over time. In contrast, the study's validity is determined by how well the research measures the intended variables or the accuracy of the research results (Heale and Twycross, 2015; Joppe, 2000). To ensure reliability, the researcher, with the guidance of a skilled statistician, analysed the data from the questionnaire responses. To ensure content validity, research experts from W&RSETA

and academia reviewed the survey items to ensure they comprehensively cover the relevant constructs, such as AI literacy, skill adaptability, and training needs.

3.3 Qualitative aspect of the study

A qualitative approach is a way of obtaining or gaining insight through discovering meanings (Cresswell, 2013). This approach is useful to the research objectives posed because it allows for an open-ended flow of information from the respondents, and the participants will have an opportunity to elaborate on their answers.

3.3.1 Sampling and participants

Participants were selected using a non-probability purposive sampling. In purposive sampling, the researcher chooses participants based on strong evidence that they accurately represent the entire population (Calmorin and Calmorin, 2008). Purposive sampling enabled the researcher to purposely select the participants with extensive, pertinent experiences regarding the impact of artificial intelligence on skills requirements in the wholesale and retail sector. Participants were chosen based on their knowledge and background in the wholesale and retail sector. Only experienced managers with over five years of working experience in the sector, who have embraced the use of AI, were sampled to participate in the study. The researcher accessed the list of experienced retail managers with their contact details from the WRSETA. In instances where the researcher could not access the retail managers on the provided list, retail managers in retail stores at the mall were approached to participate in the study. Notably, before conducting the interviews, the researcher ensured that the managers had five years' experience as retail managers. This criterion of selection ensured that the interviewees offered valuable perspectives on the impact of artificial intelligence on skills requirements in the wholesale and retail sector. Furthermore, the envisaged sample size was 18 managers (2 managers per province) from the wholesale and retail sector across all nine provinces in South Africa.

Additionally, the criteria for inclusion concentrated on choosing food and clothing retail and wholesale enterprises that have implemented or are in the process of integrating AI technologies, function in South Africa, and employ a minimum of 50 staff members. These standards guaranteed that the research identifies pertinent AI-related shifts in skill demands. Conversely, the exclusion criteria left out businesses that haven't embraced AI, tiny enterprises, industries beyond food and apparel, and firms functioning solely outside of South Africa. Additionally, retailers that sell both food and clothing were chosen for this study for the sake of convenience and efficiency.

3.3.2 Data collection

The initial plan was to conduct eighteen (18) individual semi-structured interviews with the managers from the wholesale and retail sector across all nine provinces of South Africa. Only 10 retail managers were interviewed (5 from the food sector and 5 from the clothing sector in Limpopo, Gauteng, Mpumalanga and Western Cape), as eight of the retail managers were unavailable for interviews. The target of 18 interviews was therefore not realised, but data saturation was still reached with the available participants. Four interviews were conducted online via Microsoft Teams, and voice calls and six interviews were conducted face-to-face. For participants in Mpumalanga, all interviews were conducted face-to-face because this is where the researcher resides, and it was convenient for both the researcher and the participants. For all participants from Gauteng, Limpopo and Western Cape, interviews were conducted with different online platforms depending on the convenience of the platform to each of the participants. The researcher used a semi-structured interview guide to ask the questions. For the development of the questions in the semi-structured interview guide, the researcher was guided by the research objectives and literature. The interviews enabled the researcher the flexibility to probe further, obtaining more information from the participants and asking for elaboration, where needed. Therefore, interviews were appropriate in this regard.

The selected managers were contacted via calls and emails, and then the researcher explained more about the study in a bid to receive consent from interested managers. For those who were not interested, other managers in the sector were contacted. The interviews were conducted in English and lasted for about 40 minutes to 50 minutes, and all the interviews were audio recorded. In addition to audio recording, the researcher took brief notes (words and phrases) to keep abreast of what transpired during the interviews. Notably, the researcher sought consent from the participants about recording the sessions before recording.

3.3.3 Data analysis

Thematic Content Analyses (TCA) were used in this research to analyse the data gathered from individual interviews. The six steps of thematic content analysis, as described by Braun and Clark (2006), were applied to systematically structure and describe the data collection, also recognising, probing, and presenting patterns (themes) within the data. These steps are explained in detail below:

- **Familiarisation with data**: At the beginning of theme analysis, the researcher familiarised herself with the data (Braun and Clarke, 2006). In the present research, the researcher initially examined the interview transcripts and then created a possible list of codes. Reading the material repeatedly enabled the researcher to examine the data set for themes and patterns.

- **Generating themes:** The next step in this inquiry involved compiling an initial collection of data set items that exhibit a repetitive pattern. Braun and Clarke (2006) proposed utilising a systematic approach to collect relevant data points related to the research topic to create codes.
- **Searching for themes:** The initial stages of the research process involved identifying themes and assessing both the positive and negative aspects of these themes as a starting point for determining potential codes. Braun and Clarke (2006) proposed that the researcher should start by analysing how codes come together to create broader themes in the data at this point. Following the creation of a subject list, the researcher focused on overarching trends in the data by merging coded data with suggested themes.
- **Reviewing of themes:** The researcher reviewed the identified themes and elaborated on them as required. Braun and Clarke (2006) proposed that during this phase, the researcher should have a collection of possible themes because of revisiting the initial subjects. Some concepts may organically connect, while others may need to be divided into smaller, easier-to-understand parts.
- **Defining and naming themes:** During this phase of the analysis, the focus was on determining which data features are being gathered, what sets the themes apart, and why they are intriguing. During this stage, the researcher enhanced the existing themes provided in the final analysis to assist in exploring the data within each theme. During this phase, the significance of the themes was established based on how each theme influences the overall interpretation of the data (Braun and Clarke, 2006).
- **Producing the report:** After analysing the selected topics, the researcher created the final report. The researcher selected key themes to effectively address the research questions in the results section.

3.3.4. Measures to ensure trustworthiness

Credibility, in-member checks, confirmability, and transferability were used to ensure trustworthiness. For in-member checks, the researcher was in contact with the participants to seek participants' views on the credibility of the findings and interpretations. The researcher had a supervisor, and the supervisor went through the background information, data collection methods and processes, data management and data analysis. After data analysis was completed, the supervisor asked questions about everything the researcher investigated, including the methods, meanings and interpretations to verify the concepts found in the analysis. Confirmability was observed by making provisions for recording the interviews using an audio recorder and making field notes. Lastly, the purposive selection

of the participants support transferability, while the manner in which the results are reported aims to ensure transferability.

3.4 ETHICAL CONSIDERATION

3.4.1 Informed consent

As per the POPI Act, consent was specific, informed, and freely provided (Section 11(1)(a), POPI Act). Participants were made aware of their right to revoke consent at any time (Rubin and Babbie, 2017). Farquhar (2012) suggested that ethical issues in research, particularly in qualitative studies, need to be recognised and addressed. Each participant was provided with a consent form with information about the purpose and extent of the study, its goals, and possible dangers. The participants were asked for their consent verbally and signed a consent form before the interview commenced. Notably, other participants only preferred to provide verbal consent. In addition, the participants were informed that they are free to discontinue participation in the study at any time without incurring any penalties because it is entirely voluntary. But none of the participants revoked their participation at any point. Furthermore, approval to conduct this study was sought and obtained from the W&RSETA.

3.4.2 Voluntary participation

Participation in the proposed study was completely voluntary. No participant was involved in the study against their will. They were informed that they may withdraw from the study at any stage if they experience discomfort and were assured that no one would punish them in any way should they decide to do so.

3.4.3 Anonymity and confidentiality

The researcher ensured that the participant's responses were only used for the study's goals. Furthermore, participants were guaranteed that their identities would be kept confidential and unknown. Additionally, during analyses, the researcher followed Padgett's (2017) recommendation of using pseudonyms to safeguard the anonymity of the participants while analysing data and discussing conclusions. Interview data is securely stored and kept confidential using encryption and password protection

4. Limitations of the study

One potential challenge in analysing how AI affects skill needs in South Africa's wholesale and retail food and clothing industry is the fast pace of advancements in AI technology. Due to the rapid pace of change, any discoveries might soon become obsolete, particularly as AI technology in these sectors progresses. Another challenge arises from the varying rates of AI implementation among major retail companies and small to medium-sized businesses (SMEs). Larger corporations usually can dedicate

resources to AI-based technologies and training for employees, while smaller companies often face challenges with financial constraints and inadequate infrastructure. Differences in AI adoption between big and small companies may impact the study's accuracy in representing the industry.

4. Results

This section presents the analysis of the findings of the study. The research was conducted across all provinces of South Africa and involved in-depth interviews across five provinces and self-administered online survey questionnaires with retail managers across all nine provinces. To protect the confidentiality of the participants, numbers have been used in place of their real names.

4.1. Quantitative Results

Table 1 shows the sample characteristics of respondents in various sectors. The majority are between 40–64 years (62.0%), indicating a largely mature workforce, while 36.0% are younger professionals aged 20–39 years. Only 2 respondents were aged 65+ years, suggesting limited participation from older workers. The sample has more female respondents (59.0%) than males (44.0%), showing slightly greater female representation in the surveyed workforce thus far. Most of the respondents have a Secondary level education (48.0%), only 34.0% had an undergraduate level of education, and 15.0% had Postgraduate qualifications. Among the sectors, Retail respondents dominate the sample at 77.0%, while small proportions were from the Wholesale sector (6.0%).

A significant (79.0%) number of respondents are from large companies (250+ employees). Only 21.0% represent SMEs. Of the respondents, 63.0% hold senior management roles, with 11.0% and 17.0% in frontline and middle management, respectively. There is minimal (< 10%) representation from executives and owners.

