The Impact of Artificial Intelligence and Digital Transformation on Workforce Skills, Job Roles, and Competitiveness in the Wholesale and Retail Sector

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ABSTRACT

Background: The rapid pace of technological advancement is changing skills requirements in the wholesale and retail sector, creating potential gaps between employees' existing competencies and those required to work effectively with artificial intelligence (AI) systems and other digital technologies. These gaps may relate to digital literacy, technical competencies, data analysis, and the ability to adapt to changing job roles and responsibilities. If not adequately addressed, such gaps may limit the effective implementation of AI and contribute to workforce displacement, particularly in entry-level positions vulnerable to automation. Although AI is becoming increasingly important in the wholesale and retail sector, research on its implications for workforce skills requirements in South Africa remains limited. This study investigated the impact of AI and digital transformation on workforce skills, job roles, and competitiveness in the South African wholesale and retail sector.

Research methods: This paper reports on the qualitative findings of a sequential explanatory mixed-methods study. Semi-structured interviews were conducted with 10 purposively selected retail and wholesale managers. The data were analysed using thematic analysis.

Results: AI adoption and broader technological changes were found to be reshaping skill requirements in the wholesale and retail sector. Participants highlighted the growing importance of digital literacy, technical proficiency, analytical thinking, and problem-solving skills. Emphasised also are the need for continuous upskilling and reskilling to adapt to technology-driven workplace changes. However, the findings primarily reflected digitalisation and automation, with more limited evidence of direct AI adoption.

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Conclusion: Technological change is influencing workplace practices and skill requirements in the South African wholesale and retail sector. Organisations need to strengthen digital skill development, provide continuous training, and address infrastructure limitations to prepare employees for future technological development.

Keywords: Artificial intelligence (AI); skill requirements; wholesale and retail sector; workforce development.

1. INTRODUCTION

Artificial intelligence (AI), according to Zhang et al. (2021), is a branch of computer science concerned with developing machines capable of performing tasks that typically require human intelligence, including perception, reasoning, and problem-solving. AI is transforming various sectors, including wholesale and retail, through technologies that improve supply chain processes, customer engagement, and operational efficiency (Almulhim and Aramco, 2024; Bessen, 2019). However, these developments are also changing the skills required by employees, disrupting traditional occupations, and creating new employment opportunities, thereby influencing the labour market (Bessen, 2019). These changes require organisations to reconsider the skills employees need to succeed in an increasingly technology-driven working environment.

The adoption of AI in marketing, customer interaction, decision-making, inventory management, and logistics is contributing to the digital transformation of the wholesale and retail sectors. Recent industry reports indicate that businesses are increasingly using AI to improve operational efficiency, enhance customer experience, and support decision-making (IBM Institute for Business Value, 2025; OECD, 2026). These developments demonstrate how technological change is influencing workplace activities, customer experience, and employees' skill requirements. Consequently, employees may need to enhance their adaptability, creativity, and problem-solving abilities to remain effective in today's technology-enhanced working environment (Bobitan et al., 2024; Hussain, 2024).

The growing use of AI has also raised concerns about job displacement and changing employment patterns, particularly in South Africa, where unemployment remains a significant socioeconomic challenge. Giwa and Ngepah (2024) suggest that AI may contribute to the displacement of certain jobs while simultaneously increasing demand for particular skills. The World Economic Forum (2020) projected that approximately 85 million jobs could be displaced by automation by 2025, while 97 million new roles could emerge as the division of labour between humans and machines changed. These projections highlight the importance of preparing employees for changing occupational requirements. Appropriate training and development programmes are therefore necessary to enable workers to transition into emerging roles. Furthermore, addressing the AI-related skills gap requires investment in education and training, alongside collaboration between government, industry, and educational institutions (Bessen, 2019; Manyika et al., 2017).

Dube et al. (2021) opined that the rapid pace of technological advancement can outstrip the rate at which employees acquire the skills needed to use new technologies effectively. Such skills gaps may limit the effective implementation of AI in retail and create challenges for employees whose roles are vulnerable due to automation (Bonetti et al., 2023). Without adequate training and support, employees may struggle to adapt to technological changes, potentially increasing their vulnerability to displacement.

