TABLE OF CONTENTS

SSIRC 2024-004

PROMOTING SUSTAINABILITY OF SMALL BUSINESSES THROUGH ENTREPRENEURSHIP EDUCATION

N. Dyantyi-Gwanya
Walter Sisulu University, South Africa

Abstract

The majority of Small, Medium, and Macro Enterprises (SMMEs) struggle to operate for more than five years due to a lack of management, short-sighted business strategies, and limited access to financial support. Proper records management, which is often overlooked, is key to building a profile that is recognised by financial institutions and regulatory statutes. Another aspect is that SMMEs are likely to be managed by owners or individuals with no entrepreneurial acumen. However, entrepreneurship education teaches adaptability, creativity, and sustainable business recovery strategies. Hence, this paper explores the effects of entrepreneurship education on the sustainability of SMMEs. The paper employed a qualitative thematic review methodology. The thematic analysis yielded the following themes: SMME sustainability, entrepreneurship education competencies, business reputation, and finances. This paper revealed that SMME success relies on government support and access to financial resources rather than on social and environmental impact. However, socially and environmentally conscious businesses enjoy tax incentives and strengthen collaborations with funders, government, and communities while promoting entrepreneurial communities. The entrepreneurship education competencies and embracing technology improve trading relations, reduce operational costs, increase competitiveness, and boost access to financial services. The study recommends human capital investment to ensure a return on investment for sponsors, revenue for the business owner, creative solutions to societal challenges, and a multi-skilled versatile entrepreneurial community.

Keywords: SMME sustainability, entrepreneurship education, records management, business profiling, business recovery strategies

INTRODUCTION

Theoretical Framework and Background

The effects of entrepreneurship education on the sustainability of SMMEs are explored through the lenses of knowledge spillover and human capital theories. The knowledge spillover theory facilitates effective teaching and learning of entrepreneurship education to stimulate business acumen that contributes to innovation development. This theory states that more knowledge leads to more entrepreneurial opportunities (Audretsch & Keilbach, 2007; Anokhin et al., 2021). It encourages the conversion of new knowledge into societal utilities by exploiting overlooked discoveries and innovations (Braunerhjelm et al., 2018; Cetindamar et al., 2020). The knowledge spillover theory of

entrepreneurship suggests that acquired skills affect intrapreneurialism among employees within SMMEs.

The human capital theory maintains that knowledge, skills, and ability are important for improving performance and connects these three to stakeholders and their behaviour (Martin, et al., 2013; Prasetyo & Kistanti, 2020). Fundamentally, the human capital theory argues that educating employees to acquire the necessary skills and knowledge related to sustainability and business development for SMMEs improves their capacity to carry out allocated duties. Investing in human capital enables entrepreneurs to take innovative and creative strides in different technologies, which in turn influences high productivity and sustainability (Arshed et al., 2021).

METHODOLOGY

The relevant paradigm for this study is the constructivism paradigm, also known as interpretivism, symbolic thinking, or hermeneutics, which allows for multiple ways of presenting situations based on proponents' knowledge and perceptions (Kayii & Akpomi, 2022). This paradigm is relevant to the study as it seeks to understand whether entrepreneurship education can promote the sustainability of SMMEs. The research approach employed is a qualitative thematic literature review. This approach builds on existing knowledge in a systematic way by synthesising knowledge into themes that unpack the aims of the paper. The themes provide insight into existing literature about the role of entrepreneurship education in promoting the sustainability of SMMEs.

The desktop methodology utilised thematic and narrative analyses. To ensure the validity and reliability of the study, the literature review was systematically searched from pertinent academic publication databases using keywords such as SMME challenges, SMME sustainability, entrepreneurship education, and business recovery strategies. The search was limited to papers published in English between 2017 and 2024. Finding important themes in the data, as well as identifying the challenges hindering the sustainability of SMMEs and entrepreneurship education as one of the interventions, were part of the analytical process.

Findings and Discussions

The thematic analysis of the literature search on the alignment between entrepreneurship education and SMME sustainability revealed several themes. These themes include SMME sustainability, competencies gained from entrepreneurship education, business reputation, and finances. Therefore, the following sections provide more detailed explanations of these findings.

SMME Sustainability

SMMEs are key players in a country's economic innovation and development, accounting for more than half of all businesses in developing countries (Chukwuneme et al., 2023). SMMEs are regarded as the cornerstone for economic development due to their significant role in innovation and creating new ventures, particularly during a financial crisis (Cele, 2020; Enwereji, 2023). Furthermore, they are critical in fostering a knowledge-based economy, growth, and creating job opportunities (Chege

& Wang, 2020). However, despite their pivotal role, up to 80% of SMMEs struggle to remain operational in the first five years, and the recent COVID-19 pandemic exacerbated this issue (Naicker et al., 2017; Chukwuneme et al., 2023; Ncube & Matlala, 2023). According to the National Integrated Small Enterprise Development (NISED) Masterplan, SMME growth in South Africa has been stagnant for the past three decades, while the business discontinuance rate increased from 4.9 in 2019 to 13.9 in 2021 (Global Entrepreneurship Monitoring, 2022; NISED, 2022). This phenomenon is attributed to economic issues such as government regulation, exorbitant interest rates, insufficient internal control, limited technological capabilities, and management incompetence (Ajibade & Khayundi, 2017; Nguza-Mduba, 2021; Fazal et al., 2022).

SMMEs are often managed by owners who have little to no leadership and management training, which subsequently compromises human resource, financial, and strategic management (Mxunyelwa & Lloyd, 2021; Enwereji, 2023; Le et al., 2023). Efficient human resource management is critical for recruiting and maintaining exceptional individuals while also assuring their growth and motivation, which may lead to increased effectiveness (Prasetyo & Kristanti, 2020). Financial management, which includes cash flow management and financial planning, is equally critical for the long-term viability of SMMEs (Ajibade & Khayundi, 2017; Cele, 2020). Meanwhile, strategic management includes developing and implementing novel tactics to promote growth and success, such as the use of new technology for marketing and branding initiatives (Sari & Ahmad, 2022; Mokoena & Liambo, 2023). Addressing these internal variables can help SMMEs improve their operations, become more competitive, and achieve long-term growth.

Skills and knowledge transfer are crucial for the efficiency of SMMEs, especially those with few employees, to ensure that services and processes do not come to a halt due to the unavailability of a particular employee. A confident leader is necessary to facilitate skills sharing within the organisation, as encouraged by both the human capital and knowledge spillover theories (Anokhin et al., 2021; Arshed et al., 2021). The South African public sector has adopted Denmark's enterprise support structure to promote sustainability through skills sharing in the manufacturing sector, aiming to improve competitiveness in local, national, and international markets (Reischauer, 2018; Ghobhakloo et al., 2021). These skills include records management, marketing, customer service, technology fluency, and networking. Records management is essential for monitoring operations, retaining customers, and providing customised services (Ajibade & Khayundi, 2017; Cele, 2020). Despite the significant importance of SMMEs to the South African economy, Ajibade and Khayundi found that there was no records management strategy governing business procedures and record-keeping. This lack of strategy resulted in difficulties accessing finances or recognition in sector bodies.

SMMEs operate differently from major corporations in terms of supply chain and business management, with the advantage of flexibility under unpredictable circumstances (Cele, 2020; Chukwuneme, et al., 2023). Government policies regarding supply chain regulations and communication barriers in SMMEs are seen as stumbling blocks that limit market access and growth (Ghobhakloo et al., 2021; Chukwuneme, et al., 2023; Sureka et al., 2023). In recent years, South Africa has made efforts to address these difficulties through various government initiatives, including the

Small Enterprise Development Agency (SEDA) and the National Small Business Act (Van Staden, 2022; van Niekerk, 2024). The National Development Plan (NDP) recognises the need for support as a strategic driver for achieving the nation's overall economic strategy by 2030 (Bolosha et al., 2023; Ramsuraj, 2023). Bolosha et al. (2023) forecast that by 2030, SMMEs will provide 90% of all new jobs, aligning with the aims and objectives of the NDP. This paper advocates for policymakers to promote the development and sustainability of SMMEs as a means of realising the South African NDP 2030, African Agenda 2063, and United Nations Sustainable Development Goals.

Entrepreneurship Education Competencies

Competencies are not only influenced by characteristics and cognition, but also encompass observable and measurable knowledge, behaviours, attitudes, and abilities that are valuable in task performance. The emphasis on competencies as a way to capture important qualities of entrepreneurs that drive venture performance originates from early research on managerial abilities that impact the performance of larger enterprises (Arshed et al., 2021; Fazal et al., 2021). Conversely, the main objective of entrepreneurship education is to equip stakeholders with relevant and sufficient knowledge, skills, aptitude, and exposure to support the development of SMMEs (Chikari, 2021). Entrepreneurship education is defined as any pedagogical program that instils entrepreneurial aptitude and skills such as risk-taking, strategic thinking, informed decision-making, creativity, and innovation (Ncanywa, 2019; Altahat & Alsafadi, 2021). Therefore, entrepreneurship education is crucial in creating accessible innovative solutions for society and the environment, with the potential to generate income that contributes to the sustainability of SMMEs and economic growth (Malipula, 2023; Olutuase et al., 2023; Shetty et al., 2024).