Table 1 Sample Characteristics of Respondents in the Wholesale and Retail Sector, 2025 (n = 108)

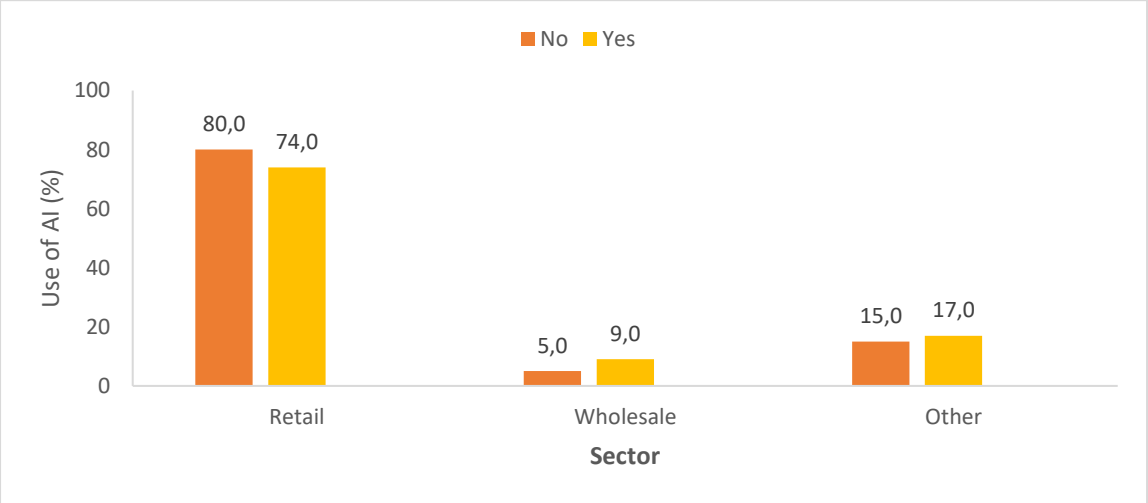
Variables	n	%
Total	**108**	**100**
Age group (Years)		
20-39	39	36.0
40-64	67	62.0
65+	2	2.0
Sex		
Female	64	59.0
Male	44	41.0
Education level		
Secondary	52	48.0
Undergrad	37	34.0
Postgrad	16	15.0
Other	3	3.0

Variables	n	%
Industry sector		
Retail	83	77.0
Wholesale	8	7.0
Other	17	16.0
Company size		
Small (1-50)	13	12.0
Medium (51-250)	10	9.0
Large (250+)	85	79.0
Position in organization		
Director/Owner	10	9.0
Frontline	12	11.0
Middle Management	18	17.0
Senior Management	68	63.0

***Note**: Small sample size (n=108); interpret with caution.*

**Other services: MICT, SETA, NGO, NPO, SDP, Training and development, Training of small businesses in the, Training sector*

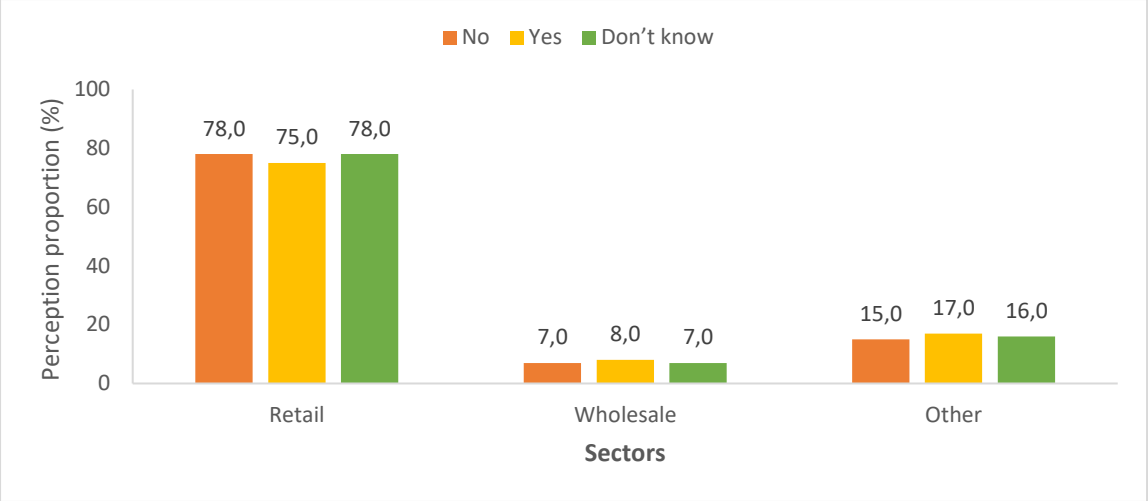
Figure 1 shows the proportion of the use of Artificial Intelligence across sectors. The retail sector had the highest proportion (74.0%) of respondents who confirmed the use of AI in their sector, followed by other services (17.0%) and Wholesale (9.0%).



Note: Other services include MICT, SETA, NGO, NPO, SDP, Training and development, Training of small businesses in the Training sector

Figure 1 The use of Artificial Intelligence in the Sector

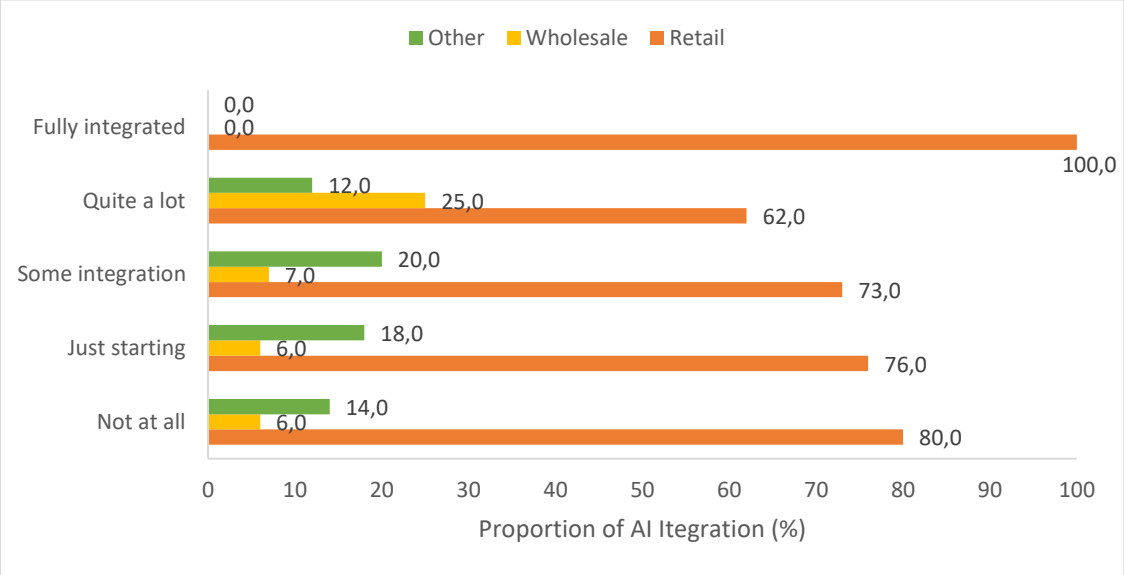
Figure 2 shows the proportion of sector-specific perspectives on whether AI has altered traditional job roles. Overall, there were no major differences in perception within sectors. However, 75% of respondents in the retail sector reported that AI has changed job roles, while only 8.0% said yes in wholesale.



**Other services: MICT, SETA, NGO, NPO, SDP, Training and development, Training of small businesses in the Training sector*

Figure 2 Proportion of sector-specific perspectives on whether AI has altered traditional job roles

Figure 3 shows the proportion of participants who reported on the extent of AI integration within their sectors. 80% of retail respondents reported that AI was not integrated at all. Wholesale and other sectors lagged, with wholesale reporting 25% and 7% in the "quite a lot" and "some integration" categories, respectively, and the other sector at 12% and 20%. Early-stage adoption ("just starting") was also highest in retail (76%), compared to wholesale (18%) and other (6%).



Note: Other services include MICT, SETA, NGO, NPO, SDP, Training and development, Training of small businesses in the Training sector

Figure 3 The Integration of Artificial Intelligence by Sector

Table 2 shows the provision of formal AI training across companies of different sizes. A significant number of respondents reported not receiving any AI training. Most organisations (91%) have not provided AI training, with only 9% offering it. By sector, retail (10%) and other (10%) show some training provision, while wholesale reports none. By company size, small organisations are most

likely to provide training (30%), followed by medium (11%), with large companies least likely (5%).

Table 2 AI Training Received by Sector and Company Size (n=74)

	AI Training Provided				
	No		Yes		Total*
	n	%	N	%	n
Total	**67**	**91**	**7**	**9**	**74**
Sector					
Retail	53	90	6	10	59
Wholesale	5	100	0	0	5
Other	9	90	1	10	10
Company Size					
Small (1-50)	7	70	3	30	10
Medium (51-250)	8	89	1	11	9
Large (250+)	52	95	3	5	55

***Note**: Small sample size (n=108); interpret with caution.*

**Sample does not add up to 108 due to missingness/item non-response*

Table 3 shows sector-specific skills shortage proportions. The most prevalent gap is AI/ML expertise in the retail sector (80.0%), and the lowest AI/ML training gap was in the wholesale sector (9.0%).

Table 3 Skills Gaps by Sector (n=108)

	Sector						
	Retail		Wholesale		Other		Total
	N	%	n	%	n	%	n
Total	**83**	**77**	**8**	**7**	**17**	**16**	**108**
Skills gaps							
AI/ML Expertise	44	80	5	9	6	11	55
Fixing technical problems	3	75	0	0	1	25	4
Managing change	1	100	0	0	0	0	1
Using digital tools	2	100	0	0	0	0	2
Using digital tools + Managing change	1	100	0	0	0	0	1
Working with data	8	62	2	15	3	23	13
None/Not applicable	22	73	1	3	7	23	30

***Note**: Small sample size (n=108); interpret with caution.*

**Other services: MICT, SETA, NGO, NPO, SDP, Training and development, Training of small businesses in the Training sector*

Table 4 shows the integration of AI by company size. While 79.0% of respondents come from large firms, 86.0% of these report no AI integration. Only 80.0% of large firms show "some integration," with minimal full adoption (3%). Small firms show no extent of integration at 18% ("just starting"), while medium firms lag significantly.