Despite the growing importance of AI in the wholesale and retail sector, limited research has comprehensively examined its implications for skills requirements in South Africa. Understanding these implications is important for identifying emerging competencies, addressing skills gaps, and preparing employees for changes in workplace responsibilities.

Therefore, this study sought to investigate the impact of AI on skill requirements in the South African wholesale and retail sector. Specifically, the study aimed to:

a) To examine the adoption of artificial intelligence (AI) and other digital technologies in retail operations, including their applications and influence on operational processes

b) To identify how AI and digital transformation are changing the skills and competencies required of employees in the retail sector

c) To assess how AI and digital technology adoption is transforming employees' roles, responsibilities, work processes, and employment opportunities in the retail sector

d) To identify existing and emerging skills gaps and examine the training, upskilling, and reskilling initiatives required to prepare retail employees for technological change.

e) To evaluate how AI and digital technology adoption contributes to organisational efficiency, innovation, competitiveness, and the long-term sustainability of the retail sector.

The findings are intended to inform organisations, businesses, policymakers, and educational institutions as they prepare for the workforce requirements and challenges associated with AI adoption.

2. RESEARCH METHODS AND MATERIALS

2.1. RESEARCH APPROACH AND DESIGN

This study formed part of a larger sequential explanatory mixed-methods study examining the impact of AI on skill requirements in South Africa's wholesale and retail sector. The broader study combined a quantitative survey with qualitative interviews to provide a comprehensive understanding of the research problem. However, thispaper reports only on the qualitative findings, which provide an in-depth understanding of retail and wholesale managers' experiences and perceptions of AI adoption and its implications for workforce skills.

The broader study followed a sequential approach in which quantitative data were collected first, followed by qualitative interviews. Using different data sources enabled triangulation, strengthened the interpretation of the findings, and provided opportunities to explore unexpected or complex results emerging from the quantitative phase.

2.2. SAMPLING

For the qualitative component, 10 participants were selected using non-probability purposive sampling. This approach enabled selecting participants with relevant knowledge and experience of technological adoption and its

implications for skills requirements in the wholesale and retail sector. The adequacy of the sample size was informed by literature suggesting that relatively small samples can be sufficient for qualitative interview studies when participants have relevant experience and the research objectives are clearly defined. Guest et al. (2006) found that data saturation occurred within the first 12 interviews in their study, while Hennink and Kaiser (2022), in a systematic review of empirical studies, found that saturation was commonly achieved within 9–17 interviews, particularly in studies involving relatively homogeneous populations and focused research objectives. Furthermore, Malterud et al. (2016) proposed the concept of information power, which emphasises that sample adequacy depends on the relevance of participants' knowledge, the specificity of the research aims, the quality of the interviews, and the analytical approach. Therefore, a sample of 10 participants may be considered appropriate for this study, provided that the interview data were sufficiently rich to address the research objectives.

Participants were selected based on their knowledge of and experience in the sector. Only managers with more than five years of work experience in the wholesale and retail industry who had experience with technology adoption were included. A list of experienced retail managers and their contact details was obtained from the Wholesale and Retail Sector Education and Training Authority (WRSETA). Potential participants were identified and contacted by telephone and email and invited to participate. When managers could not be reached, other managers were approached at retail stores and invited to participate until the sample of 10 was achieved. Before the interviews were conducted, it was confirmed that every participant met the inclusion criterion of having at least five years of managerial experience in the sector.

2.3. DATA COLLECTION

Data were collected using a semi-structured interview guide comprising open-ended questions. The interview questions explored five main areas: (1) AI adoption and digital transformation in workplace operations (including the applications of AI and other digital technologies); (2) changes in skills requirements and job roles (including the creation or elimination of roles, changes in responsibilities, and skills becoming more or less relevant); (3) skills gaps and workforce development (including skills gaps arising from technological adoption, employee upskilling and reskilling, and training initiatives); (4) barriers to technology adoption and organisational competitiveness (including barriers to AI implementation and the effects of technology on organisational growth, innovation, and operational efficiency); and (5) sustainability and future workforce preparation (including the long-term sustainability of the wholesale and retail sector, potential future risks associated with AI, and recommendations for policymakers and industry leaders on preparing the workforce for technological change).