The provision of entrepreneurship education training should be tailored to the target audience, socio-economic context, student needs, competencies, the profile of the facilitator, and the overall objective of developing specific techniques that enhance students' entrepreneurial potential (Del Vecchio et al., 2021). Some of the training focuses on high-level information such as intellectual property, business models, marketing, management, and interpersonal skills. The course directly or indirectly teaches soft skills, including self-esteem, attitude, values, and the ability to recognise opportunities. The commonly taught areas in entrepreneurship include financing and resource mobilisation, marketing, idea generation/opportunity discovery, managing growth, business planning, organisation and team building, new venture creation, small business management, and risk and rationality (Fazal et al., 2022; Ncube & Matala, 2023). The course increases the likelihood of new venture creation and their survival by applying the acquired skills in managing liabilities, taking initiative, effective communication, managing innovation, and generating revenue for individuals (Del Vecchio et al., 2021; Shetty et al., 2024).

The study by Ncube and Matlala (2023) confirms that competencies acquired through entrepreneurship education enhance the performance of SMMEs in terms of innovation, adaptability, growth, and market competitiveness. Adaptability, risk-taking, and rationality, as part of strategic management, are essential qualities necessary for the resilience of SMMEs in navigating the complexities of the business landscape (Mxunyelwa & Lloyd, 2019; Nguza-Mduba & Mutambara, 2021). Adopting sustainable

business practices to diversify business services and products, increase clientele, and maintain trading during difficult times is a learning outcome of modules on Opportunity Identification and Sustainable Business Recovery Strategies (Ncanywa, 2019). The competencies in accounting and records management, which are advocated in the literature as key skills for business sustainability, are offered in the Business Management module (Ajibade & Khayundi, 2017; Cele, 2020; Shetty et al., 2024). To broaden access to comprehensive and impactful entrepreneurship education, a multidimensional approach can be developed that incorporates financial management, marketing strategy, legal compliance, and technological integration, and can be established through collaborations among educational institutions, industry professionals, and government agencies.

Business Reputation and Finances

Access to finance, advice/mentorship, partnerships, marketing and procurement, infrastructure, appropriate technology, and enabling legislative and regulatory conditions are important factors for the long-term sustainability of SMMEs. One of the main reasons small firms fail within the first five years is due to a lack of funding and difficulty in obtaining loans during critical moments (Chukwuneme et al., 2023; Ncube & Matlala, 2023). As a result, finance is the most widely studied concept in entrepreneurial education and business sustainability. Kanayo et al. (2021) argue that the success of South African SMMEs largely depends on financial resources and government support rather than social and environmental indicators.

Securing finance, marketing the business, and adapting technology are interconnected business processes. Technological adaptability refers to SMMEs' ability to leverage information technology to reduce operating costs, improve customer service, enhance communication between producers and customers as well as suppliers, gain market insights, and build strong trade relationships (Ali et al., 2023; Bolosha et al., 2023). Innovative financial practices involve the use of the latest digital financial products and services for operational efficiency and investment purposes. A study by Lingyan et al. (2021) on the importance of technology adaptation found that enterprises that embraced open innovation in technology established global networks, engaged in licensing agreements, and collaborated with third parties. Utilising technology and digitalisation in marketing, advertising, and business communication, as well as adopting innovative financial methods like digitalising purchasing and sales activities, improves the reputation and visibility of SMMEs in potential markets. A strong online presence also enhances access to secure financial assistance from the government and banks.

CONCLUSION AND RECOMMENDATIONS

This study explored the effects of entrepreneurship education on promoting the sustainability of SMMEs. The study used qualitative thematic review methodology and found a substantial amount of literature on the connection between SMME success and entrepreneurship education. The study revealed that entrepreneurship education programs have a positive impact on various factors related to SMME performance, such as growth, innovation, adaptability, and market competitiveness. By acquiring skills in handling liabilities, having a sense of initiative, effective communication, managing innovation, and generating revenue, individuals are more likely to create new ventures and ensure the

survival of SMMEs. Additionally, the competencies gained from modules on Opportunity Identification and Sustainable Business Recovery Strategies equip SMME practitioners with strategic communication skills, an understanding of the importance of diversification, and knowledge of digital financial management and marketing. This study recommends collaboration between SMME practitioners, government, policymakers, and educational institutions to develop comprehensive and impactful entrepreneurship education training that addresses relevant challenges. The accessibility and quality of entrepreneurship education programs should be improved, focusing on practical skills, digital literacy, and resilience-building tactics. Furthermore, the government should consider providing incentives and promoting SMME involvement in entrepreneurial education projects through financial and legislative interventions, recognising it as an investment in human capital for economic growth. By embracing entrepreneurship education as a strategic tool, countries like South Africa can promote the growth and resilience of their SMME sector, contributing to economic development, job creation, and long-term entrepreneurship in the face of persistent problems. Sustainable SMMEs are a step closer to realising the South African NDP 2030, African Agenda 2063, and United Nations Sustainable Development Goals.

REFERENCES

Ajibade, P., & Khayundi, F. E. (2017). The role of records management in small micro and medium enterprises (SMMEs) in South Africa and its implications for business sustainability. *African Journal of Library, Archives & Information Science*, *27*(2), 175–188.

Ali, E., Parmentola, A., & Ali, U. (2023). Fostering digital entrepreneurship by developing entrepreneurial mindset. In D. Matricano, L. Castaldi, W. E. Jackson III, & L. Marino (Eds.), *Entrepreneurial Processes in the Era of Digital Transformation,* 1–5. De Gruyter.

Altahat, S., & Alsafadi, Y. (2021). The mediating role of creativity in the influence of the entrepreneurial mindset on corporate entrepreneurship. *International Journal of Innovation, Creativity and Change*, *15*(4), 767–783.

Anokhin, S., Chistyakova, N., Antonova, I., Spitsina, L., Wincent, J., & Parida, V. (2021). Flagship enterprises, entrepreneurial clusters, and business entry rates: insights from the knowledge spillover theory of entrepreneurship. *Entrepreneurship & Regional Development*, *33*(3–4), 353–367.

Arshed, N., Rauf, R., & Bukhari, S. (2024). Empirical contribution of human capital in entrepreneurship. *Global Business Review*, *25*(3), 683–704. Audretsch, D. B., & Keilbach, M. (2007). The theory of knowledge spillover entrepreneurship. *Journal of Management studies*, *44*(7), 1242–1254.

Bolosha, A., Sinyolo, S., & Ramoroka, K. H. (2023). Factors influencing innovation among small, micro and medium enterprises (SMMEs) in marginalized settings: Evidence from South Africa. *Innovation and Development*, *13*(3), 583–601.

Braunerhjelm, P., Ding, D., & Thulin, P. (2018). The knowledge spillover theory of intrapreneurship. *Small business economics*, *51*, 1–30.

Brijlal, P., & Yan, B. (2022). Social capital and access to Bank finance: the case of small business owners in a developing nation. *International Journal of Science and Research*, *78*(2), 1–13.

Cele, S. (2020). The role of management accounting practices in the success of Small and Medium-sized Enterprises in Durban. (Master's dissertation). Durban University of Technology.

Cetindamar, D., Lammers, T., & Zhang, Y. (2020). Exploring the knowledge spillovers of a technology in an entrepreneurial ecosystem – The case of artificial intelligence in Sydney. *Thunderbird International Business Review*, *62*(5), 457–474.

Chege, S. M., & Wang, D. (2020). The impact of entrepreneurs' environmental analysis strategy on organizational performance. *Journal of Rural Studies*, *77*, 113–125.

Chikari, G. (2021). An assessment of the effectiveness of entrepreneurship education in Botswana private higher education institutions (Doctoral dissertation).

Chukwuneme, E. P., Olaniyi, A. T., & Innocent, B. (2023). South African government palliative funds for SMMEs during COVID-19: Challenges of implementation and suggestions for improvement. *Journal of Accounting, Finance and Auditing Studies, 9*(2), 18–45.

Del Vecchio, P., Secundo, G., Mele, G., & Passiante, G. (2021). Sustainable entrepreneurship education for circular economy: emerging perspectives in Europe, *International Journal of Entrepreneurial Behavior & Research*, *27*(8), 2096–2124.

Enwereji, P. C. (2023). Navigating the hurdles: The internal and external challenges of Small, Medium and Micro Enterprises (SMMEs) in South Africa. *African Journal of Development Studies, 13*(4), 227–249.

Fazal, S. A., Al Mamun, A., Ahmad, G. B., & Al-Shami, S. S. A. (2022). Entrepreneurial competencies and microenterprises sustainability. *Vision*, *26*(1), 39–47.

Ghobakhloo, M., Iranmanesh, M., Grybauskas, A., Vilkas, M., & Petraitė, M. (2021). Industry 4.0, innovation, and sustainable development: A systematic review and a roadmap to sustainable innovation. *Business Strategy and the Environment*, *30*(8), 4237–4257.