Table 4 Distribution of AI Integration Extent and Industry Sector by Company Size in the Wholesale and Retail Sector, 2025 (n = 108)

Company Size	Small (1-50)		Medium (51-250)		Large (250+)		Total
	N	%	n	%	n	%	N
Total	13	12	10	9	85	79	108
Extent of AI Integration							
Not at all	3	6	4	8	42	86	49
Just starting	6	18	5	15	22	67	33
Some integration	2	13	1	7	12	80	15
Quite a lot	2	25	0	0	6	75	8
Fully integrated	0	0	0	0	3	100	3

***Note**: Small sample size (n=108); interpret with caution.*

Table 5 shows the distribution of Training Methods and Organisational rank in the Organisation. Most firms (47%) train staff on AI informally, while 19% use formal programs. Over a third (34%) provide no training at all. Wholesale leads in formal training (38%); retail lags (36% offer none). Frontline workers get mostly on-the-job training (67%), with just 8% in formal programs. Surprisingly, 37% of senior leaders report no AI training

Table 5 Training Methods by Sector and Organisational Rank (n=108)

	Training methods						
	Formal programs		On-the-job / In-house		None/Not applicable		Total
	n	%	N	%	n	%	n
Total	**20**	**19**	**51**	**47**	**37**	**34**	**108**
Sector							
Retail	15	18	38	46	30	36	83
Wholesale	3	38	3	38	2	25	8
Other	2	12	10	59	5	29	17
Organisational Rank							
Director/Owner	2	20	5	50	3	30	10
Frontline	1	8	8	67	3	25	12
Middle Management	5	28	7	39	6	33	18
Senior Management	12	18	31	46	25	37	68

***Note**: Small sample size (n=108); interpret with caution.*

**Other services: MICT, SETA, NGO, NPO, SDP, Training and development, Training of small businesses in the Training sector*

Table 6 shows AI Training Methods by Employee Education Level. There are disparities in AI training access by education level. While 48% of employees have secondary education, they receive the majority (55%) of on-the-job training, but also face the highest rates of no training (43%). Formal

programs are equally split between secondary (40%) and undergraduate (40%) groups, while postgraduates - despite their advanced qualifications - are surprisingly underserved, with 22% receiving no AI training at all.

Table 6 AI Training Methods by Employee Education Level (n=108)

	Education Level								
	Secondary		Undergrad		Postgrad		Other		Total
	n	%	N	%	N	%	n	%	n
Total	**52**	**48**	**37**	**34**	**16**	**15**	**3**	**3**	**108**
Training methods									
Formal programs	8	40	8	40	3	15	1	5	20
On-the-job / In-house	28	55	17	33	5	10	1	2	51
None/Not applicable	16	43	12	32	8	22	1	3	37

***Note**: Small sample size (n=80); interpret with caution.*

Figure 4 shows the Distribution of Perception on the Improvement of business competitiveness due to AI. 37.0% of respondents reported that AI did not improve business competitiveness at all.

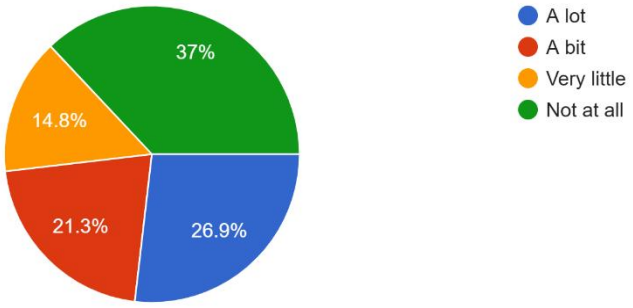


Figure 4 Distribution of Perception of Improved Business Competitiveness due to AI (n = 108)

Table 7 shows traditional job roles most affected by AI integration by sector**.** Of 31 total removed roles, retail accounts for 68%, followed by other sectors at 29%, and wholesale at 3%. Manufacturing/Assembly roles (n=10) and Other/Unspecified roles (n=8) are most frequently affected. Clerical/Admin roles are exclusively removed in retail (100%), while Customer Service role losses are split between retail (67%) and other sectors (33%). Retail Cashier/Frontline roles see a higher removal in other sectors (57%) than in retail (43%). Interpretation: Retail faces the largest impact from AI-driven role reductions, particularly in clerical/admin and manufacturing-related

functions, with notable displacement of frontline cashiers in other industries, likely service-based or hybrid retail.

Table 7 Traditional Job Roles Most Affected by AI Integration

	Sector						
	Retail		Wholesale		Other		Total
	N	%	n	%	n	%	n
Total	**21**	**68.0**	**1**	**3.0**	**9**	**29.0**	**31**
Removed roles							
Clerical/Admin	3	100.0	0	0.0	0	0.0	3
Customer Service	2	67.0	0	0.0	1	33.0	3
Manufacturing/Assembly	7	70.0	0	0.0	3	30.0	10
Retail Cashier/Frontline	3	43.0	0	0.0	4	57.0	7
Other/Unspecified	6	75.0	1	12.0	1	12.0	8

***Note**: Small sample size (n=31); interpret with caution.*

**Other services: MICT, SETA, NGO, NPO, SDP, Training and development, Training of small businesses in the Training sector*

Table 8 shows the training needs identified for AI integration by sector. Across 108 reported training needs, retail dominates with 77% of the demand, followed by other sectors at 16%, and wholesale at 7%. Basic AI Literacy is the most sought-after skill (n=55; 51%), primarily among retail workers (78%). Digital Tools & Platforms (n=22) and Data Analysis & Interpretation (n=18) reflect strong interest in foundational and intermediate digital skills, while Cybersecurity Awareness (n=13) is less common but relevant across sectors. Retail drives the need for basic digital training, but other sectors show greater demand for specialised skills like data analysis and cybersecurity, indicating sector-specific skill gaps.

Table 8 Training Needs Identified for AI Integration

	Sector						
		Retail		Wholesale		Other	Total
	n	%	n	%	n	%	n
Total	**83**	**77.0**	**8**	**7.0**	**17**	**16.0**	**108**
Future training needs							
Basic AI Literacy	43	78.0	3	5.0	9	16.0	55
Data Analysis & Interpretation	11	61.0	3	17.0	4	22.0	18
Digital Tools & Platforms	19	86.0	1	5.0	2	9.0	22
Cybersecurity Awareness	10	77.0	1	8.0	2	15.0	13

***Note**: Small sample size (n=108); interpret with caution.*

**Other services: MICT, SETA, NGO, NPO, SDP, Training and development, Training of small businesses in the Training sector*

4.2. Discussion of Quantitative Results

The results presented indicate that respondents are predominantly from retail, large organisations and hold senior management roles. Furthermore, notable patterns can be noted within that context. The first being *awareness versus operationalisation*, this suggests that many respondents reported that AI is "in use" in their sector, yet most simultaneously characterise organisational integration as minimal or just beginning. This pattern is consistent with early-stage adoption: tools may be visible in pockets without being embedded in core workflows, performance management or job descriptions/designs. The second emerging pattern is that *training gaps are systematic, not incidental*. A clear majority of respondents reported no AI training, and when training occurred, it was most likely informal or on the job. Leadership training also appeared uneven, with a notable proportion of senior managers reporting no training, while frontline staff primarily receive in-house exposure rather than structured curricula.

Training access also varied by level of education, suggesting that learning opportunities may be shaped more by organisational practice and role than by employee qualifications. The third pattern was that *skills need to cluster around data and Machine Learning*. The most frequent skills gaps reported related to AI/ML expertise, followed by data work and change management. This aligns with the "awareness-integration" gap, which essentially means that organisations have recognised high-value AI capabilities but have not yet developed scalable pathways to acquire or diffuse them to fully realise the impact of AI on skills requirements.

4.2.1 Training and Skills Development

The frequency of informal training signals initiative at the team level but raises concerns about consistency, assessment, and transferability. Without structured learning objectives, assessment frameworks, and progression pathways, organisations risk building isolated competence that does not translate into measurable performance or equitable access. The finding that a sizeable group of senior leaders report no training is particularly salient: leadership capability is often a precursor to responsible scaling. It is crucial to develop systems that will facilitate upskilling within retail and wholesale sectors to ensure job security.

4.2.2 AI Integration and Competitiveness

Respondents' perceptions that AI has not improved competitiveness for many firms are congruent with low integration and limited initiative towards integration. Benefits typically accrue after organisations move from *experimentation* to *process redesign* (integrating AI outputs into inventory, merchandising, pricing, or workforce planning cycles). At an early stage, costs (time, governance, change management) can be more salient than returns, especially where training and change

processes are thin. Moreover, poor leadership involvement of senior management (which is most of the sample) and above in AI-related training signals a critical leadership gap championing skills development from the top. This leadership vacuum may contribute to a lack of coherent skills strategies, no perceived improvement in business competitiveness, particularly for mid-career professionals who appear to lack adaptive, targeted training pathways. While higher education attainment offers some buffering effect, it does not fully address the evolving demands of AI-driven work environments.

4.2.3 Implications for Workforce and Equity

The sample is largely mature and features more women than men, with substantial representation of employees with secondary education. Given that training access appears uneven, there is a risk that AI adoption could widen internal inequities if upskilling is not deliberately inclusive (by rank, education level, or function). Conversely, fit-for-purpose on-the-job training, paired with clear progression routes, could translate AI adoption into broadened opportunity, particularly in retail, where frontline roles are prevalent.

4.2.4 Strengths and Limitations

A key strength of this study is that it provides a timely baseline, capturing an early 2025 snapshot of perceptions on AI use, integration, skills gaps, and training within the wholesale and retail sector. This offers valuable insight at a moment when AI adoption is still emerging and evolving. The study also takes a multi-faceted view, examining factors such as organisational size, sector, rank, training modality, and education. This allows for triangulation across different perspectives, making the findings richer and more nuanced. Another strength is its practical focus. The study centres on actionable constructs, AI integration, training approaches, and skills gaps that organisations can directly influence, making the results relevant for decision-making.

Several limitations have also been noted: The sample is heavily skewed toward retail, large firms, and senior managers, which limits representativeness. Caution is needed when applying these findings to the wholesale subsector, SMEs, or frontline workers. Some subgroup analyses rely on very small sample sizes, which reduces the reliability of those estimates. These figures should be interpreted as descriptive trends rather than precise measurements. Inconsistencies in denominators and item responses across tables and figures suggest possible nonresponse or differences in question routing. The distinction between “AI use in sector” and “extent of AI integration in organisation” may not have been clear to respondents, potentially causing inconsistencies in the data. Future studies should provide clear definitions and examples. Finally, the

study relies entirely on self-reported data, which can introduce perception bias. Including objective measures, such as the number of AI-enabled processes, would improve validity.