The initial target was to conduct 18 individual semi-structured interviews with managers from the wholesale and retail sector across all nine provinces of South Africa. However, only 10 managers were interviewed: eight from the retail sector and two from the wholesale sector. Participants were from Limpopo, Gauteng, Mpumalanga, the Free State, North West, and the Western Cape. The target of 18 interviews was not achieved because many managers were unavailable to participate. Nevertheless, data saturation had been reached among the ten available participants. This assessment was based on recurring patterns and the consistency of information across interviews, with subsequent interviews contributing little substantially new information relevant to the research objectives.

The interviews were conducted in English and lasted approximately 40–50 minutes. All interviews were audio-recorded after participants provided consent to be audio recorded. Following data collection, the recordings were transcribed into written text. The recordings of the interviews were relistened to while transcribing the interviews and

thereafter to ensure that participants' responses were accurately captured and to identify and correct any errors or omissions. Participants were assigned identification numbers rather than being referred to by their names to maintain confidentiality.

All the principles of informed consent, confidentiality, and the protection of participants' personal information in accordance with the Protection of Personal Information Act 4 of 2013 (POPIA) were strictly adhered to. Participants were informed about the purpose of the study, and participation was voluntary. Consent was obtained before the interviews were conducted.

2.4. MEASURES TO ENSURE TRUSTWORTHINESS

Trustworthiness was addressed using the four criteria proposed by Lincoln and Guba (1985): credibility, dependability, confirmability, and transferability. These criteria are widely used to assess rigour in qualitative research (Shenton, 2004).

Credibility refers to the extent to which the findings accurately represent participants' experiences and perspectives. In this study, credibility was supported through member checking, whereby participants were engaged to provide feedback on the credibility of the findings and interpretations. Interviews lasting up to 50 minutes provided participants with sufficient time to explain their experiences. In addition, the research background, data collection procedures, data management, and analysis, including the coding, themes, and subthemes were reviewed by a mentor to ensure consistency with the data and relevance to the research objectives.

Dependability concerns the consistency and transparency of the research process. It was addressed by describing the procedures followed during participant recruitment, data collection, transcription, and thematic analysis. Providing a clear account of these procedures enables readers to assess how a study was conducted (Nowell et al., 2017).

Confirmability refers to the extent to which the findings are grounded in participants' accounts rather than solely in a researcher's assumptions. Audio recordings and field notes were used to maintain a record of the information collected. Furthermore, the mentor reviewed the coding, themes, and subthemes to assess whether they were supported by the interview data.

Transferability concerns the potential relevance of the findings to other contexts. Purposive sampling was used to select managers who met the study's inclusion criteria, including having at least five years of managerial experience in the sector. Providing information about participants' experience and the research context enables readers to assess whether the findings may be relevant to similar settings (Shenton, 2004).

2.5. DATA ANALYSIS

The collected data were analysed using thematic analysis (TA). The process began with familiarisation, during which time the interview transcripts were reread repeatedly to become familiar with the data. Information considered significant and relevant to the research objectives was then identified and coded.

An inductive coding approach was used to identify patterns emerging from the data rather than relying exclusively on predetermined categories. The codes were examined for recurring patterns and relationships, after which related codes were grouped into preliminary themes and subthemes.

The preliminary themes were subsequently reviewed and refined. An assessment was done to ensure the codes within each theme were coherent and whether the themes adequately represented the interview data. Conceptually distinct findings were retained as separate themes, while related findings were grouped together where appropriate. This process helped establishing clear distinctions between the themes while maintaining their connection to the research objectives.

The data were repeatedly reviewed to refine the themes and develop titles and descriptions that captured their central meaning. To strengthen the credibility of the analysis, the identified codes, themes, and subthemes were reviewed by the research mentor. The feedback received was considered, and adjustments were made where necessary to ensure that the themes accurately represented the data.