Global Entrepreneurship Monitor. (2018). *GEM 2017/2018 Global Report*. http://www.gemconsortium.org/report/gem-2018-2019-global-report

Kanayo, O., Agholor, I., & Olamide, E. (2021). Impact of sustainable entrepreneurship indicators on SMEs business success in South Africa. *Academy of Entrepreneurship Journal*, *27*(4), 1–17.

Kayii, N. E., & Akpomi, M. E. (2022). Constructivist approaches: A budding paradigm for teaching and learning entrepreneurship education. *International Journal of Education, Teaching, and Social Sciences*, *2*(1), 31–44.

Le, D. T., Christopher, S., Nguyen, T. T. T., Pham, H. T. T., & Nguyen, P. T. L. (2023). How leadership styles influence organizational outcomes: an empirical study in Vietnamese SMEs. *International Journal of Emerging Markets*, *18*(10), 3893–3912.

Lingyan, M., Qamruzzaman, M., & Adow, A. H. E. (2021). Technological adaption and open innovation in SMEs: An strategic assessment for women-owned SMEs sustainability in Bangladesh. *Sustainability (Switzerland)*, *13*(5), 1– 23. https://doi.org/https:/doi.org/10.3390/su13052942

Lopez-Torres, G. C. (2023). The impact of SMEs' sustainability on competitiveness. *Measuring business excellence*, *27*(1), 107–120.

Madrid-Guijarro, A., & Duréndez, A. (2024). Sustainable development barriers and pressures in SMEs: The mediating effect of management commitment to environmental practices. *Business Strategy and the Environment*, *33*(2), 949–967.

Malipula, M. M. (2023). SMEs sustainability through entrepreneurship training in Tanzania. *Journal of Enterprise and Development*, *5*(3), 384–397.

Martin, B. C., McNally, J. J., & Kay, M. J. (2013). Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship education outcomes. *Journal of business venturing*, *28*(2), 211–224.

Mokoena, S. L., & Liambo, T. F. (2023). The sustainability of township tourism SMMEs. *International Journal of Research in Business and Social Science*, *12*(1), 341–349.

Msomi, T. S., & Olarewaju, O. M. (2021). Factors affecting small and medium enterprises' financial sustainability in South Africa. *African Journal of Inter/Multidisciplinary Studies*, *3*(1), 103–117.

Mutyenyoka, E. M., & Madzivhandila, T. S. (2014). Employment creation through small, medium and micro enterprises (SMMEs) in South Africa: Challenges, progress and sustainability. *Mediterranean Journal of Social Sciences*, *5*(25), 65–72.

Mxunyelwa, S., & Lloyd, H. (2019). Management capacity within small to medium tourism enterprises (SMTEs) in the Eastern Cape Province. *African Journal of Hospitality, Tourism and Leisure*, *8*(4), 1–12.

Naicker, V., Suzaan, L. E., Bruwer, J., & Bruwer, J. P. (2017). Knowledge sharing as a value-adding initiative for South African SMME sustainability: A literature review. *Expert Journal of Business and Management*, *5*(2), 51–60.

Naidoo, V. (2021). SME Sustainability in South Africa Post-COVID-19. In: Bapokrikar, N. (eds), *Handbook of Research on Sustaining SMEs and Entrepreneurial Innovation in the Post-COVID-19 Era*. USA: IGI Global.

Ncanywa, T. (2019). Entrepreneurship and development agenda: A case of higher education in South Africa. *Journal of Entrepreneurship Education, 22*(1), 1–11.

Ncube, T. R., & Matlala, M. E. The impact of entrepreneurship education on small, medium and micro enterprises' performance in South Africa amid and after COVID-19: A scoping review. In *Mbali Conference 2023 Proceedings,* 501.

Ngonisa, P., Mgxekwa, B., Ndlovu, N., Ngonyama, N., & Mlambo, C. (2023). Bank market structure and SMMEs' access to finance: A South African perspective. *Economies*, *11*(1), 1–11.

Nguza-Mduba, B., & Mutambara, E. (2021). The entrepreneurial path to success for Small and Medium-sized Enterprises (SMEs) in the tourism sector using intuitive competitive intelligence. *International Journal of Entrepreneurship*, *25*, 1–19.

Nxele, S., & Hoque, M. E. (2023). Factors Hindering Small, Medium, and Micro Enterprise Business Growth in South Africa. In *Advancing SMEs Toward E-Commerce Policies for Sustainability,* 134–151. IGI Global.

Olutuase, S. O., Brijlal, P., & Yan, B. (2023). Model for stimulating entrepreneurial skills through entrepreneurship education in an African context. *Journal of Small Business & Entrepreneurship, 35*(2), 263–283.

Prasetyo, P. E., & Kistanti, N. R. (2020). Human capital, institutional economics and entrepreneurship as a driver for quality & sustainable economic growth. *Entrepreneurship and Sustainability Issues*, *7*(4), 2575–2589.

Ramsuraj, T. (2023). Assessing the role of entrepreneurship industry and SMEs to economic growth in South Africa. *International Journal of Research in Business and Social Science*, *12*(7), 283–291.

Reischauer, G. (2018). Industry 4.0 as policy-driven discourse to institutionalize innovation systems in manufacturing. *Technological Forecasting and Social Change*, *132*, 26–33.

Rungani, E. C. (2022). Towards a comprehensive SMME support framework in South Africa. *Journal of Contemporary Management*, *19*(2), 654–674.

Sari, S. A., & Ahmad, N. H. (2022). Connecting the dots: Linking entrepreneurial leadership and strategic agility towards SME competitiveness. *Vision*, 09722629221091658. https://doi.org/10.1177/097226292210916

Shetty G, S., Baliga, V., & Thomas Gil, M. (2024). Impact of entrepreneurial mindset and motivation on business performance: deciphering the effects of entrepreneurship development program (EDPs) on trainees. *Cogent Business & Management*, *11*(1), 2314733.

Sureka, R., Kumar, S., Mukherjee, D., & Theodoraki, C. (2023). What restricts SMEs from adopting sophisticated capital budgeting practices? *Small Business Economics*, *60*(1), 265–290.

Van Niekerk, L., Claassens, N., Fish, J., Foiret, C., Franckeiss, J., & Thesnaar, L. (2024). Support factors contributing to successful start-up businesses by young entrepreneurs in South Africa. *Work* (Preprint), 1–12.

Van Staden, L. J. (2022). The influence of certain factors on South African Small and medium-sized enterprises towards export propensity. *Development Southern Africa*, *39*(3), 457–469.

Yadav, V. (2023). SME Sustainability in turbulent times of COVID-19: A review of literature and future directions. *Small and medium-sized Enterprises, and Business Uncertainty: Just Surviving or Thriving?* 17–35.

SSIRC 2024-007

THE NEXUS BETWEEN HOUSING AND HEALTH: THE CASE OF INFORMAL SETTLEMENTS IN SOUTH AFRICA

N. S. Mathonsi
University of Limpopo, South Africa

S. L. Sithole
University of Limpopo, South Africa

Abstract

The notion of quality, safe and adequate housing from both the supply and the demand sides has had a detrimental effect on the conditions of most households in South Africa. The deteriorating ability of the state to deliver housing opportunities for low-income earners owing to the shrinking fiscus, increasing building costs and housing need (population growth), and rapid urbanisation, amongst other factors, has forced many families at the lower-end of the income brackets to live in poor housing conditions in informal settlements. Literature reveals that housing is often cited as an important social determinant of health, recognising the range of challenges in which lack of housing and or poor quality housing can negatively affect the health and social well-being of people in a society. Also, living conditions in informal settlements are argued as posing health risks, particularly to vulnerable populations such as children, the elderly, disabled, and people with suppressed immune systems. Studies indicate that some incidents that are prevalent in informal settlements such as lack of water onsite and subsequent collection as well as storage of water in containers increase the risk of infectious diseases. Against this background, this conceptual paper adopts the Herald Maslow's Theory of Hierarchy of Needs to understand the need for safe and secure shelter. This theory is supplemented by the ideas of Gosta Esping-Andersen on *The Three Worlds of Welfare Capitalism* to analyse the South African state in relation to the provision of basic services such as housing and health. We relied on existing literature to put together this paper. This approach aligns with the qualitative design through the adoption of the systematic review method to develop thematic issues for discussion as findings. The relevance of the findings concretises the need for an effective relationship between health and housing sectors. The same also accounts for the empirical contribution of this project. Some key recommendations are provided as theoretical contributions and for policy consideration.

Keywords: Housing, health, hierarchy of needs, welfare, informal settlements

INTRODUCTION AND BACKGROUND

From the year 2009, the mandate of the erstwhile Department of Housing in South Africa was expanded from housing to human settlements. The former President, Mr Jacob Zuma clarified that '... human settlements is not just about building houses. It is about transforming our cities and towns and building cohesive, sustainable and caring communities with closer access to work and social amenities, and recreational facilities' (The Presidency, 2009). The former Minister of Human Settlements, Mr Tokyo Sexwale opines that human settlements is about '... where we live must also be where we can learn; where we live must also be in the proximity of where we can leisure;…where we stay should also be where we can play, where we can pray ...' (Polity, 2011). This definition confirms that other sectors should be involved in human settlements delivery.