Conclusion

The preliminary results provide an important early view of how AI is perceived, adopted, and supported through training in the wholesale and retail sector in 2025. While awareness of AI is high, particularly in retail, actual integration remains limited, with most organisations still at the early stages of adoption. Training provision is uneven, heavily reliant on informal methods, and often inaccessible to key groups, including frontline staff and even senior leaders. The most pressing skills gaps relate to AI/ML expertise and data competencies, underscoring the urgency of structured, inclusive capacity-building strategies. Furthermore, the findings should be interpreted with caution due to limitations in sample representativeness, small subgroup sizes, inconsistent denominators, and reliance on self-reported data. These constraints mean that the results are best understood as indicative trends rather than definitive measurements.

4.3. Qualitative Results

This section presents the qualitative analysis of findings from the study. The research was conducted across some provinces of South Africa and involved in-depth interviews with ten retail managers, all of whom successfully participated in the study. To protect the confidentiality of the participants, numbers have been used in place of their real names.

The findings are structured according to the key 5 main themes that emerged during the data analysis. These themes offer an understanding of how AI is influencing skills requirements, creating new opportunities and posing potential challenges within the wholesale and retail sector. The results are also presented in alignment with the research objectives to ensure that each research question has been fully addressed.

This systematic presentation of results aims to provide a foundation for interpreting the implications of AI adoption for workforce development, guiding both policy recommendations and practical strategies for skills training, reskilling and upskilling in the retail industry. Ultimately, this analysis seeks to contribute valuable insights into how the sector can adapt and remain competitive in an increasingly technology-driven era.

Table 9 below depicts the demographic information of participants who took part in the study.

Table 9 Demographic information of participants who took part in the study

Participant No	Gender	Age	Type of organisation	Province	Role
1.	Female	35	Retail	Limpopo	Manager
2.	Female	30	Retail	Mpumalanga	Manager
3.	Male	43	Retail	Limpopo	Manager
4.	Male	32	Retail	Gauteng	Manager
5.	Male	39	Retail	North West	Manager
6.	Female	42	Retail	Western Cape	Manager
7.	Male	40	Wholesale	Gauteng	Manager
8.	Male	42	Wholesale	Mpumalanga	Manager
9.	Female	35	Retail	Mpumalanga	Manager
10.	Male	29	Retail	Free State	Manager

Table 10 below depicts the objectives, main themes and sub-themes that emerged from the study

Table 10 Themes that emerged from the study

Objective	Theme	Sub-Theme
Assess the current AI integration: Examine the extent to which artificial intelligence (AI) has been integrated into the wholesale and retail sector.	**Theme 1:** AI Adoption in Retail Operations	**Subtheme 1.1**Integration into customer services **Subtheme 1.2:** Automation of internal processes **Subtheme 1.3:** Subtheme Devices and embedded smart software
Analyse changes in skills requirements: Investigate how AI integration has altered the skills and competencies required by employees in the wholesale and retail sector. Identify emerging skills and competencies that are	**Theme2:** Changes in skills Requirements	**Subtheme 2.1:** Growing Importance of Digital Literacy and Technical Device Proficiency **Subtheme 2.2:** reshaped work processes

becoming essential due to AI advancements.		**Subtheme 2.3:** Integration of Digital Proficiency into Core Job Requirements
Evaluate the impact on job roles: Explore how AI is reshaping traditional job role and responsibilities within the sector. Assess the potential displacement or creation of job roles as a result of AI implementation.	**Theme 3:** Transformation of Roles and Responsibilities	**Subtheme 3.1:** Evaluating the Impact on Job Roles **Subtheme 3.2:** Reduction of repetitive administrative tasks. **Subtheme: 3.3** Expanded Responsibilities and Role Evolution Over New Job Creation **Subtheme 3.4:** Future potential for role displacement due to online shopping and robotics.
Identify skills gaps and training needs: Determine the current skills gaps that have emerged due to AI adoption.	**Theme 4:**Skills Development and Gaps	**Subtheme 4.1:** Digital Competence Gaps in Role Transitions **Subtheme 4.2:** Training Strategies for AI Integration **Subtheme 4.3:** Operational Challenges of AI Implementation **Subtheme 4.4:** Variability in Training Approaches: Formal vs. Informal **Subtheme 4.5:** Targeted Training Needs for Digital Payment and Refund Processes

Assess the broader impact on sectoral growth: Evaluate how the integration of AI is influencing overall growth and competitiveness in the wholesale and retail sector. Explore the implications of AI on sectoral innovation and long-term sustainability	**Theme 5:** AI's Role in Long-Term Sustainability and Competitiveness	**Subtheme 5.1:** Efficiency Gains and Incremental Sectoral Growth **Subtheme5.2:**Sustainability Benefits through Digitalisation and Waste Reduction **Subtheme 5.3:** Infrastructure Limitations as a Barrier to AI's Full Potential **Sub-Theme 5.4** Recommendations for Policymakers and Industry Leaders

Objective 1: Assess the current AI integration: Examine the extent to which AI has been integrated into the wholesale and retail sector

Theme: AI Adoption in Retail Operations

Subtheme (1.1) Integration into customer services

Evidence from the study indicates that among participants, the simplest example of AI adoption is in customer-facing capabilities such as digital ordering, electronic receipts and digital payments. Participants reacted to multiple levels of AI adoption within their organisations. Whereas others had already embedded AI in activities such as inventory management, sales projection, and customer service robots, the rest were still in the early stages, mostly applying AI to facilitate administration efficiency and technical support. There were a few managers who confirmed that AI was already improving sales and business effectiveness and not automating human jobs. AI was also found to improve turnaround times and decision-making with fact-based data, although it was more used in urban-based stores rather than rural branches. Below are narratives extracted from participants:

"We use our tablets to help customers find product information quickly, so they don't have to wait for someone to go check at the back." **Participant 9**

"Yes, in terms of efficiency and customer services it makes our jobs easy and efficient." ***Participant 8***

Participant 1 described this shift directly: *"we no longer print our store receipts; we send them through via electronic methods such as emails."*

Participant 7 *added "There are also some items we might not have physically in the store but when you go into our website, you can easily access them"*

Participant 2 likewise noted AI use in online orders and payments: *"we do utilise AI in our store through online orders and payment methods made through customers."*

Participant 3 reinforced how customer-facing processes moved to personal devices: *"customers who pay using options like PayFlex and pay just now and store accounts."*

The above statements state that AI-based or intelligent digital services have been put in place primarily to facilitate convenience in payments, purchases and interactions with customers

Subtheme (1.2) Automation of internal processes

The study reported internal administrative automation, such as electronic records of hiring and the capturing of attendance of employees. The following extracts attest to that:

Participant 1 said Hiring contracts "… *is done electronically, and I'm assuming that's also part of AI."*

Participant 2 described attendance capture: *"We also use it for employee attendance capturing, such as when a person arrives at work, they have to authenticate through facial recognition and also apply the same method when they knock out later."*

Participant 9 *"Stock counts are much faster now because we use scanning devices; before we had to write everything down manually."*

Participant 10 also indicated, *" We are able to capture and trace employee attendance and absenteeism through digital platforms, something that had to be done manually before"*

These narratives above indicate that AI or intelligent automation is embedded not only in customer interactions but also in back-office HR and security activities

Subtheme (1.3) Devices and embedded smart software

The technology stack by which these services are being delivered was mentioned time and time again, with frequent references to tools such as tablets, laptops, iPads and company-wide AI-enabled tools

such as Microsoft Copilot. These technologies are at the centre of customer service enhancement, transaction processing and management of store operations. Below are narratives to support the above-mentioned:

Participant 1: *"We do have equipment like computers, laptops, iPads and tablets at our store to assist consumers."*

Participant 4 stated the organisation is *"Microsoft-driven, and we use tools like Microsoft Copilot," and explained, "if, for example, we have a client with an issue and I'm not getting the solution, I'd ask Copilot and it will provide a solution for me."*

Participant 3: "Most of our day-to-day tasks rely on these devices from checking stock availability to processing applications; without them the workflow would significantly slow down."

Participant 7: *"When we have customer enquiries, I tend to use my work iPad to quickly check product specifications or prices. It saves the customer time and improves their overall shopping experience."*

These accounts demonstrate that AI implementation is not merely a matter of back-

end analytics, but is embedded in the actual tool

Objective 2: Analyse changes in skills requirements: Investigate how AI integration has altered the skills and competencies

Theme 2: Changes in Skills Requirements

Subtheme 2.1: *Growing Importance of Digital Literacy and Technical Device Proficiency*

The findings also indicate that the use of AI in retail and wholesale has introduced digital literacy as an essential skill for all workers across career levels. Employees must use AI machines and software in daily operations; thus, technical requirements apply even to lower-level jobs. Gaps in experience and age can be addressed with some employees underperforming without direct training. Staff need to overcome trivial technical hiccups, comprehend AI-powered acumen, and make use of digital wisdom while making decisions. Regular software updates and creating AI capabilities necessitate continuous skill upgrades in order to maintain productivity and standards of operations. This is what some had to say:

Participant 2: "*Nowadays, you can't work here if you don't know how to use a tablet or a scanner, it's part of the job from day one."*

Participant 6: *“It’s not just about knowing products anymore; you must also know how to operate all the devices and apps we use every day.”*

Participant 4: *“Before, most things were written down, but now everything is digital. If you’re not good with devices, you’ll struggle.”*

Participant 7: *“We had to learn fast how to use the new stock-taking system, it’s all done through devices now and being used to the traditional method, we had to quickly adapt.”*

Participant 9: *“Even the simplest task, like checking prices, is now done on the device, so employees need to be comfortable with it, especially in this high AI era.”*

Subtheme (2.2) Reshaped work processes

The findings highlight that while AI has not caused job loss, it has transformed work activities by altering the skills required for maximum performance. The conventional has been transformed with this new era of technology, and this requires the acquisition of new skills. The statements below support the aforementioned:

Participant 2 further observed that "*At this point in time, there's no possible way we can claim that we don't require a particular role, or a role is more significant,*" such as when the job posts are the same but the way of performing them has been altered.

Participant 8 elaborated on how "*AI has not automated any employment but has reengineered work processes. For example, employees are now required to have skills in scanners, ordering software, and other AI-based devices to carry out everyday work.*" This refers to the application of AI-based systems in workday processes, where conventional manual processes now have electronic systems supporting them.