3. RESULTS

This section presents the findings of the study based on interviews with ten managers from the wholesale and retail sector. The participants represented six South African provinces: Limpopo, Gauteng, Mpumalanga, North West, the Free State, and the Western Cape. Data were collected through semi-structured interviews conducted either face-to-face with participants based in Mpumalanga or remotely via Microsoft Teams with participants from the other five provinces. This approach facilitated data collection across multiple provinces without requiring travel to each location.

The findings are organised according to the main themes identified during data analysis. These themes provide insight into how technological adoption is influencing skills requirements, creating opportunities, and presenting potential challenges in the wholesale and retail sector. The results are also aligned with the study's research objectives.

For analytical clarity, there is a distinction between AI from automation, digitalisation, and conventional information technology (IT). AI refers to systems that perform tasks such as generating content, recognising patterns, making predictions, or supporting decisions using AI techniques. Automation involves executing tasks with reduced manual intervention, while digitalisation refers to the use of digital technologies to manage information and deliver services. Conventional IT includes devices and software used to process, store, and communicate information. Although these categories may overlap, the use of digital technology does not necessarily constitute AI adoption. Accordingly, the findings distinguish participants' reported use of general digital technologies from applications that can be more clearly identified as AI-enabled. Where the underlying functionality could not be established from the interviews, the findings were interpreted in terms of digitalisation or automation rather than attributed directly to AI.

TABLE 1: DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANTS

Participant	Gender	Age	Organisation type	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

3.1. THEME 1: AI ADOPTION AND DIGITAL TRANSFORMATION IN RETAIL OPERATIONS

3.1.1. Integration of Digital Technologies into Customer Service

Participants reported varying levels of technology adoption, ranging from digital ordering, electronic receipts, and online shopping to more advanced AI-enabled applications. Participant 9 explained, “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 1 added, “We no longer print our store receipts; we send them through via electronic methods such as emails.” Participant 7 noted that customers could access products online even when those products were unavailable in physical stores.

These accounts demonstrate how digitalisation has improved customer convenience and access to services. However, tablets, electronic receipts, websites, and digital payment systems are not inherently AI-based. The findings therefore primarily demonstrate broader digital transformation rather than direct AI adoption.

3.1.2: Automation of Internal Processes

Participants described the use of electronic recruitment records, attendance-monitoring systems, and stocktaking technologies. Participant 2 described the use of facial recognition to record employees' arrival and departure times: Participant 2 stated, “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 explained, “Stock counts are much faster now because we use scanning devices; before we had to write everything down manually.”

These findings demonstrate the use of digitalisation and automation to reduce manual work and improve record-keeping. Facial recognition may involve AI, depending on the functionality of the system being used.

3.1.3: Digital Devices and AI-Enabled Software

Participants identified computers, laptops, tablets, and specialised software as essential workplace tools. Participant 1 stated, “We do have equipment like computers, laptops, iPads and tablets at our store to assist consumers.”

More direct evidence of AI adoption emerged from Participant 4's account of using Microsoft Copilot: Participant 4 said, “If, for example, we have a client with an issue and I'm not getting the solution, I'd ask co-pilot and it will provide a solution for me.”

This example demonstrates the use of AI-enabled software to support workplace problem-solving. The findings indicate that conventional IT and AI applications coexist in retail workplaces, although the presence of digital devices alone does not establish AI adoption.

3.2. THEME 2: CHANGES IN SKILLS REQUIREMENTS

3.2.1: Growing Importance of Digital Literacy and Technical Proficiency

The findings indicate that digital literacy has become an essential workplace requirement as employees increasingly rely on digital devices and applications to perform their duties. Participant 2 stated, “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 similarly explained, “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 3 added, “AI allows us to get it done faster, but only if you possess the ability to operate the machines and programs that allow it.”

These accounts highlight the importance of digital literacy and technical proficiency in technology-enabled workplaces. However, the skills described primarily concern the use of digital devices and applications rather than specialised AI competencies.