The concept of human settlements has been in existence, at a conceptual level, for almost six (6) decades. From 1965 hitherto, the United Nations (UN) has been emphasising the fundamental role of human settlements management as part of governance mechanisms to create integrated, sustainable and healthy living environments (UN, 1969). For sustainable and healthy living environments in societies, the relationship between housing and health is necessary. However, the reality is the opposite and thus an oxymoron in the Republic of South Africa (RSA) when one looks at the daily living realities in informal settlements, especially in metropolitan municipalities.

This conceptual paper draws on the existing literature to problematise issues of housing and health in South Africa by focusing on informal settlements. The paper is anchored on the idea that shelter and good health are basic human needs as informed by the Maslow's Hierarchy of Needs Theory. Linked to this, this study adopts the welfarian approach in the delivery of basic services by focusing on the poor. Some key recommendations are provided based on the findings to provide an original contribution with respect to the empirical and theoretical significance of the project.

PROBLEM STATEMENT

Notwithstanding the right to have access to adequate housing and health care services for everyone as provided for in Sections 26 and 27 of the Constitution (RSA, 1996) and emphasised in the World Health Report (2008), sustainable healthy living conditions are non-existent in most informal settlements in South Africa. This is a life-threatening problem, which is experienced in most parts of the country. It is worse in metropolitan cities where informal settlements are mushrooming as a result of the urbanisation process that was prognosticated by the National Development Plan (NDP) (2011). The problem of poor healthcare seems to have been in the making as long as informal settlements existed. However, it has worsened in the recent past years due to increased urbanisation. The Socio-Economic Rights Institute (SERI) (2018:7) indicates that:

> 'poor health and susceptibility to various kinds of social ills that include crime, teenage pregnancy, juvenile delinquency, infant mortality, and low life expectancy occur in informal settlements. Informal settlements in South Africa are characterised by profound inequalities in access to basic services such as water, sanitation, and electricity'.

This is a daily living reality for most of the 8.1% of the South African population who live in informal dwellings (Statistics South Africa, 2023). Although this problem directly affects people in informal settlements, it also a challenge for the government since it is cumbersome to curb the proliferation of new informal settlements regardless of the implementation of the Prevention of Illegal Eviction and Unlawful Occupation of Land Act (1998) and Informal Settlements Upgrading Programme (ISUP) by the human settlements sector.

This serves as motivation to conduct the study in order to contribute to the body of knowledge and unearth wisdom that will yield key recommendations. The central research question that this project attempts to grapple with is ***whether or not the nexus between health and housing can improve the quality of life in informal settlements.***

AIM AND OBJECTIVES

The aim of this project is to demonstrate the mutually reinforcing relationship between housing and health functions by focusing on informal settlements in South Africa.

In order to address the aim of the study, the following related objectives were pursued:

(i)   to analyse the relationship between housing and health in South Africa; and
(ii)   to determine possible solutions for the poor health living conditions in informal settlements.

THEORETICAL PERSPECTIVES: HOUSING, HUMAN SETTLEMENTS AND HEALTH

As a starting point, it is crucial to consider housing and health within the Constitutional framework that governs the space within which they are implemented in South Africa. Sections 26 and 27 of the Constitution provide for housing and health services, respectively. With regards to housing, Sections 26(1) and (3) provide that 'everyone has the right to have access to adequate housing… No one should be evicted from their home, or have their home demolished, without an order of court made after considering all the relevant circumstance', whereas Sections 27(1) and (3) provide that 'everyone has the right to have access to health care services, including reproductive health care… No one maybe be refused emergency medical treatment' (RSA, 1996). It is the responsibility of the state to ensure the progressive realisation of the right to adequate housing and healthcare services. The housing and health services share the same status in terms of their recognition in the Constitution, which makes them right-based services.

In practice, health and housing share a strong relationship that is mutually reinforcing. Hubley (2020:3) concludes in her work titled *Health, Housing, and the Hierarchy of Need: Partnership for Strong Communities* that 'our health is dependent on the place in which we live'. Given this argument and its relationship to the hierarchy of human needs as well as the Constitutional provisions, two (2) theoretical perspectives will be utilised to anchor this project, namely: (1) the Maslow's Hierarchy of Needs, and (2) The Welfarian perspective of states on basic services.

Maslow's Hierarchy of Needs: Housing and Health As a Basic Need

One of the predominant theories in disciplines such as psychology, sociology, economics, political science and public management, among others, is the Maslow's Hierarchy of Needs Theory. McLeod (2018) posits that psychosocially, the theory is concerned with human motivation based on needs comprising five-tier model depicted as hierarchical levels within a pyramid. From the bottom of the pyramid to the top are the following cluster of needs: (i) physiological (ii) safety (iii) love and belonging (iv) esteem and (v) self-actualisation (Maslow, 1943, 1987; McLeod, 2018; Hubley, 2020). Malow (1987:69) also argues that the satisfaction of needs at a particular level is not an 'all-or-none' requirement, which means that it does not mean that 'a need must be satisfied 100 percent before the next need emerges'. As such, some needs may be satisfied simultaneously across different strata of the pyramid. Figure 1 below depicts Maslow's hierarchy of human needs from *the most cardinal ones to the glamorous*.

Figure 1: Maslow's hierarchy of needs model
Source: McLeod, 2018

In summary, Maslow (1943, 1987) and authors who reacted to his theory such as Zavei and Jusan (2012), McLeod (2018), and Hubley (2020), among others, clarify the five human needs as follows: (i) **Physiological needs** – examples are air, water, food, shelter, and sleep, among others. These are the most basic needs that should be satisfied first since they are directly linked to life and survival. (ii) **Safety needs** include security, resources, property and health, among others. (iii) **Love and belongingness needs** are exemplified by family, love, intimacy, friendship and social networks, among others. (iv) Examples of **esteem needs** include dignity, independence, prestige, respect, reputation and status, among others; and (v) **Self-actualisation needs** are represented by personal achievements, pedigree, becoming an expert, realising one's potential and amassing personal growth.

Although Maslow's Theory of Human Needs and Motivation is critiqued for its applicability and relevance, it is still relevant in analysing human needs and motivation to date.

With regards to housing service as problematised in this project, it is considered as human shelter in terms of Maslow's Theory. Based on the Theory, housing/shelter is a physiological/basic need for human survival. Shelter goes beyond a house because there are homeless people. The rational practice around it is to understand that some examples of needs can be considered individually whereas others can best be considered alongside other needs within the same cluster of needs. Thus, the case of housing is approached from various disciplines, especially because it serves to satisfy various kinds of human expectations. Borg (2018:1) opines that 'housing is a topic that gathers researchers from different disciplines such as geography, political science, sociology, and economics – all with different points of departure. The multidisciplinary nature of housing research has advantages in that it brings multitude theoretical views together'. Various authors in the cited disciplines 'consider that Maslow's theory on hierarchy of needs is applicable in explaining users' motivations in housing' (Zavei & Jusan, 2012:311). This is because a 'house is such a universal satisfier for human needs…' (Murray, Pauw, & Holm, 2005; Zavei & Jusan, 2012). In a study on *Housing Needs and Preferences* based on Maslow's Theory, the findings reveal the applicability of the theory in identifying beneficiaries' needs for housing (Zavei & Jusan, 2012).

Based on Maslow's Theory, a house is considered a key aspect of a shelter. However, Branham (2007) as well as Zavei and Jusan (2012) break down the residential space concepts into three similar items as house, home and shelter. Unlike a house, a home is more than a structure. Hubley (2020:2) is of the view that shelter is about a roof over someone's head to protect them from 'elements of the outside world'. Zavei and Jusan (2012) concur, arguing that shelters serve as a mechanism for human protection, a home is a representation of an inherent social structure whereas a house is a denotative concept for a dwelling such as a physical building. Hablemitoglu, Ozkan and Purutcuoglu (2010) posit that a house is an instrument that helps 'to meet the basic physiological needs and helping man to maintain his life'. A home is a 'symbol of the lives spent within it…it is connotative of the deep structures of a social system and how these are reflected in the family's relationships to the domestic space it occupies' (Zavei & Jusan, 2012:313).

Reflecting on Maslow's Theory, Hubley (2020) discusses health as one of the safety needs. She argues that human safety needs are met when people feel that they have resources, personal security and good health. Most importantly, human health depends on settlements in which people live, as such, 'health and housing overlap, and how they impact one another and the lives of human beings' (Hubley, 2020:1). She adds that:

> 'having a roof over your head does provide some comfort but is not always what most would consider 'safe'…part of having a place to live is feeling secure in that space… Those living in poverty more frequently live in homes with mould, asbestos, lead paint, cramped spaces, infestations, and poor air quality' People in these areas are more likely to face negative health effects like asthma, lead poisoning, heart disease, mental health impairment and even some forms of cancer' (Hubley, 2020:2).