Despite more utilisation of technology, communication, teamwork, and interpersonal interaction skills are still priceless. **Participant 10** also proposed:

“Although I do not think that AI has altered or diminished the importance of some jobs, it remains crucial for employees to be able to understand the basics of AI so that they can deliver services through AI because it has become important to learn device skills as well as digital skills, especially in this age of high technology.".

Despite the technology shift, soft skills remain most crucial. Communication remains the core skill, and digital literacy increasingly so. The way **Participant 10** explained it was: *"Even though technical skills*

now are required for some jobs, the customer service type of retail is still the same underneath." This means that AI-driven change has placed additional new technical requirements on top of previous work, as well as supplanting the implicit human aspects of the work.

The above-mentioned suggests that AI-led transformation has imposed new technical strains on top of existing work beyond replacing the underlying human elements of the work.

Subtheme 2.3: *Integration of Digital Proficiency into Core Job Requirements*

The results indicate that AI uptake has not replaced jobs but shifted the skill set required of the labour force, with digital literacy being at the centre of job requirements. The interview participants talked of a blatant transformation where the skill to use digital devices is no longer a technical skill but a fundamental requirement. This change is not just being aware of equipment such as scanners, tablets, and smartphones, but having the capacity to use AI-based applications to carry out activities on a daily basis.

Participant 2 indicated that this change was, "*It's no longer good enough just to know your job, you have to know the systems and technology that enable it*."

Similarly, **Participant 3** quoted, "*AI allows us to get it done faster, but only if you possess the ability to operate the machines and programs that allow it."*

Others' transition involved technical training and acquiring new workflows. **Participant 4** explained, *"When I started, all things were more done by hand. Now, even stock counts are done using handheld scanners to AI systems. If you can't get with them, you fall behind."*

Participant 5 also agreed, *"We had to learn things such as order tracking applications and electronic payment systems. Now it is a part of our day-to-day work."*

This increasing intermixture of technical skills is not a replacement for soft skills but rather an add-on. As **Participant 6** summarised, *"You still have to deal with people and be a team, but if you don't have the tech stuff, it's like you're doing half the job."*

Overall, the results suggest that AI-driven alterations have embedded digital literacies into the very requirements of most professions, such that ongoing upskilling becomes imperative in order to remain work-relevant.

Objective 3: Evaluate the impact on job roles: Explore how AI is reshaping traditional job role and responsibilities

Theme 3: Transformation of Roles and Responsibilities

Sub-theme 3.1: Evaluating the Impact on Job Roles

The findings reveal that although AI significantly revolutionised procedures, it did not lead to mass job loss. Instead, the jobs changed, new ones appeared or were upgraded to accommodate computer elements. Interviewees repeatedly remarked that AI helped improve process efficiencies, freeing employees to engage more with customers and introducing specialist posts best suited for technology work. This is what they said:

For example, some of the participants discussed how till packers were being re-trained as cashiers and had to be taught to handle AI-based payment systems and accept electronic money. Managers also shared that AI had taken the responsibility of mundane administrative work off their shoulders and had liberated workers to provide customised customer service and store support. **Participant 2** commented, *"AI hasn't taken jobs away, it's changed what we do." People have changed to jobs that entail them dealing with more systems and less repetitive hands-on labour.*

It was revealed by participant 3 that it also created entirely new positions, like employees who track the movement of goods with scanners or manage customer web account services such as store credit applications and insurance policy sign-ups.

Participant 3 said, "*We now have jobs that did not exist before for people who only provide online services or track stock through AI programs."*

Participant 5 also provided a similar answer and stated. *"We have employed people just to operate on the task of monitoring things; we also have employees who operate just for the sake of assisting people in opening store cards. All these are done online with the assistance of AI."*

Importantly, some participants agreed that there were no retrenchments due to AI implementation directly. Interestingly, as **Participant 4** highlighted, "*Technology here has been about making work easier, not cutting jobs."* **Participant 8** agreed, *reiterating, "Technology has not made us retrench certain individuals."*

More broadly, the findings point to AI as affecting the nature and scope of jobs as opposed to substituting them, with a focus on role diversification and upskilling to adapt to new technology requirements, as well as role diversification to accommodate new tech requirements.

Subtheme:3.2 Reduction of repetitive administrative tasks and workload change for managers

The findings indicate that AI has dramatically reduced the amount of work involved in repetitive and routine administrative tasks, particularly for managers. With the automation of tasks such as data capture, stock monitoring, and record-keeping, managers have been able to create time to exercise

strategic control and interact with customers. AI has not gotten rid of these jobs but changed what they do, away from menial, manual tasks towards value-enhancing processes.

Participant 2 added that AI *"decreased the workload for some jobs like the manager's job" and highlighted that "jobs that are repetitive in nature, like data capturing",* have been automated a great deal. This transformation has not made such jobs unnecessary but has allowed employees to spend their time on higher-level responsibilities. **Participant 5** provided a concrete illustration of this change: *"We used to check things manually to keep track of things available and quantity; now we have scanners, it instantly shows."*

Other stakeholders concurred, stressing the saving in time that comes from using AI applications. **Participant 3 said**, *"Before, managers would spend several hours slogging through paperwork. Now the system generates reports automatically, and we have more time to address problems and assist staff.***" Participant 4** also added, "It's cut down on the going-back-and-forth for basic information we can get information in seconds and make quicker decisions."

Participant 9 *"We no longer spend hours filling out forms by hand; the system does it automatically once we scan the product."*

The consensus of the participants is that AI has replaced jobs but has fundamentally changed the way some jobs are performed, leading to increased efficiency of operations. **Participant 6** eloquently summed it up by saying, "*AI hasn't replaced people; it's replaced the boring parts of the job."*

Subtheme:3.3 Expanded Responsibilities and Role Evolution Over New Job Creation

The study identifies that AI adoption has increasingly contributed to the workload of existing employees rather than leading to the creation of entirely new jobs. Growth is usually through reskilling and upskilling existing staff to carry out AI-related tasks, for example, interpreting AI outputs, working with AI-powered systems and training others. Rather than recruiting more staff, organisations are optimally utilising their existing employees and equipping them with the ability to integrate AI into operations.

Participant 4 explained this point by making it clear that AI does not necessarily create new work but that "*we train the already existing staff members to perform some AI tasks."*

Furthermore, **Participant 1** described a top-down training process: *"They train us managers initially so that we can transfer the skills to the other junior staff members."*

The other participants agreed. **Participant 3** noted, *"Instead of hiring new people, they give us more jobs like reading AI reports or making sure that the system is okay."*

Participant 8 also reported a task shift*: "AI has supplemented what we have been doing. We have to learn the system, train others, and do our normal job."*

Such experiences suggest that the role of AI has to be seen as role evolution rather than job displacement. Workers are being tasked with new tasks, usually layered on top of existing tasks, which require continuous learning and adaptation. For instance, tasks such as the management of AI systems, data interpretation, and fault fixing have become features of tasks that had little or no technical component to them in the past.

Subtheme:3.4 **Future potential for role displacement due to online shopping and robotics**

While adaptation was emphasised by most of the participants, some illustrated that some narrowly defined tasks have been taken over by artificial intelligence and, in the future, will perhaps continue to automate specific tasks. The most obvious changes can be seen in standardised repetitive tasks that can be easily replicated through computer means with minimal human judgment.

Participant 3 gave a quick example: *"Years ago, there would be shops that have staff who are hired specifically to deal with store account applications. People are now able to apply for a store account from their phones in the convenience of their own homes". This has made the specific jobs obsolete."* Such examples illustrate how AI can replace entirely some forms of labour, even as the general job is still intact.

The rest of the interviewees saw the change as not a complete one but merely a partial shift**. Participant 4 responded,** *"But not altogether replacement, I'd say 50/50. AI does substitute some, but some still require human input.* "This understanding acknowledges the ongoing need for human input, particularly in jobs with complex judgment, emotional intelligence, or complexity of solution beyond current capabilities of AI.

Participant 9, however, suggested that *"If the systems keep improving, some jobs could be done without people, like cashiers or stock checkers."*

These findings indicate that although the current impact of AI on automation is restricted to single tasks, there is also a perceived potential for enhanced development in more sophisticated domains in the future. The respondents admitted that continuous technological advancement could push the

balance further towards the machines, so constant upskilling was necessary for long-term workplace stability.

Objective 4: Identify skills gaps and training needs: Determine the current skills gaps that have emerged due to AI adoption

Theme 4: Skills Development and Gaps

Subtheme 4.1: Digital Competence Gaps in Role Transitions

The findings indicate that skills gaps were most evident when workers were promoted to jobs demanding higher levels of digital skills. Adoption of AI has raised the technical requirements of most occupations, and digital literacy and working knowledge of AI-powered tools have become necessary. Skills gaps were most evident in cases where workers, particularly older workers, had minimal exposure to technology in the first place.

This was observed by **Participant 9:** *"Particularly working with older people who are not familiar with the technology that's currently available, they can't cope. We need to give them proper training officially."*

Participant 7 indicated, *"Older colleagues sometimes struggle because they've never used this type of technology before."*

Similarly, **Participant 5** pointed out, *"Older staff are not used to the technology we now have to plan formal training."*

All of these narratives mention the necessity of formal training programs to bridge the knowledge gap and enable easy role transition.

Participant 3 said: *"When I got promoted, I had to familiarise myself with new systems that I had never worked on before, it was overwhelming initially, with no proper training."*

Participant 8 explained: *"I've watched friends get promoted into digital-intensive roles and then struggle for weeks because they were never trained on the software that they are supposed to be using."*

Participant 2 added: *"Some of our best salespeople are afraid to apply for jobs of greater responsibility because they know the position demands good computer skills they don't have yet."*

The above extracts depict that while promotion is a fair reward for labour, it also reflects an inadequate preparation for AI-facilitated tasks. Without formal, specific digital skills training, career transitions risk slowing productivity and reducing employee confidence.

Subtheme 4.2: Training Strategies for AI Integration

Evidence showed that workplace skills gaps were most widely tackled through focused workshops and formal training courses, mostly delivered through resources such as iTel, which guides staff through step-by-step technical troubleshooting and escalation procedures. This is conducive to technical competence and confidence in the operation of AI systems.