3.2.2: Reshaping Work Processes

Participants reported that technology had changed how employees performed their duties without necessarily eliminating existing positions. Some participants observed that job positions remained largely unchanged, although work practices had evolved. These findings suggest that digitalisation and automation have introduced additional technical requirements while preserving many existing responsibilities. However, the responses do not consistently establish that AI specifically caused these changes.

Participant 8 explained, “AI has not automated any employment but has reengineered work processes.” The participant further indicated that employees were required to develop skills in using scanners, ordering software, and other technology-enabled systems to perform everyday tasks.

Participant 2 similarly stated, “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.” The participant indicated that job positions remained largely unchanged, although the ways in which employees performed their duties had evolved.

These findings suggest that technological adoption can change the skills required to perform existing jobs without necessarily resulting in immediate changes to formal job positions.

3.3. THEME 3: TRANSFORMATION OF ROLES AND RESPONSIBILITIES

3.3.1: Changes in Job Roles and Expanded Responsibilities

The findings indicate that technological adoption has primarily reshaped existing job roles and expanded employees' responsibilities rather than resulted in widespread job losses within the participating organisations. Participants described taking on additional digital duties, assisting customers with online services, and learning to operate new systems. Participant 2 summarised this change by stating, “AI hasn't taken jobs away it's changed what we do.”

Participant 3 described the emergence of responsibilities involving online services and stock tracking: “We now have jobs that did not exist before for people who only provide online services or track stock through AI programs.”

Participant 4 explained how organisations developed the capabilities of existing employees: “We train the already existing staff members to perform some AI tasks.”

These accounts suggest that technological change has encouraged role evolution, reskilling, and the expansion of employees' responsibilities. However, online services and scanner-based stock monitoring do not necessarily involve

AI. The findings therefore reflect broader digital transformation alongside specific AI-related activities where their use can be established.

Participants also reported no direct retrenchments attributable to technology in their workplaces. As Participant 4 stated, “Technology here has been about making work easier, not cutting jobs.”

3.3.2: Reduction of Repetitive Administrative Tasks and Changes in Managers' Workloads

Participants reported that digital systems and automated processes had reduced the time spent on data capture, stock monitoring, and report generation. Participant 2 observed that technology had “decreased the workload for some jobs, such as the manager's job.”

Participant 3 explained, “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.”

These findings demonstrate how automation can reduce repetitive work and allow managers to focus on other responsibilities. However, automatic reporting and scanner-based stock monitoring do not necessarily involve AI. Participant 6 summarised the perceived benefit by stating, “AI hasn't replaced people; it's replaced the boring parts of the job.”

3.3.3: Potential Job Displacement through Online Shopping and Automation

Although participants emphasised adaptation rather than job losses, some acknowledged that technology could reduce demand for particular tasks. Participant 3 explained, “People are now able to apply for a store account from their phones in the convenience of their own homes.”

This example demonstrates how digital self-service can reduce the need for in-store assistance, although online applications do not necessarily involve AI. Participant 9 suggested that future technological developments could reduce the need for cashiers or stock checkers, stating, “If the systems keep improving, some jobs could be done without people, like cashiers or stock checkers.”

These findings reflect concerns about potential job displacement as automation, online services, and AI capabilities develop. However, the evidence points more clearly to the potential automation of individual tasks than to the confirmed AI-driven elimination of entire occupations.

3.4. THEME 4: SKILLS DEVELOPMENT AND GAPS

3.4.1: Digital Competence Gaps during Role Transitions

The findings indicate that skills gaps were particularly evident when employees moved into roles requiring greater digital proficiency. The evidence primarily demonstrates gaps in digital competence rather than AI-specific skills.

Participant 9 stated, “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 3 similarly explained, “When I got promoted, I had to familiarize myself with new systems that I had never worked on before; it was overwhelming initially with no proper training.”

These accounts highlight the difficulties employees may experience when required to use unfamiliar technologies without adequate preparation. They also demonstrate the importance of structured training and ongoing support during role transitions

3.4.2: Training Strategies and Variations in Training Approaches

Participants described formal training programmes, workshops, and informal workplace guidance as approaches to developing employees' technological competence.

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

Participant 1 described a formal training programme: “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.”