To showcase the relationship between housing and health as problematised in this project, Hubley (2020:3–4) concludes that 'the theory of a hierarchy of human need shows plainly that having a safe, secure place to live, a stable income, and supportive services within the community to provide help when it is most needed does impact on health'. Maslow's Theory maintains that a house does not only satisfy shelter-related needs, but also physiological needs, which directly relate to human health (Hablemitoglu, Ozkan, & Purutcuoglu, 2010). This also corroborates the already established mutual relationship between housing and health. Both housing and health services are government mandates. It is, therefore, crucial to theoretically analyse them using a welfarian stance. The next subsection attempts to do so for the housing function.

The Welfarian Perspective: Housing and Human Settlements in South Africa

The South African state can be considered as a welfare state although not 'a fully-fledged one', according to Mopp and Swanepoel (2022:18). Its welfarian character is justifiable by, among other key aspects, the adoption of welfarian policy frameworks that guarantee some government services to citizens. These policy frameworks include but not limited to, the Reconstruction and Development Programme (RDP) (1994), the Housing White Paper (1994), the White Paper for Transforming Health Systems (1997), the White Paper on Welfare (1998), and the Growth, Employment and Redistribution Strategy (GEAR) (1996) – although the latter is criticised for its capitalistic nuances by alliance partners of the majority party. Notwithstanding, health services and adequate housing are typical basic services provided by the South African state in line with Sections 26 and 27 of the Constitution.

Regarding welfare states, Gosta Esping-Andersen's *magnum opus* (*The Three Worlds of Welfare Capitalism (1990))*, refers. Welfare states are clustered into three (3) worlds as: (i) conservative capitalist welfare states – wherein there are welfare rights on the basis of secure private sector employment (examples are Germany, France, and Japan, among others); (ii) liberal capitalist welfare states – wherein welfare provisions are limited and labour markets are flexible (examples are Australia, Canada and the United Kingdom, among others); and (iii) social democratic capitalist welfare states – wherein labour markets are highly regulated and the sphere of public provision is highly de-commodified (examples are Finland, Sweden and Norway, among others).

Generally, welfare states are complicated in that they involve a lot of other socio-political phenomena. This is demonstrated by Mopp and Swanepoel (2022) in Figure 2 below, who argue that welfare states create classes of people in societies. This is not surprising considering that there is a capitalist flavour that is inherent in them notwithstanding the goal of bringing about parity in terms of general living standards (Mopp & Swanepoel, 2022). Without delving into details on the three (3) worlds as conceptualised by Esping-Andersen (1990), attention is hereby drawn to the social democratic welfare state, of which Mopp and Swanepoel (2022) conclude that this is epitomised by the South African state. This epitomisation is due to 'its ideological proximity to the South African governance regime, democracy. Social democratic welfare states can pride themselves on a greater facility for remedial defects or for correcting errors committed in the past' (Mathonsi, 2017). Mitileni and Sithole (2016) concur with the classification of the South African state as what Esping-Anderson (1990) considers a social democratic capitalist welfare state.

Welfare states are complex because they involve a number of other complicated aspects that simply do not really relate with each other. However, the bottom line is to ensure some equality for general maintsreaming and to ensure respect for citizens' rights (Esping-Andersen, 1990).

Figure 2: Some elements of welfare states
Source: Mopp & Swanepoel, 2022

With regards to the relationship between welfare states and housing, it should be noted that a house is recognised as both a socio-economic asset and a market commodity in capitalist democracies (Bengtsson, 2001). As such, state intervention includes the provision of housing as one of the key welfare services for wealth creation. Borg (2018:1) opines that '…housing is incorporated as one of the five key public services that are the focus of social policy in academic debates; health, social security, education and personal social services', and acknowledges that 'in contrast to these services, housing is to a large extent dependent on a market sector, as the market functions as the main source of supply and distribution of housing, and this is the reason for the particular place of housing within the wider welfare state'. Thus, in South Africa, the state has to ensure that funds are available through a variety of means, including market activities in line with GEAR to assist in the progressive realisation of the socio-economic right to housing and health, among others.

LITERATURE DISCUSSION: HOUSING, HUMAN SETTLEMENTS AND HEALTH

In the preceding section, it has been established that the South African state is teetering towards a welfare state, especially considering some of its key features that make such a consideration justifiable. This section looks at the services (housing and health) which the state provides as a way of showcasing one among other characteristics that account for its consideration as a social democratic welfare state. The section discusses two closely related issues, namely: (i) the housing and human settlements concept, and (ii) housing and health in informal settlements.

Housing and Human Settlements in South Africa: Conceptual Synopsis

South Africa has adopted the two concepts in its social democratic welfarian approach to assist the low- and middle-income brackets of the country's residential property market. Some background on the concept of human settlements could be necessary at this stage, looking at the works of the United Nations (UN) and the UN-Habitat. As noted in the introduction, the concept of human settlements has been in existence since 1965 to be exact, wherein the UN acknowledged that building houses alone

does not improve human life and canvassed for the human settlements management to create integrated and sustainable towns and cities (UN, 1969).

Following its establishment in 1975, the UN-Habitat hosted its first conference in Canada in 1976 wherein the concept of human settlements was officially declared. With the declaration, it was stated that 'adequate shelter and services are a basic human right' (UN-Habitat, 1976:28). The concept is defined as the 'totality of the human community whether city, town or village with all the social, material, organisational, spiritual and cultural elements that sustain it' (UN-Habitat, 1976:8). Adeniran, Mbanga and Botha (2021:2) concur that the human settlements structure include 'physical elements, social services, and infrastructure'. 'The 'physical components consist of manmade shelters that vary in size, composition, and type, and that are built within a community for privacy, security and protection... The community requires social services such as education, health, welfare, nutrition and recreation' (Adeniran, Mbanga, & Botha, 2021:2).

The conceptual framing of housing in South Africa has been linked to the concept of human settlements. This has been the case after the adoption of the Breaking New Ground Policy Strategy in 2004 and the expansion of the mandate of the erstwhile Department of Housing to the Current Department of Human Settlements (DHS) in 2009. The human settlements sector has published a number of housing policy programmes through Section 4 of the Housing Act (Act 107 of 1997), which states that the minister should publish a Housing Code that contains sector policy programmes (RSA, 1997). This responds to the Constitutional mandate for the sector, which is provided in Section 26(1-3) of the Constitution, which states that:

> '(1) Everyone has the right to have access to adequate housing. (2) The state must take reasonable...measures...to achieve the progressive realisation of this right. (3) No one may be evicted from their home, or have their home demolished, without an order of court made after considering all the relevant circumstances. No legislation may permit arbitrary evictions' (RSA, 1996).

As noted in the introduction, the former President of the Republic of South Africa, Mr Jacob Zuma remarked that '... human settlements is not just about building houses. It is about transforming our cities and towns and building cohesive, sustainable, and caring communities with closer access to work and social amenities, including sports and recreation facilities...' (The Presidency, 2009). The same sentiment was shared by the former Minister for Human Settlements, Mr Tokyo Sexwale, who posited that '... where we live must also be where we can learn; where we live must also be in the proximity of where we can leisure; we say where we stay should also be where we can play, where we can pray and so on...' (Polity, 2011). This brings the definitional aspects of the concept as adopted in South Africa close to the original conception by the UN and the UN-Habitat.

Currently, housing and human settlements have been implemented as the same function in South Africa, and the outputs yielded from the sector delivery includes both houses built and stands/sites services in order for beneficiaries to incrementally build houses of their own preference. This is dependent on the application of qualification criteria, which are part of the housing policy item in the Housing Code. As such, instead of only counting physical houses, the sector also counts serviced sites, and refers to both outputs as housing opportunities. As per the literature, this does not yet fully live up

to the definition of integrated sustainable human settlements because putting the definition into practice will mean practical coordinated planning, coordinated budgeting, and coordinated delivery with other sector departments. This still appears to be a pipedream as it currently stands. Sectors are more concerned with what pertains to their targets, which is a stronghold for silo planning, silo delivery and uncoordinated development.

The qualification criteria of the Housing Code define the low-middle-and high-income brackets. Considering the merits of other qualification criteria, low income starts from a total household income of R0 – R3 500, 00 wherein beneficiaries qualify for a full subsidy (land and top structure). Middle income is between R3 501,00 – R22 000,00 wherein beneficiaries can be assisted through programmes that include serviced sites and most subsidised rental programmes. Within this category is a programme called the First Home Finance (FHF), which is partly a loan from a finance institution and partly a subsidy from the government. The higher income bracket is constituted by households whose income is R22 001,00 and above for whom it is understood that they may not struggle as much as the other groups would to secure home loans from banks. Rao and Geffen (2023) indicate that the state delivered above 5 million housing opportunities from 1994 to 2022.

Housing and Health in Informal Settlements

The relationship between housing and health in South Africa has already been demonstrated. It is safe to indicate that the same relationship exists in first world countries. Weimann, Kabane, Jooste, Hawkridge, Smit and Oni (2020) argue that in Britain, the housing policy has had a health dimension embedded in it. They add that the housing policy and health interact in two ways. First, the housing policy serves as a useful tool for the regulation of the built environment through the management of health-related risks that can be caused by damp and cold dwellings to ensure healthy living environments (Weimann, Kabane, Jooste, Hawkridge, Smit, & Oni, 2020). Secondly, housing interventions regulate where people should live through housing policies that keep people away from risky neighbourhoods by ensuring that those with health problems find housing opportunities that are suitable for their conditions (Weimann, Kabane, Jooste, Hawkridge, Smit, & Oni, 2020). The Commission on Social Determinants of Health (2008) shares the same sentiment that the connection between housing and health as it relates to human well-being is mutually reinforcing. This simply means that decent housing breeds healthy living conditions.