Rather than hiring an outside employee, most employers opted for upskilling the current employees to retain institutional knowledge and gain workplace continuity. The method allowed veteran workers to transition jobs without losing industry-specific knowledge. Illustrates to support below

Participant 2 mentioned, "*We don't just bring in new people, we take the people we have and teach them to work with the systems."*

Participant 4 added, "*Some sort of formal training is required, especially if the system is new. It gives everyone a chance to learn prior to using it in the workplace."*

Participant 4 explained that AI deployment also pointed toward technical and systems integration competencies specifically for system developers and technicians. Several Participants acknowledged that personnel able to assist AI tools and ensure compatibility with existing infrastructure, such as Windows-based systems or SAP platforms, are required. Elaborated in detailed narratives below:

Participant 4: warned: *"If the systems are not upgraded, then the AI tools cannot work at their capacity," and added that organisations require "trained system developers or technicians who can understand the outputs of the AI as well as the systems where they are being integrated."*

Subtheme 4.3: Operational Challenges of AI Implementation

The findings also showed that while training addressed the majority of skill gaps, working problems remained. Older employees typically require extra time and individual guidance to adapt, and this has the potential to restrain AI adoption in some departments. Moreover, scheduling training without disrupting normal operations was described as a typical issue. Narratives shared below:

Participant 3 quoted, "*It's hard to train them all simultaneously, some have to stay on the floor dealing with customers, so training takes longer."*

The systems work well when you know them, but when they are not familiar with it, people do things incorrectly, and that irritates clients," as explained by Participant 6.

Such observations suggest that while training is essential in order to counter digital skill gaps, the implementation of AI technologies must be managed well in order to reduce service disruption and improve the quality of services.

Subtheme 4.4: Variability in Training Approaches: Formal vs. Informal

The findings demonstrate a high level of variability between stores in the delivery of training, ranging from formal programmes to work-based informal guidance.

Formal programs were defined by **Participant 1**: *"We have a program called Jump-Start; with each person that we bring in they must first do training under that and hone their craft."*

Participant 3, however, indicated a less formal response: *"Not exactly, there are no formal training programs, someone will teach them how to use these practices, this is more of an informal introduction."*

*"We have a program called Jump-Start; with each person that we bring in, they must first do training under that and hone their craft. "***Participant 4**

Participant 7 *noted: "Some stores invest in regular workshops, but in others you're just expected to figure it out on your own with help from whoever is available."*

Participant 10 *added: "It really depends on where you work. I've been in one branch with formal training modules, and another where they simply say, 'Here's your login, start working.'"*

In contrast, some sites relied on informal, experiential learning. **Participant 3** reflected:

"Not exactly; there are no formal training programs. Someone will teach them how to use these practices – this is more of an informal introduction."

Participant 7 reinforced this point, describing a reliance on peer-to-peer learning*:*

"You just shadow someone until you know what to do; there's no set manual or course."

Similarly, Participant 5 noted*:*

"Most of our training happens on the floor; you pick it up as you go."

These varying practices are indicative of inconsistency in skill upgrading, where there are some employees with planned upskilling, while others rely on mentorship and observation learning. The

disparity is likely to affect adjustment rates in AI-driven workflows and general levels of competency among the different sites.

Subtheme 4.5: Targeted Training Needs for Digital Payment and Refund Processes

Pragmatic gaps in the administration of digital payment systems and refund policies were observed by some Participants. Process complexities baffled staff, causing delays and annoyance for customers as explained herein:

Participant 3 recounted a common challenge: *"Customers expect immediate refunds, but it may actually take days before a refund can be initiated, so some customers get very furious and fail to understand."*

Similarly, **Participant 1** noted the managerial burden caused by insufficient training: *"I, as a manager, have to come in and assist because the junior employees are not well-trained enough to deal with such."*

Similarly, Participant 7 explained:

"If the system rejects a transaction, some staff panic because they don't know the alternative steps."

Participant 8 added*:*

"We get complaints, especially when customers are told to wait days for a refund – they think we are stalling."

It was pointed out by **participant 9**: *"Some staff don't know how to process a refund, and it causes delays for customers."*

These insights point to the necessity of targeted training that combines technical proficiency with customer service skills, ensuring employees can confidently manage payment platforms, refund flows and customer interactions.

Objective 5: Assess the broader impact on sectoral growth: Evaluate AI's influence on growth, competitiveness and sustainability

Theme: AI's Role in Long-Term Sustainability and Competitiveness

Subtheme 5.1: Efficiency Gains and Incremental Sectoral Growth

The findings indicate that the overall respondents considered AI to be one of the drivers of efficiency and improved customer service, which positively impacted competitiveness. They also expressed that AI has been evolutionary in nature for improving processes so far, rather than introducing significant structural shifts in the retail sector.

Participant 1 cited concrete operational benefits: "*AI really saves us time, money, and we don't print our store receipts anymore."*

Similarly, **Participant 2** made the following statement: *"These tools make things easier in some sense, but they have not changed the business in any significant way yet."* These statements show how much AI delivers measurable improvements in process speed, expense, and convenience; its revolutionary potential is not quite there yet.

The expansion was explained more in relation to business effectiveness as opposed to sales volume increases. **Participant 5 said**: *"Integration of AI has improved efficiency, streamlining and accelerating our work that positively contributes towards our overall growth and competitiveness."*

Participant 10 offered a vision for what the future might hold: *"I see it evolving and growing better."* Collectively, these narratives position AI as a gradual agent of industry growth, fuelling competitiveness primarily through process gain and customer benefits.

Subtheme 5.2: Sustainability Benefits through Digitalisation and Waste Reduction

Participants 2 referred to the environmental benefits of AI integration in the form of reduced paper usage and wastage. The use of digital receipts, paperless advertisement and display screens by applying AI technology was seen as a feasible green strategy.

Participant 2 said*: "With display screens utilising digital or artificial intelligence technology, it would be an easy thing to switch advertisements without relying on printed adverts wastage would also be minimised."*

Such steps not just aid broader sustainability objectives but also reduce operational costs and increase flexibility in the upkeep of promotional material. The findings show that digitalisation via AI can be an environmental and economic turn for sectoral long-term sustainability.

Subtheme 5.3: Infrastructure Limitations as a Barrier to AI's Full Potential

While the participants acknowledged that AI has the potential to improve competitiveness and sustainability, they also pointed out huge infrastructure bottlenecks hindering its value. Poor connectivity and power supply were given as chronic operational issues that interfere with customer service and undo efficiency advances.

Participant 1 described the impact of network crashes: *"We mostly experience problems when we have no network; we experience numerous challenges. It becomes an issue when customers are at the machine and they are just about to make payments, then the machine just goes off."*

Participant 4 emphasised the necessity for infrastructure funding, suggesting *"better internet, like 5G and electricity stability" to realise the full potential of AI.*

With these quotations, they emphasise that in the absence of stable infrastructure, competitive and sustainability gains of AI are trapped, likely to slow sectoral growth and limit its broader market effects.

Sub-Theme 5.4: Recommendations for Policymakers and Industry Leaders

Participants offered a range of recommendations to guide policymakers and industry leaders in ensuring that artificial intelligence (AI) adoption within the retail sector is inclusive, skill-enhancing, and strategically implemented. Across the interviews, there was consensus that AI integration should not only focus on operational efficiency but also support workforce adaptability, job security, and equitable access to technological benefits.

One of the strongest messages that emerged was the need to create environments that encourage learning and adaptability to AI-driven changes. Several participants highlighted the importance of providing workers with hands-on opportunities to experiment with AI in their everyday tasks. This, they argued, would allow employees to develop confidence and skill in applying emerging tools. As Participant 4 noted, *“I’d like to adopt AI into environments, learn, understand and grow from it because of that I’m at an advantage at work.”* Drawing from personal experience, the same participant elaborated, *“We need to enable hands-on experience and real-world application so that individuals can better adapt to it. For example, as a consultant, I've started studying how to use AI in certain software suites. I’ve gained an advantage in the workplace and have become more preferred for certain tasks.”* These reflections underscore the importance of creating training opportunities that bridge theory and practice, positioning AI as an accessible tool rather than a disruptive force.

Another key recommendation focused on improving digital payment systems. Participants recognised that advancements in payment technologies could serve a dual purpose: streamlining customer transactions and exposing staff to real-world applications of new technology. Participant 2 suggested, *"Policymakers and business leaders should invest in more digital payment channels, such as scan-to-pay systems, to improve efficiency This can help reduce long queues, speed up transactions, and improve the overall customer experience."* Such investments, they argued, not only enhance operational flow but also familiarise employees with digital platforms, indirectly preparing them for broader AI adoption.

Flexibility and accessibility in using company systems also emerged as a priority. Participants recommended expanding system access beyond traditional workstations, particularly through mobile compatibility, while maintaining strong security protocols. This would make it easier for employees to work from different locations and adapt to varying operational demands. As Participant 5 explained, *"Make it more convenient to log in to company websites, not just company laptops, but with strengthened security."* They emphasised that mobile accessibility should be implemented alongside enhanced data protection to avoid exposing organisations to potential cyber risks.

Despite recognising the potential benefits of AI, some participants voiced concerns about its long-term impact on employment. They cautioned against allowing automation to replace human workers entirely, advocating instead for a balanced approach that leverages AI to complement, rather than displace, human labour. Participant 1 articulated this sentiment, stating, *"There has to be balance in applying AI for improving operations and protecting the livelihoods and jobs of the workers."* This perspective reflects a broader concern that technological advancements, if left unchecked, may inadvertently erode job security, particularly in sectors where routine tasks are most vulnerable to automation.

Overall, participants' recommendations reveal a shared vision for AI adoption in retail that is inclusive, skill-focused, and strategically balanced. They suggest a model in which AI is positioned as a tool for empowerment, not displacement, where digital innovations such as mobile access and advanced payment systems enhance both customer experience and employee competence. In this way, AI can be integrated into retail environments in a manner that safeguards jobs, strengthens operational efficiency and equips workers to thrive in a technology-driven future.

4.3.1 Summary of the findings

The findings gave the following recommendations: a set of recommendations that would make policymakers and business leaders adopt artificial intelligence (AI) in the retail sector, inclusive, skill-upgrading, and strategically pursued. Consensus during the interviews was that adoption of AI should not only be operationally effective but also consider workers' flexibility, employment protection and access to technological benefits on a fair basis.