However, training practices were not consistent across all workplaces. Participant 7 explained, “You just shadow someone until you know what to do; there's no set manual or course.”

These accounts reveal differences between structured training and informal peer learning, which may affect the consistency of employees' digital skills development.

3.4.3: Operational Challenges of Technology Implementation

Participants reported difficulties providing training without disrupting daily operations. Participant 3 explained, “It's hard to train them all simultaneously; some have to stay on the floor dealing with customers, so training takes longer.”

Participant 6 similarly noted that employees' unfamiliarity with workplace systems could result in errors and customer dissatisfaction.

These findings indicate that staffing constraints, limited training time, and differences in employee readiness can hinder technology adoption. Adequate preparation and ongoing support are therefore important for maintaining operational efficiency and service quality.

3.5. THEME 5: TECHNOLOGY ADOPTION, SUSTAINABILITY AND COMPETITIVENESS

3.5.1: Efficiency Gains and Incremental Sectoral Growth

Participants associated technology adoption with improved operational efficiency, reduced administrative effort, and enhanced customer service. Participant 1 stated, “AI really saves us time, money, and we don't print our store receipts anymore.”

However, Participant 2 observed, “These tools make things easier in some sense, but they have not changed the business in any significant way yet.”

These findings suggest that participants perceived technological change as supporting incremental improvements rather than major structural transformation. Nevertheless, benefits associated with electronic receipts and conventional digital systems are attributable primarily to digitalisation rather than AI specifically.

3.5.2: Sustainability through Digitalisation and Waste Reduction

Participants identified paperless processes and digital advertising as opportunities to reduce paper consumption and promotional waste. Participant 2 explained, “With display screens utilizing digital or artificial intelligence technology, it would be an easy thing to switch advertisements without relying on printed adverts wastage would also be minimized.”

These findings suggest that participants perceived digital technologies as providing opportunities to reduce reliance on printed materials. However, the environmental benefits described were based on participants' perceptions rather than direct measurements of waste reduction

3.5.3: Infrastructure Limitations as a Barrier to Technology Adoption

Participants identified unreliable electricity and network connectivity as barriers to effective technology use. Participant 1 explained that network failures created difficulties when customers were attempting to make payments. Participant 1 stated, “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 need for improved internet connectivity, including 5G, and a more reliable electricity supply.

These findings indicate that reliable infrastructure is essential for digital service delivery and AI implementation. Connectivity and power interruptions can disrupt transactions, reduce operational efficiency, and limit the benefits organisations expect from technological adoption.

3.5.4: Recommendations for Policymakers and Industry Leaders

Participants recommended practical training, improved digital payment channels, accessible company systems, and measures to protect employment.

Participant 4 emphasised the value of hands-on learning and practical application, stating, “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.”

Participant 2 recommended investment in digital payment channels to improve transaction efficiency and customer experience, stating, “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.”

These recommendations highlight the importance of practical skills development, accessible technology, infrastructure investment, and workforce preparation in supporting technological change in the wholesale and retail sector.

4. DISCUSSION

4.1. THEME 1: AI ADOPTION AND DIGITAL TRANSFORMATION IN RETAIL OPERATIONS

The findings indicate that technological adoption by South African wholesale and retail organisations is characterised mainly by digitalisation and automation, with more limited evidence of direct AI applications. Participants reported using tablets, electronic receipts, online shopping platforms, scanning devices, and automated reporting systems to improve customer service and operational efficiency. This finding is consistent with Vial (2019), who explains that digital transformation involves changes to organisational processes and practices through the use of digital technologies.

More direct evidence of AI adoption emerged through participants' accounts of using Microsoft Copilot and facial recognition. Nevertheless, these examples do not establish widespread AI integration, as reported by the organisations who participated in this study. The findings therefore suggest that technological transformation is occurring, with conventional digital tools remaining more prominent than advanced AI applications. This distinction provides a more precise understanding of technology adoption in the South African wholesale and retail context.

The findings also revealed that technological benefits were not experienced uniformly. Although participants reported improvements in efficiency and customer convenience, some indicated that technology had not substantially transformed their organisations. This suggests that technology adoption does not automatically result in significant organisational change. Its effectiveness depends on the applications implemented and how well they are integrated into existing processes.