As people migrate to urban and metropolitan spaces, they will need shelter. Granted that in cities, there are no ample pieces of land available for decent housing, people create slums as their homes for easy access to employment opportunities and social amenities. The Housing Code indicates that the characteristics of informal settlements are: (i) illegality and informality (ii) inappropriate locations (iii) restricted public and private sector investment (iv) poverty and vulnerability, and (v) social stress (DHS, 2009). Regarding social stress, Weimann, Kabane, Jooste, Hawkridge, Smit and Oni (2020:2) opine that 'informal settlements are characterised by inadequate living conditions and high disease burdens'. They add that informal settlements grow and increase in metropolitan areas due to rapid urbanisation, and international health organisations canvass for coordinated efforts to address the social determinants of health (SDOH) (Weimann, Kabane, Jooste, Hawkridge, Smit, & Oni, 2020).

This is because the SDOH are multi-dimensional underlying socio-structural aspects that contribute to human well-being inclusive of human settlement issues in terms of where people live, work and play (Weimann, Kabane, Jooste, Hawkridge, Smit, & Oni, 2020). Thus, this is conclusive that 'our health is dependent on the place in which we live' (Weimann, Kabane, Jooste, Hawkridge, Smit, & Oni, 2020:2).

Poor governance contributes to the proliferation of informal settlements in South Africa. SERI posits that 'the implementation of the right to adequate housing has…been plagued by poor planning, a lack of coordination, insufficient capacity, a failure to adequately monitor the implementation of government policies, and a lack of political will' (SERI, 2018:5). This occurs at the expense of people such as the disabled, who should not be suffering from such conditions from moral standards point of view. The White Paper on the Rights of Persons with Disabilities (2015) provides that there are many persons with disabilities residing in informal settlements, which further disadvantages them in terms of lack of access to basic amenities, sanitation and clean water (RSA, 2015). People are vulnerable in informal settlements due to 'threat of natural disasters, inadequate access to basic services such as water, sanitation and electricity, pollution, and poisoning by hazardous waste, and susceptibility to infectious diseases' (SERI, 2018:11). Other health-related risks include HIV/AIDS, tuberculosis, depression, diabetes and cerebrovascular diseases (SERI, 2018). Informal settlements are not safe places to live in. Anyone can fall victim to crime, mugging and sexual assault due to less police visibility for whom it is also not safe (SERI, 2018).

METHODOLOGY

Studying the living conditions in informal settlements is a qualitative exercise, which can best be approached from a qualitative design. To adequately address the aim, the project adopted a qualitative design of systematic review of published content on the subject matter. Sandelowski and Barroso (2007) believe that the qualitative systematic literature review aggregates, integrates and interprets findings adopted from published qualitative studies. Housing and health issues in informal settlements were studied through the extensive analysis of literature in order to make sense of the meaning of the findings. In terms of application, this method imbibes a scientific approach of applying assessment criteria of literature for inclusion (Seo & Kim, 2012). Tran, Tam, Elshafay, Dang, Hirayama and Huy (2021) hold that such assessment criteria include: (i) literature search (ii) literature preview (iii) selection of relevant literature (iv) verification of selected literature, and (v) extracting data from selected literature. This ascertains the reliability and validity of the data considering that such data is obtained from a scientific process of validation and scrutinising primary publications. A point of saturation was reached when the amount of literature reviewed was adequate to generate sufficient conclusions.

Thematic content analysis was adopted for its relevance, rigour and appropriateness in terms of making sense of qualitative data. The key steps involved in a systematic review method are summarised by Pai (2009): to (i) tabulate literature data summary; (ii) check for heterogeneity of literature; (iii) identify factors that explain heterogeneity; (iv) evaluate study impact on results; and (v) to explore publication bias possibility. During this process, themes and sub-themes emerge. Publications

herewith reviewed are works of authors such as: DHS (2009), SERI (2018), Adeniran, Mbanga, and Botha (2021) and Fatima (2022), among others.

From the analysis, a theme, sub-themes and categories emerged. The theme that emerged is *housing and social issues in informal settlements*. Three sub-themes emerged as: (i) causes of informal settlements; (ii) plight of informal settlements; and (iii) possible solutions to challenges of informal settlements and poor health care. The following categories were formed: (i) apartheid regulation; (ii) socio-economic factors; (iii) health-related issues; (iv) other social-related issues; (v) good governance; and (vi) intergovernmental relations support. Table 1 is illustrative.

Table 1: Development of themes and categories

Theme 1: Housing and Social Issues in Informal Settlements	
Sub-Theme	**Category**
Causes of informal settlements	Apartheid Regulations
	Socio-Economic Factors/Urban Migration
Plight of Informal Settlements	Health-Related Issues
	Other Social-Related Issues
Possible solutions for poor health in informal settlements	Good Governance
	IGR and Partnership Support

Source: Authors' construct

FINDINGS AND DISCUSSION

This project was aimed at demonstrating the relationship between housing and health functions by focusing on informal settlements in South Africa. This section presents findings and discussions in respect of the relation between the two. The discussion is based on the analysis of findings deduced from the data and illustrated in Table 1. As such, the discussion is aligned to the sub-themes and categories that emerged from the thematic content analysis conducted.

Figure 3: Depiction of informal settlements in South Africa
Source: Vahapoğlu, 2019

Causes of Informal Settlements

Regarding the causes of informal settlements, especially in cities, literature findings reveal that informal settlements were caused by: (i) apartheid regulations, and (ii) socio-economic factors.

Apartheid Regulation

Regarding one of the key causes of informal settlements in South Africa, especially in cities, findings reveal that apartheid regulations are to be blamed. It was noted that:

> *'Apartheid-era legislation led to both insecure land rights and a lack of housing for the majority of South Africa's population. Spatial segregation policies initially removed individual land ownership rights for black Africans, and evolved to prevent black, coloured, and Indian/Asian South Africans from living in well--located areas... The apartheid state's failure to invest in the development of housing and municipal services in these townships led to an unprecedented shortage of housing, overcrowding, and the establishment of informal settlements. Hence, the 'lack of affordable and adequate housing is resulting in the creation of informal settlements, and the practice of forced evictions from such settlements persists''* (SERI, 2018:14).

From the excerpt above, it can be noted that the government is struggling to redress the apartheid spatial geography. At the heart of this argument is that legislation enabled the apartheid regime to create spatial segregation. Possibly, a new set of regulations that address apartheid injustices, compliance with regulations, and patience could be what the country needs as a form of redress.

Socio-Economic Factors/Urban Migration

The need for jobs, a better standard of living, socio-economic amenities, and better services is considered as another key cause of informal settlements in urban areas. Findings show that:

> *'Unemployment, ... backwardness of rural areas are the main reasons for urbanisation. The labor force shifts from rural to urban setup due to availability of good-wage work opportunities, better education and health care facilities, and good transportation service'* (Fatima, 2022:1).

This finding is consistent with theories in the fields of geography, sociology and economics regarding push (from rural areas) factors and pull (towards urban areas) factors. Both the public and private sectors can change the status quo by creating investment opportunities and jobs in rural areas. Other aspects require the prioritisation of rural areas on the delivery of basic services.

Interpretation/meaning of findings: *Apartheid regulations and socio-economic factors as causes of informal settlements in South Africa as experienced and observed for more than thirty (30) years into democracy demonstrates lack of socio-economic opportunities in rural settlements and government failure in addressing the apartheid spatial geography and poor infrastructure development, which can be considered as a housing and human settlements issue. This demonstrates that solutions in this regard rest in the housing and human settlements sector.*

The Plight of Informal Settlements

What does it mean and how does it feel to live in an informal settlement? Perhaps literature is not able to explain in exactitudes what it means to live life in informal settlements. Literature findings yielded two categories in this respect wherein the first provides for health-related issues and the other deals with other social-related issues.

Health-Related Issues

The opening question in this sub-theme is meant to guide the imagination. Otherwise, it is hard to respond, especially because obtaining primary data is usually impossible due to safety-related reasons in informal settlements. Regardless of this, findings indicate that:

> *'Indications of increased health risks in these areas implies a lower life expectancy than in more formal settlements… Informal settlements showed consistently high rates of HIV infection in HRSC surveys conducted in the 2002, 2005, 2008, and 2012… In addition, residents in informal settlements are also more vulnerable to infectious diseases. For example, latent tuberculosis (TB) is most highly prevalent (88%) in 30 to 39 year olds living in informal settlements… In addition to physical health concerns, residents of informal settlements are also more likely to experience major mental health challenges. Poor mental health and symptoms of depression have been linked to other poor outcomes and HIV risk behaviours'* (SERI, 2018:11).