One of the most powerful messages delivered was to construct learning-facilitative environments and act on AI-enabled change. Some of the participants highlighted the importance of giving employees experiential learning opportunities to tinker with AI in their jobs. This, they felt, would help employees become confident and capable users of new tools. As Participant 4 himself said, "I'd like to take AI into environments, learn, know and grow from it because of that I'm ahead in work." Speaking from his own experience, the same participant further added, "*We have to give hands-on training and actual application so that people can better adjust to it. For instance, as a consultant, I've begun learning how to implement AI in some suites of software."* I had obtained a head start with my work and received more and more necessary to perform those tasks." This feedback speaks towards making training half practice and half theory in such a manner that AI is a usable tool, not a scary one.

The suggestions were on the creation of digital payment systems. Participants understood that making the payment technology better has a double purpose: simpler transaction usage for customers and exposing employees to actual usage of new technology. Recommended Participant 2, "Government policymakers and business leaders [need] to put more money in other electronic payment channels like scan-to-pay schemes to improve efficiency that can reduce long queues, speed up transactions and improve the overall customer experience." Such expenditures, they said, promote operational efficiency but also familiarise workers with digital platforms, secondary prep for more widespread AI usage.

Flexibility and on-call availability while running company systems were another issue. Involvement meant the facilitation of system availability to extend beyond the usual workstations, that is, through mobile capability, without diminishing good security practice. This would allow for the convenience of employees performing work off-site and coping with variable levels of operational demands. As Participant 5 encapsulated, "Make it more convenient to log in to company websites not just using company laptops, but also with greater security." They observed that mobile access must be balanced with additional data protection in order to prevent exposing organisations to the risk of cyber-attacks.

Once again invoking the potential benefits of AI, certain participants also made warnings regarding its longer-term impact on employment. They cautioned against replacing human labour with automation but advocated a balanced approach to leveraging AI to supplement, rather than replace, human labour. This perception was also supported by Participant 1 when he stated, "There has to be a balance in using AI to improve operations and protect the workers' jobs and livelihood." This is a usual concern that technological development, if not controlled, can potentially unleash job insecurity, more especially for companies where the most likely jobs to automate are routine tasks.

Altogether, participants' recommendations portend a future of AI implementation in retail as open, skill-focused, and strategically aligned. Participants see a world where AI is positioned as empowerment rather than substitution and where technological advancements, such as smartphone pervasiveness and sophisticated payment systems, enhance the customer experience and staff potential. AI, therefore, can be applied in retail environments in a manner that is job-saving, makes business more effective and enables employees to thrive in a technology-driven world.

4.3.2 Strengths and Limitations

A key strength of this study is that it provides a timely baseline, capturing an early 2025 snapshot of perceptions on AI use, integration, skills gaps, and training within the wholesale and retail sector. This offers valuable insight at a moment when AI adoption is still emerging and evolving. The study also takes a multi-faceted view, examining factors such as organisational size, sector, rank, training modality, and education. This allows for triangulation across different perspectives, making the findings richer and more nuanced. Another strength is its practical focus. The study centres on actionable constructs, AI integration, training approaches, and skills gaps that organisations can directly influence, making the results relevant for decision-making. Several limitations have also been noted: The quantitative sample is heavily skewed toward retail, large firms, and senior managers, which limits representativeness. Caution is needed when applying these findings to the wholesale subsector, SMEs, or frontline workers.

Some subgroup analyses rely on very small sample sizes, which reduces the reliability of those estimates. These figures should be interpreted as descriptive trends rather than precise measurements. Inconsistencies in denominators and item response across tables and figures suggest possible nonresponse or differences in question routing. The distinction between “AI use in sector” and “extent of AI integration in organisation” may not have been clear to respondents, potentially causing inconsistencies in the data. Future studies should provide clear definitions and examples.

Finally, the study relies entirely on self-reported data, which can introduce perception bias. Including objective measures, such as the number of AI-enabled processes, would improve validity.

For the qualitative part of the study, one of the limitations was that majority of the participants were not willing to participate, and recruitment was a challenge. Hence, the researcher only managed to interview 10 instead of 18 participants. Also, the researcher only interviewed participants from six out of nine provinces

4.4 Table 11 Findings Summary and Recommendations

Main Finding	**Recommended Intervention**
Most respondents are between 40–64 years (62.0%), indicating a largely mature workforce, while 36.0% are younger professionals aged 20–39 years.	• Employers in the sector should ensure a supportive and positive workplace environment that can enhance employee satisfaction and retention of younger professionals. • Employers in the sector should partner with institutions of higher learning to offer internships or apprenticeships as a potential pathway for future employment of young graduates.
Most of the respondents have a secondary level education (48.0%), only 34.0% had an undergraduate level of education, and 15.0% had Postgraduate qualifications.	• Partnering with institutions of higher learning for internships will increase the chances of having employees with undergraduate and postgraduate qualifications in the sector.
While awareness of AI is high, particularly in retail, the actual integration remains limited, with most organisations still at the early stages of adoption.	• The sector should recognise the high value of AI capabilities and develop scalable pathways to fully integrate AI to realise its impact.
The most frequent skills gaps reported are related to AI/ML expertise, followed by data work.	• Formal training on AI and data work is essential to close this skills gap. • Collaboration between institutions of higher learning and the sector is recommended. This may increase the

	chances of alignment between skills development and skills gap.
A clear majority of respondents reported no AI training, and when training occurred, it was most likely informal or on the job. 37% of senior leaders report no AI training. Training provision is uneven.	• It is crucial to develop systems that will facilitate formal upskilling within the sector for all employees (including senior management) to ensure that everyone is AI-equipped.
Respondents perceive that AI has not improved competitiveness for many firms (are congruent with low integration and limited initiative towards integration	• Integrating AI into merchandising, pricing, or workforce planning cycles is recommended to realise the benefits of AI.

Conclusion

The preliminary results provide an important early view of how AI is perceived, adopted, and supported through training in the wholesale and retail sector in 2025. While awareness of AI is high, particularly in retail, actual integration remains limited, with most organisations still at the early stages of adoption. Training provision is uneven, heavily reliant on informal methods, and often inaccessible to key groups, including frontline staff and even senior leaders. The most pressing skills gaps relate to AI/ML expertise and data competencies, underscoring the urgency of structured, inclusive capacity-building strategies. Furthermore, the findings should be interpreted with caution due to limitations in sample representativeness, small subgroup sizes, inconsistent denominators, and reliance on self-reported data. These constraints mean that the results are best understood as indicative trends rather than definitive measurements.

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APPENDIX A: Proposed Time frame for the research

Project Phase	Deliverables	Timelines
Phase 1: Conceptualisation and Literature Review	• Briefing session with W&RSETA • Research design and methodology • Inception report • Literature Review (First draft)	**30 November 2024**
Phase 2: Research Methodology	**Phase 2 Research Design and Methodology** • Document and literature review • Data gathering tools. • Stakeholder consultations • Data collection • Literature review (second draft)	**28 February 2025**
Phase 3: Primary Research, Data Capturing and Analysis	**Phase 3 Data Collection and Analysis** • Data collection and capturing • Data analysis • Report writing • Feedback session • Preliminary reports (Draft)	**30 June 2025**

Phase 4: Final Report	• **Final Research Report**, submission by *15 August 2025.* • Presentation to W&RSETA Committees. • Project report and Project closure.	**31 August 2025**

APPENDIX B: Proposed budget for carrying out the study

ITEM	COST
Research Assistance	**R5 000**
Statistician for analysing quantitative data	**R10 000**
Airtime and Data costs	**R2 000**
Professional language editing of the final proposal and research report	**R2 000**
Professional language editing for manuscripts	**R 5 000**
Total expenses	**R 24 000**

This research is funded by WRSETA.

APPENDIX C: Consent form

I understand that my details as they appear in this consent form will not be linked to the responses I provide through the interview, and that my answers will remain confidential.

Put ur initials and name if comfortable

THE IMPACT OF ARTIFICIAL INTELLIGENCE ON SKILLS REQUIREMENTS IN THE WHOLESALE AND RETAIL SECTOR: NAVIGATING THE FUTURE WORKFORCE

Purpose of the Interview

The Wholesale and Retail Sector Education and Training Authority (W&RSETA) is conducting sector-wide interviews to investigate the use and impact of Artificial Intelligence (AI) within South Africa's wholesale and retail industry. This initiative seeks to capture how businesses are integrating AI technologies across various operations, and how this transformation is influencing jobs, skills requirements, training needs, and growth trajectories within the sector.

As AI continues to disrupt traditional business models and workforce dynamics, these interviews will help us in understanding both the opportunities and challenges presented by its adoption. Key areas of focus will include the extent of AI uptake, the emergence of new occupational roles, potential

displacement or evolution of existing jobs, and the readiness of the current workforce to adapt to digital change.

The insights gathered will be instrumental in shaping W&RSETA's strategic interventions, particularly in the development of responsive training programmes and skills planning frameworks that anticipate future needs. Through this initiative, the SETA aims to proactively support the sector in navigating the complexities of AI adoption, ensuring that workforce development strategies are aligned with emerging technologies and that no one is left behind in the journey toward a digitally enabled future.

All information collected through the interviews will be treated with **strict confidentiality** and in full compliance with the **Protection of Personal Information Act (POPIA).** No data will be shared or distributed without the explicit consent of participants, and responses will be used **solely for the purposes of research and planning**.

Consent form to be signed by participant

I _____ hereby agree to participate in a research project that focuses on The Impact of Artificial Intelligence on Skills Requirements in the Wholesale and Retail Sector: Navigating the Future Workforce.

The purpose of the study has been fully explained to me. I further understand that I am participating freely and without being forced in any way to do so. I also understand that I can withdraw my participation in this study at any point should I not want to continue, and that this decision will not in any way affect me negatively.

I understand that this is a research project, whose purpose is not necessarily to benefit me personally. I understand that my details as they appear in this consent form will not be linked to the responses I provide through the interview, and that my answers will remain confidential.

Signature: _____

Name: _____

Date: _____

APPENDIX D: Interview guide

Section A: Demographics

Age:

☐ 20-39

☐ 40-64

☐ 65+

Gender:

☐ Female

☐ Male

Level of education:

☐ Higher Certificate

☐ National Diploma

☐ Bachelor's Degree

☐ National Diploma

☐ Bachelor's Degree

☐ Other: _____

Section B: This section helps us understand your background and the type of organisation you work for.