Furthermore, participants perceived electronic receipts and digital advertising as opportunities to reduce paper wastage. These perceived benefits demonstrate how digitalisation may support more sustainable business practices. However, the findings did not establish that AI specifically produced these benefits, nor do they provide direct measurements of environmental outcomes.

4.2. THEME 2: CHANGES IN SKILLS REQUIREMENTS

The findings demonstrate that digital literacy and technical proficiency have become increasingly important in the workplace. Employees are expected to operate scanners, tablets, ordering systems, and other digital applications as part of their daily responsibilities. This suggests that technological change is reshaping workplace skills required, with digital competence increasingly complementing traditional product knowledge and customer service skills.

This finding is consistent with Gonese and Ngepah (2024), whose analysis of Fourth Industrial Revolution technologies and employment in South Africa highlights the importance of technological development and workforce preparedness. However, this study revealed that many of the changing skill requirements relate to general digital competence rather than specialised AI skills. Employees must therefore develop foundational digital capabilities alongside any additional competencies required to use AI-enabled applications.

The findings also indicate that technology has changed how employees perform their duties without necessarily eliminating existing positions. This supports Autor's (2015) task-based perspective, which explains that automation may replace particular tasks while complementing other activities performed by workers. Similarly, Gmyrek et al. (2023) opined that generative AI is more likely to transform many existing jobs than to eliminate entire occupations.

This study adds a workplace-level perspective by showing how changing technical requirements can emerge, even when employees' formal roles remain largely unchanged. The findings therefore highlight the importance of developing employees' digital capabilities to help them adapt to changing responsibilities and workplace technologies.

4.3. THEME 3: TRANSFORMATION OF ROLES AND RESPONSIBILITIES

The findings suggest that technological adoption has primarily reshaped job responsibilities and reduced repetitive administrative work rather than resulted in widespread reported job losses. Participants described expanded digital duties, online customer assistance, digital stock monitoring, and automated report generation as examples of how technology has changed daily work activities and operational processes. These changes suggest that technology can alter the composition of employees' work while allowing existing positions to remain in place.

This finding supports the task-based understanding of technological change discussed by Autor (2015) and Gmyrek et al. (2023). However, participants also recognised that continued automation and online self-service could reduce demand for certain tasks, including cashiering and stock checking. The findings therefore indicate that task transformation and potential job displacement can occur alongside one another.

Importantly, participants did not report direct retrenchments attributable to technology in their workplaces. Gonese and Ngepah (2024) demonstrate that employment effects associated with Fourth Industrial Revolution technologies vary according to the technological indicators examined. This study complements this research by showing that, among the participating managers, changes in tasks and responsibilities were more evident than direct job losses.

The findings consequently highlight the need for organisations to prepare employees for evolving responsibilities through reskilling and continuous professional development. It is also suggested that employment implications should be evaluated in terms of both immediate changes to tasks and the possibility of longer-term occupational displacement. Given the limited sample and the qualitative nature of this study, these findings should not be interpreted as evidence that technological adoption has no employment consequences across the wider sector.

4.4. THEME 4: SKILLS DEVELOPMENT AND GAPS

The findings indicate that managers perceived differences in employees' readiness to adapt to workplace technologies. Some participants described structured training programmes, while others reported relying on informal peer guidance and observation to help employees learn how to use new technologies and adapt to changing workplace requirements. These differences suggest that access to consistent and effective training varies across the participating workplaces.

This finding reinforces the importance of workforce development in managing technological change, as highlighted by Gonese and Ngepah (2024). Thisstudy extends this understanding by identifying practical barriers to training, including staffing constraints, limited time, and the difficulty of releasing employees from customer service responsibilities. Participants also described feeling overwhelmed when required to use unfamiliar systems without adequate preparation.

These findings suggest that technology adoption alone does not guarantee effective implementation. Managers suggest that employees require appropriate training, opportunities to practise, and continued support to use digital systems confidently. Informal peer learning may assist with immediate operational challenges, but structured training

can provide more consistent guidance and help ensure that employees develop the competencies required for their responsibilities.