Findings reveal that from a health risk point of view, residing in informal settlements is the worse ever possible risk environment that anyone can ever be exposed to. It is clear from the findings that any form of disease and illness can be contacted with ease, especially transmittable diseases. The other challenge is that, granted that informal settlements are not planned, health care services may be obtained a distance away from the residential area.

Other Social-Related Issues

What is known is that life is hard for people living in informal settlements. It is difficult to imagine how hard it may be for vulnerable groups. Findings show that persons with disabilities and infants are gravely affected by daily living conditions in informal settlements:

> *'In relation to specific groups, the government has confirmed that those living in informal settlements include people with disabilities…being 'further disadvantaged by not having access to other basic amenities, including sanitation and clean water'. It has been observed further that children with disabilities 'are more likely to live in … informal settlements than their non-disabled counterparts'… However, in relation to children in general, the government reported in 2014 that 'over two million children live … in informal settlements; over 40% of these children are within the particularly vulnerable 0–5 year age… Studies link indications of poverty, such as food insecurity, low levels of education, social class, financial stress, with symptoms of depression''* (SERI, 2018:7).

Vulnerable groups are ordinarily government priorities. However, granted the layout of most informal settlements, accessing households is difficult for government, especially because of poor road

infrastructure. Besides this, it was noted from the findings that living in informal settlements has other blights such as poverty, insecurity, poor education, social and financial stress, among others. This emphasises that informal settlements pose challenges for various sector departments beyond human settlements and health.

Interpretation of the findings: *Life in informal settlements is a risk, and while there are other social and behavioural related risks, the health risk is direr in informal settlements.*

Possible Solutions to Challenges of Informal Settlements and Poor Healthcare

Findings confirm that there is hope for the better management of informal settlements and health issues in South Africa. Obviously, there can never be a one-size-fits-all approach to address informal settlements and health issues. As such, a staggered approach and a combination of various strategies as well as other options could be explored. Findings demonstrate that this can be clustered into two categories, namely: (i) good governance, and (ii) intergovernmental relations and partnership.

Good Governance

As noted in the literature discussion above, the aspect of political will is crucial for good governance. Every government decision, policy, programme framework, among other initiatives, can only take full effect where there is political will. Good governance is one aspect that thrives on political will. In this regard, findings propose an approach to human settlements management:

> *'The effectiveness of human settlements is influenced by the…identified factors for sustainable management, namely legal, political/policy, socio-economic, organisational, physical, human resource, technological, environmental, ethical/moral and sociocultural that will determine the human settlements management strategy/method.'* (Adeniran, Mbanga, & Botha, 2021:10).

Findings also provide ways in which, depending on the prevailing circumstances, some options could be considered as a way of managing and upgrading informal settlements. The following ways of managing informal settlements are suggested:

> *'(i) contain city sprawl (ii) create tenure systems through land pooling and replotting (iii) effect participatory and incremental regularising of 'informal urban types' and properties (iv) implement localised planning and improved information management systems (v) identify appropriate housing forms for the city's future (vi) reduce plot sizes, and (vii) regularise and improve exterior public spaces'* (Lupala, 2002:250).

With regards to the upgrading of informal settlements, the following options can be considered where applicable:

> *'(i) provide a variety of housing options in regards to tenure and payment, such as short-term rental, long-term lease, cohousing, and financed purchase (ii) invest in education, healthcare, and social services for people, not just in infrastructure and buildings (iii) involve the community in planning and ongoing decisions (iv) provide a stronger government presence*

in informal settlements (v) continue improving and integrating previous government sponsored projects and fringe neighborhoods (vi) prevent rogue developers and landlords from conducting fraudulent property sales and housing rental practices (vii) secure land and housing in anticipation of future migration and population growth, and (viii) foster expansion and increased density according to the long-term needs of the city and the best interests of the residents' (Vahapoğlu, 2019:3).

It is understood that some informal settlements have to be eradicated and others upgraded. Even in the case of what is known as eradication, the human settlements regulation for upgrading through the option of last resort, which is relocation. Otherwise, the *in-situ* upgrading wherein formalisation of the area and installation of services for demarcation of site is implemented in accordance with the three (3) phases of upgrading (DHS, 2004, 2009).

Intergovernmental Relations and Strategic Partnership

The government seems to be aware that the battle against informal settlements needs all sector departments and all three spheres of government as well as all strategic partners to manage it. This is probably a lesson that was learnt after the introduction of the Informal Settlements Upgrading Programme Grant (ISUPG), which showed that throwing money at a problem does not always solve it. Findings in this regard reveal that in the implementation of ISUP:

'Projects will be undertaken on the basis of a partnership of cooperative governance between the relevant municipality, the Provincial Department, the National Department, the Department of Social Development (in respect of households headed by minors) and the Department of Home Affairs (in respect of establishing the residence status of immigrants). Municipalities will fulfil the developer role' (DHS, Part 1, 2009:19).

Linked to this finding is the capacity to plan for municipalities. Urban planning is a responsibility of local government. It is government's responsibility to ensure that municipalities have capacity to plan in line with their Constitutional mandate and the legislative provisions of the Municipal Systems Act 2000 (Act 32 of 2000) and SPLUMA (Act 16 of 2013).

Meaning of findings: *Intergovernmental relations, which in this case is demonstrated by the relationship between the health and housing sector together with their strategic partners, relate to good governance. As such, effective intergovernmental relations between the two sectors can be used to address health conditions in informal settlements in South Africa.*

CONCLUSION AND RECOMMENDATIONS

The aim of this project was to demonstrate the relationship between housing and health functions by focusing on informal settlements in South Africa. From the findings of the study, a conclusion can be drawn that there is a relationship between health and housing. However, the relationship has to be effective for it to be beneficial to people in informal settlements. Its effectiveness should bring about formal signed agreements between the two sectors, capacity and funding, good governance and

citizens' involvement, and strategic partnerships for delivery. The relevance of the findings concretises the need for an effective relationship between health and housing sectors.

This project emphasises the mutually reinforcing relationship between housing and health. Constitutionally, the two services are considered as human rights both locally and internationally. This is also supported by Maslow's Hierarchy of Needs theory, which designates shelter and health care as physiological and safety needs without which human life is directly threatened. As discussed, poor housing links to poor health directly. This was demonstrated through the selected case of informal settlements. As per the aim of the study, it was shown that a mutually reinforcing relationship exists between housing and health in informal settlements.

The central research question on *whether or not an effective relationship between the two basic services can address the living conditions in informal settlements* contemplates the following recommendations for possible consideration:

(i) *The DHS and DoH should enter into a formal agreement with a clear plan of action towards planning, budgeting and channeling their efforts to address housing and health issues in informal settlements, especially in metropolitan areas and secondary/intermediate cities;*

(ii) *Capacity building should be intensified in municipalities to monitor, manage and improve urban planning as well as enforce by-laws of illegal occupation of land. This means enhanced governance to ensure spatial principles of SPLUMA;*

(iii) *The government should work closely with the communities using different avenues such as political representatives, the Association for Local Government, organised community and structures to educate communities on government work, services and responsible citizenry,*

(iv) *The government and the private sector should partner to create employment opportunities in both rural and urban areas, direct investment towards rural areas, and provide basic services as well as amenities and infrastructure in rural areas and townships; and*

(v) *Other follow-up studies on areas that the current study might have not delved into in detail can be conducted towards closing any possible knowledge gap in this regard.*

This responds to the research question by confirming that informal settlements will certainly benefit from the relationship between the two sector departments, especially when this is formalised and put into practical action.

REFERENCES

Adeniran, A., Mbanga, S., & Botha, B. (2021). 'A framework for the management of human settlements: Nigeria and South Africa as cases'. *Town and Regional Planning*, *78*,1–15.

Borg, I. (2018). Housing, poverty and the welfare state. Spatial distribution of tenure types and its effects on housing deprivation, unemployment and residualisation. Stockholm: Stockholm University Press.

Commission on Social Determinants of Health. (2008). Closing the gap in a generation: Health equity through action on the social determinants of health. Geneva: World Health Organization.

Fatima, Z. (2022). *An Empirical Analysis of Urbanization and Economic Growth in South Asian* countries. Retrieved 5 November 2023, from https://www.diva-portal.org/smash/ get/diva2:1670231/FULLTEXT01.pdf

Govender, T., Barnes, J. M., & Pieper, C. H. (2011). 'Housing conditions, sanitation status and associated health risks in selected subsidized low-cost housing settlements in Cape Town, South Africa'. *Habitat International, 35*(2), 335–342.

Hablemitoglu, S., Ozkan, Y., & Purutcuoglu, E. (2010). 'The assessment of the housing in the theory of Maslow's hierarchy of needs. *European Journal of Social Sciences*, *16*(2), 222–228.

Ley, A., Ashiq, M., Rahman, U., & Fokdal, J (Eds). (2020). *Housing and Human Settlements in a World of Change.* Bielefeld: Transcript Verlag.

Lupala, JM. (2002). Urban types in rapidly urbanizing cities: Analysis of formal and informal settlements in Dar es Salaam. (Doctoral dissertation). Stockholm: Royal Institute of Technology.

Maslow, AH. (1943). 'A theory of human motivation'. *Psychological Review, 50*(4), 370–96.