1. **Type of organisation/company:**

   ☐ Wholesale

   ☐ Retail

   ☐ Both

   ☐ Other: _____

2. **Which type of retail do you work in?**

☐ Clothing

☐ Food

☐ Both

☐ Other: _____

3. **In which province is your organisation/ company?**

☐ Gauteng

☐ Kwazulu-Natal

☐ Western Cape

☐ Mpumalanga

☐ Eastern Cape

☐ Northern Cape

☐ Limpopo

☐ Free State

☐ North-West

4. **Size of your organisation/company:**

☐ Small (1–50 employees)

☐ Medium (51–250 employees)

☐ Large (250+ employees)

5. **Your role in the organisation/company:**

☐ Senior Management

☐ Middle Management

☐ Frontline Employee

☐ Other (please specify): _____

6. **How long have you been in the position?**

☐ Less than 6 months

☐ 6 months to 1 year

☐ 1- 2 years

☐ 2-3 years

☐ 3-5 years

☐ 5 to 10 years

☐ More than 10 years

SECTION C: Interview questions.

This section asks about how AI is being used in your workplace and any challenges faced.

1. **Understanding AI Adoption in your organisation or company.**

   - Does your company/ organisation use AI?

   If yes,

   - Please describe how AI is currently being used in your organisation/company?
   - In which areas is AI used in your organisation/company?
   - What specific AI tools or technologies are being used in your operations?
   - Has AI changed the way you work in your organisation/company?

   If yes,

   - Please explain how AI adoption has changed the way work is performed in your company/organisation?

2. **Reshaping of Roles**

   - Has AI reshaped traditional job roles within your organisation/company? If yes, please explain how it has reshaped traditional job roles within your organisation/company?
   - Please explain in detail new roles or job opportunities been created due to AI and other the significant changes you observed in job responsibilities.
   - Has AI removed any job roles? If yes, which roles were removed and why?

3. **Identifying Gaps**
   - Are there any skills gaps in your organization/company that have emerged due to AI adoption? If yes, can you describe those skills gaps.
   - Are there areas or roles that are most affected by these gaps? If so, what are they?

- Are there any skills or tasks that are becoming less relevant because of AI? If so, what are they?
- Are there skills that are now considered more important because of AI? If yes, please describe the skills in detail.

4. **Skill Development and Training:**
   - How is your organisation/company addressing the need for upskilling and reskilling employees?
   - Are there specific training programs or initiatives in place to help employees adapt to AI-related changes? If yes, please explain what the initiatives are.
   - Have your organisations or company faced any challenges or barriers have you faced in implementing AI? If so, please explain the challenges/barriers.

5. **Growth and Competitiveness**
   - In what ways has AI integration impacted the overall growth and competitiveness of your organisation?
   - Are there specific examples where AI has driven innovation or improved efficiency?

6. **Long-Term Sustainability**
   - How do you see AI influencing the long-term sustainability of the wholesale and retail sector?
   - Are there any risks or challenges you foresee in the future due to AI?
7. **Recommendations**
   - What advice would you give to policymakers or industry leaders to better prepare the workforce for AI-related changes?
   - Do you have any additional insights or thoughts about the impact of AI on the wholesale and retail workforce?
   - Would you be open to a follow-up discussion if needed?

Thank You for Your Time!

APPENDIX E: Questionnaire

Wholesale and Retail Sector

Purpose of the Questionnaire

The Wholesale and Retail Sector Education and Training Authority (W&RSETA) is conducting a sector-wide survey to investigate the use and impact of Artificial Intelligence (AI) within South Africa's wholesale and retail industry. This initiative seeks to capture how businesses are integrating AI technologies across various operations, and how this transformation is influencing jobs, skills requirements, training needs, and growth trajectories within the sector.

As AI continues to disrupt traditional business models and workforce dynamics, this survey will serve as a vital tool in understanding both the opportunities and challenges presented by its adoption. Key areas of focus will include the extent of AI uptake, the emergence of new occupational roles, potential displacement or evolution of existing jobs, and the readiness of the current workforce to adapt to digital change.

The insights gathered will be instrumental in shaping W&RSETA's strategic interventions, particularly in the development of responsive training programmes and skills planning frameworks that anticipate future needs. Through this initiative, the SETA aims to proactively support the sector in navigating the complexities of AI adoption, ensuring that workforce development strategies are aligned with emerging technologies and that no one is left behind in the journey toward a digitally enabled future.

All information collected through this survey will be treated with strict confidentiality and in full compliance with the Protection of Personal Information Act (POPIA). No data will be shared or distributed without the explicit consent of participants, and responses will be used solely for research and planning.

Instructions

Please answer all questions honestly.

Tick the box that best matches your answer or fill in the blank where needed.

If a question doesn't apply to you, skip to the next one.

All information will be kept confidential.

Section A: About You and Your company/Organisation

Demographics

Age:

☐ 20-39
☐ 40-64
☐ 65+

Gender:

☐ Female
☐ Male

Level of education:

☐ Higher Certificate
☐ National Diploma
☐ Bachelor's Degree
☐ National Diploma
☐ Bachelor's Degree
☐ Other: _____

How long have you been in the position?

☐ Less than 6 months
☐ 6 months to 1 year
☐ 1- 2 years
☐ 2-3 years
☐ 3-5 years
☐ 5 to 10 years
☐ More than 10 years

This section helps us understand your background and the type of organisation you work for.

Please state the sub-sector to which your organisation/company belongs to
☐ Wholesale
☐ Retail
☐ Both
☐ Other: _____

Which type of retail do you work in?
☐ Clothing
☐ Food
☐ Both
☐ Other: _____

How big is your company/organisation?
☐ Small (1–50 employees)
☐ Medium (51–250 employees)
☐ Large (250+ employees)

In which province is your organisation/ company?

☐ Gauteng
☐ Kwazulu-Natal
☐ Western Cape
☐ Mpumalanga
☐ Eastern Cape
☐ Northern Cape
☐ Limpopo
☐ Free State
☐ North- West

What is your occupational rank within the organisation/company?

☐ Senior Management
☐ Middle Management
☐ Frontline Employee
☐ Other: _____

Section B: How AI Is Used in Your Company/Organisation

This section asks about how AI is being used in your workplace and any challenges faced.

Does your company/ organisation use AI?

☐ Yes
☐ No

If yes, does your organisation/company use AI in any of these areas? (Tick all that apply)

☐ Customer service (e.g., chatbots, virtual assistants)
☐ Inventory management and supply chain
☐ Marketing and customer engagement (e.g., personalised ads)
☐ Sales forecasting and planning
☐ In-store automation (e.g., smart checkouts)
☐ Other: _____
☐ None of the above

How much has AI been integrated into your organisation/company? (Tick one)

☐ 1 – Not at all
☐ 2 – Just starting
☐ 3 – Some integration
☐ 4 – Quite a lot
☐ 5 – Fully integrated

Please briefly describe one example of AI use in your organisation/company:

10. What challenges does your organisation/company face in using AI? (Tick all that apply)

☐ Lack of skilled staff

☐ High cost

☐ Poor data quality

☐ Staff resistance

☐ Ethical/regulatory concerns

☐ Unclear ROI

☐ Other: _____

☐ No challenges

11. Who makes decisions about AI adoption?

☐ Executives

☐ IT/Data team

☐ External consultants

☐ No one in particular

Section C: Changes in Skills and Job Roles

This section looks at how AI has changed the skills needed and the jobs in your organisation.

12. Which skills are now more important in your organisation/company because of AI? (Tick all that apply)

☐ Data analysis

☐ Knowledge of AI/ML

☐ Digital adaptability

☐ Critical thinking

☐ Tech maintenance

☐ Customer relationship

☐ AI ethics/responsibility

☐ Other: _____

13. Has AI led to new job roles in your organisation/company?

☐ Yes

☐ No

☐ Don't know

14.1 If yes, which roles?

☐ AI Specialist

☐ Data Scientist/Analyst

☐ Digital Transformation Manager

☐ Customer Experience Designer
☐ Automation Technician

☐ Prompt Engineer

☐ Other: _____

15. Do you think AI has changed traditional job roles in your organisation/company?

☐Yes
☐No
☐ Don't know

16. If yes, how much has AI changed traditional job roles in your organisation/company?

☐ A lot

☐ A bit

☐ Very little

☐ Not at all

17. Has AI removed any job roles in your organisation/company?

☐ Yes

☐ No

☐ Not sure

18. If yes, which roles were removed and why?

Section D: Skills Gaps and Training Needs

This section asks about gaps in skills and what training is needed for AI.

Which skills does your organisation/company lack because of AI? (Tick all that apply)
☐ Expertise in AI and machine learning
☐ Working with data (e.g., analysing and understanding data)
☐ Using digital tools
☐ Fixing technical problems
☐ Managing change

☐ Other: _____
☐ None of the above

Has your organisation/company provided training to help staff with AI skills? (Tick one)
☐ Yes
☐ No
☐ Not sure

If yes, what type of training was offered? (Tick all that apply)
☐ In-house workshops
☐ Online courses
☐ External certifications
☐ On-the-job training
☐ Other: _____

What future training would help improve AI skills in your organisation/company? (Tick all that apply)
☐ Advanced AI and machine learning courses
☐ Data analysis workshops
☐ Digital transformation and change management programs
☐ Hands-on technical training
☐ Other: _____
☐ None needed

Section E: Impact on Growth and Competitiveness

This section explores how AI affects your organisation's growth and position in the market.

How much has AI improved your organisation's competitiveness? (Tick one)
☐ A lot
☐ A bit
☐ Very little
☐ Not at all

Has AI led to new ideas or innovations in your organisation/company? (Tick one)
☐ Yes
☐ No
☐ Not sure

If yes, please explain how

Do you think AI helps your organisation’s long-term sustainability? (Tick one)

☐ Yes

☐ No

☐ Not sure

If yes, explain

Additional comments

Please provide any additional feedback on AI integration and its impact in your organisation/company:

Thank You for Your Time!

CUT-W&RSETA
RESEARCH
LEADERSHIP
CHAIR
Shaping Skills in Food Safety Culture and Sustainability

Central University of Technology (CUT) Leadership Chair

For more information, visit: www.cutchair.co.za

Contact us wrchairadmin@cut.ac.za

Central University of Technology, Free State

W&RSETA WHOLESALE & RETAIL SETA
Skills Development for Economic Growth

CAFSaB

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