In the South African wholesale and retail context, addressing these skills gaps is particularly important because organisations must balance employee development with daily operational demands. Training programmes should therefore be designed to accommodate operational requirements while providing employees with sufficient opportunities to develop their skills.

The findings indicate that employee readiness should be treated as an essential component of technological transformation. Organisations that invest in appropriate training and support may be better positioned to integrate new technologies while maintaining service quality and operational efficiency.

4.5. THEME 5: TECHNOLOGY ADOPTION, SUSTAINABILITY AND COMPETITIVENESS

The findings indicate that participants associated technological adoption with improved efficiency, reduced administrative workloads, enhanced customer convenience, and opportunities to reduce paper consumption. However, these benefits were not uniform, with some participants reported limited organisational change. This suggests that technology can support operational improvements without necessarily producing immediate or substantial organisational transformation.

Infrastructure limitations emerged as an important barrier to technological adoption. Participants reported that network interruptions and electricity problems disrupted digital transactions and affected customer service delivery. These findings demonstrate that technological benefits depend on reliable infrastructure, employee competence, and organisational readiness. Digital systems may have limited value when employees cannot use them consistently because of operational disruptions.

Considering the South African context is therefore important when interpreting the findings of this study. Technological adoption must be considered alongside infrastructure reliability, workforce development, and the practical demands of retail operations. Although participants identified opportunities to improve efficiency and reduce waste, this study did not directly measure productivity or environmental outcomes. These benefits should therefore be understood as participants' reported experiences and perceptions rather than independently verified organisational outcomes.

The findings suggest that competitiveness depends not only on acquiring technology but also on ensuring that systems function reliably and employees can use them effectively. Managers and policymakers should therefore consider technology investment alongside infrastructure improvements, digital skills development, and appropriate organisational support. Such measures may help organisations prepare for future technological development while supporting employees through changes in workplace responsibilities.

5. CONCLUSION

This study examined the adoption of artificial intelligence in the wholesale and retail sector, focusing on operational practices, skills requirements, job roles, training needs, and sectoral competitiveness. The findings indicate that technological adoption is influencing workplace practices and employee responsibilities in the participating South African organisations. However, the evidence primarily demonstrates digitalisation and automation rather than

widespread AI adoption. Applications such as Microsoft Copilot provide clearer evidence of AI use, whereas digital payments, scanners, electronic receipts, and automated reporting are not inherently AI-based.

Highlighted by this study is the growing importance of digital literacy, technical proficiency, continuous training, reliable infrastructure, and responsible technology implementation. Participants reported that technological adoption had generally reshaped existing responsibilities and reduced repetitive administrative work rather than resulted in direct job losses. Nevertheless, automation and online self-service may affect demand for certain tasks in the future.

The findings also revealed that employees' ability to adapt to technological change depends partly on access to appropriate training and workplace support. Differences in training practices, staffing constraints, and infrastructure limitations may hinder the effective use of technology. Organisations therefore need to invest in structured training, practical learning opportunities, and ongoing skills development to prepare employees for changing workplace requirements.

Although the findings provide useful insights into managers' experiences, this study involved only 10 participants from six provinces and relied on their reported experiences. The results should therefore be interpreted within the context of the participating organisations rather than being generalised to the entire South African wholesale and retail sector. Furthermore, because many of the technologies discussed were not demonstrably AI-based, the findings should be understood as evidence of broader technological change, with more limited evidence of the specific effects of AI.

Overall, the study underscores the importance of workforce preparation, digital competence, and organisational readiness in navigating technological change. Collaboration among businesses, policymakers, and educational institutions will be important in addressing skills gaps and helping employees adapt to the evolving requirements of the wholesale and retail sector.

Declaration on the Use of Artificial Intelligence

ChatGPT, an artificial intelligence tool developed by OpenAI, was used to assist with language editing, grammar correction, punctuation, and improving the clarity and readability of the manuscript. The author reviewed the revised text and takes full responsibility for the accuracy, integrity, and final content of the manuscript.

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