Maslow, AH. (1987). *Motivation and personality* (3rd ed.). New Delhi, India: Pearson Education.

McLeod, S. (2018). *Maslow's Hierarchy of Needs*. Retrieved 5 November2023, from https://canadacollege.edu/dreamers/docs/Maslows-Hierarchy-of-Needs.pdf

Mopp, R., & Swanepoel, D. (2022). *Advancing towards the South African welfare state.* Retrieved 5 November2023, from https://drive.google.com/file/d/13UC7Ax7qwCUWag1YFZ2GixX tx963cRxh/view

Murray, M., Pauw, C., & Holm, D. (2005). 'The house as a satisfier for human needs: A framework for analysis, impact measurement and design'. *International Association of Hydrological Sciences*, *33*, 1–9.

Pai, M. (2009). *Data Analysis in Systematic Reviews.* Retrieved 5 November 2023, from https://www.teachepi.org/wp-content/uploads/OldTE/documents/courses/sr&ma/ Lecture5_Data_Analysis_Statistics.pdf

Polity. (2011). *SA: Statement by the Department of Human Settlements, on the vision for the 2030 youth summit (21/07/2011).* http://www.polity.org.za/article/sa-statement-by-the-department-of-human-settlements-on-the-vision-for-the-2030-youth-summit-21072011-2011-07-21

Rao, S. A., & Geffen, N (2023). *Housing in South Africa: How have we done since 1994?* Retrieved 5 November 2023, from https://groundup.org.za/article/housing-in-south-africa-how-have-we-done-since-1994.

Republic of South Africa. (2015). *White Paper on the Rights of Persons with Disabilities*. Pretoria. Government Gazette.

Shaw, M. (2004). 'Housing and public health'. *Annual Review of Public Health*, *25*(1), 397–418

Smit, W., De Lannoy, A., Dover, R. V. H., Lambert, E. V., Levitt, N., & Watson, V. (2016). *Making unhealthy places: The built environment and non-communicable diseases in Khayelitsha. 39(196–203).* Cape Town: Heal Place.

Socio-Economic Rights Institute of South Africa. (2018). Informal settlements and human rights in South Africa: Submission to the United Nations Special Rapporteur on adequate housing as a component of the right to an adequate standard of living. Johannesburg: SERI.

Statistics South Africa. (2023). *Statistical Release P0318. General Household Survey 2022*. Pretoria: Statistics South Africa.

Stephens, M., & Fitzpatrick, S. (2007). *Welfare regimes, housing systems and homelessness: How are they linked?* London: Centre for Housing Policy.

The Presidency. (2009). *State of the Nation Address*. Retrieved 6 November 2023, from http://www.thepresidency.gov.za/state-of-the-nation-address/state-nation-address

UN-habitat. (1976). *The Vancouver declaration on human settlements.* From the report of Habitat: United Nations Conference on Human Settlements. Retrieved 5 November 2023, from https://documents-dds-ny.un.org/doc/UNDOC/GEN/N76/967/11/PDF/N7696711.pdf?

United Nations. (1969). *Basics of housing management*. New York: United Nations, DESA.

Vahapoğlu, L. (2019). *Strategies for Improving Informal Settlements*. Buffalo: University at Buffalo.

Weimann, A., Kabane, N., Jooste., T., Hawkridge, A., Smit, W., & Oni, T. (2020). 'Health through human settlements: Investigating policymakers' perceptions of human settlement action for population health improvement in urban South Africa'. *Habitat International, 103*(102203), 1–11.

World Health Organization. (2008). *The World Health Report 2008: Primary Health Care – Now more than ever*. Geneva: World Health Organisation.

Zavei, SJAP., & Jusan, MBM. (2012). 'Exploring housing attributes selection based on Maslow's hierarchy of needs. *Procedia – Social and Behavioural Sciences*, *42*, 311–319.

SSRIC 2024-008

EXPLORING THE INFLUENCE OF LOGISTICS OPERATIONS ON LOGISTICS SERVICE QUALITY IN THE RETAIL INDUSTRY IN GAUTENG PROVINCE

R. T. Ramulifho
Vaal University of Technology, South Africa

E. Chinomona
Vaal University of Technology, South Africa

Abstract

The retail industry is an important business sector in South Africa, and it is acknowledged for its contribution towards the country's gross domestic product (GDP). The business environment where retail firms operate has experienced tremendous change in the past years in terms of logistics operations and supply chain practices. It has been discovered that the effectiveness and efficiency of the logistics operations and supply chain practices influence the firm's overall profitability. Identifying the impact of a firm's logistics factors on supply chain effectiveness has been a starting point for comprehensive supply chain management (SCM) feasibility assessment and how to save on logistics and supply chain costs. The principal objective of this study is to investigate the impact of logistics operations on logistics service quality in the retail industry in Gauteng province. To achieve the objectives of the study, a quantitative method was used to collect data from a sample size of 300 respondents consisting of departmental personnel, managers, and supply chain professionals in the retail businesses in Gauteng province and the collected data were analysed using Confirmatory factor analysis (CFA) and structural equation modelling (SEM). The results of the study revealed the relationships that exist between each variable, from the independent variables reverse logistics (RL), warehousing (WR), and internal information systems (IS), up to the outcome variable, which is logistics service quality (LSQ). Lastly, the study recommends the training of supply chain professionals as a catalyst to increase their knowledge, skills and overall competency within the retail industry and the recruitment processes to be more structurally driven to promote a unique brand of leaders that dictate a sound and effective leadership process. The study further recommends the optimisation of the storage facilities of retail companies and the adoption of a technical system such as electronic resource planning (ERP) to assist in filtering and managing the continuous or unexpected flow of input data from and to partners in the warehouse.

Keywords: Reverse logistics, warehousing, internal information systems, logistics service quality, social exchange theory

INTRODUCTION

The business environment where retail firms operate has experienced tremendous change in the past years in terms of logistics operations and supply chain practices (Jie & Gengatharen, 2019; Elemure, Dhakal, Leseure & Radulovic, 2023). It has been discovered that the effectiveness and efficiency of the logistics operations and supply chain practices influence the firm's overall profitability. According to Abushaikha, Al-Weshah and Alsharairi (2020), the retail business environment is changing rapidly because of several internal and external factors, including intensified competition, customer satisfaction and price pressures. Through the awareness of supply chain management-related practices, retail businesses are trying to optimise their relations with their suppliers to achieve supply chain effectiveness (Aziz, Ramaisa, Rashid & Rahat, 2017). Retail firms develop and improve their supply chains to compete in a global environment and sustain growth while breaking new frontiers in a business environment because competition in the retail industry is no longer about company against the company but rather a supply chain against supply chain (Christopher, 2016; Rejeb, Rejeb, Kayikci, Appolloni & Treiblmaier, 2023). This implies that should retail businesses in South Africa wish to gain, maintain and/or improve their competitive edge, their supply chains need to provide smooth movement of goods and services from the point of origin to destinations, as well as movement in the opposite direction (De Villiers, Nieman & Niemann, 2017). Moreover, logistics is increasingly becoming an important part of overall retail operations because it provides opportunities for enhanced profit, market growth and sustainable competitive advantage, while supply chain management integrates functions with a primary responsibility of linking major business functions and processes within and across companies into a cohesive and high-performing business model (Njoku & Kalu, 2015; Sagar 2023). For this study, retail logistics operations such as warehousing, internal information systems, and reverse logistics have been identified as the drivers of logistics service quality (LSQ). The noted factors have been identified on the premise that individually, they have been investigated and found to contribute to supply chain performance, competitiveness, and effectiveness.

PROBLEM STATEMENT

The retail industry is an important business sector in South Africa and being acknowledged for its contribution towards the gross domestic product (GDP) of the country (Mafini & Loury- Okoumba, 2018). Companies operating within the retail industry must apply business strategies that would help sustain the growth of the business by modifying some of the existing business procedures on the supply chain of the firm and logistics internal systems for continuous development. There is a lack of knowledge on the effectiveness of supply chains, and it is, therefore, difficult to recognise areas to be developed for improving the entire logistics operations, which keeps most retail firms behind in the global competition (Coetzee & Bean, 2016; Sanil, Ramakrishnan, Alwethainani, Kazi & Siddique, 2016). Identifying the impact of a firm's logistics factors affecting supply chain effectiveness could provide a starting point for a comprehensive SCM feasibility assessment. To save on logistics and supply chain costs, large retailers are actively aiming for consolidation, thus, integrating retail logistics operations, which focus on warehousing, internal information systems, and reverse logistics that enhance logistics service quality (LSQ). There are limited empirical studies dedicated towards this in

the South African context (Mena & Bourlakis, 2016). As a preliminary attempt to address the lack of empirical research, this study aims to explore the impact of logistics operations on logistics service quality in the retail industry in Gauteng province, South Africa.

CONCEPTUAL MODEL AND HYPOTHESES FORMULATION

This study adopts the conceptual framework presented in Figure 1.1, conceptualising the relationship between retail logistics operations and logistics service quality. Warehousing, internal information systems, and reverse logistics form the predictor variables, while logistics service quality acts as the outcome variable.
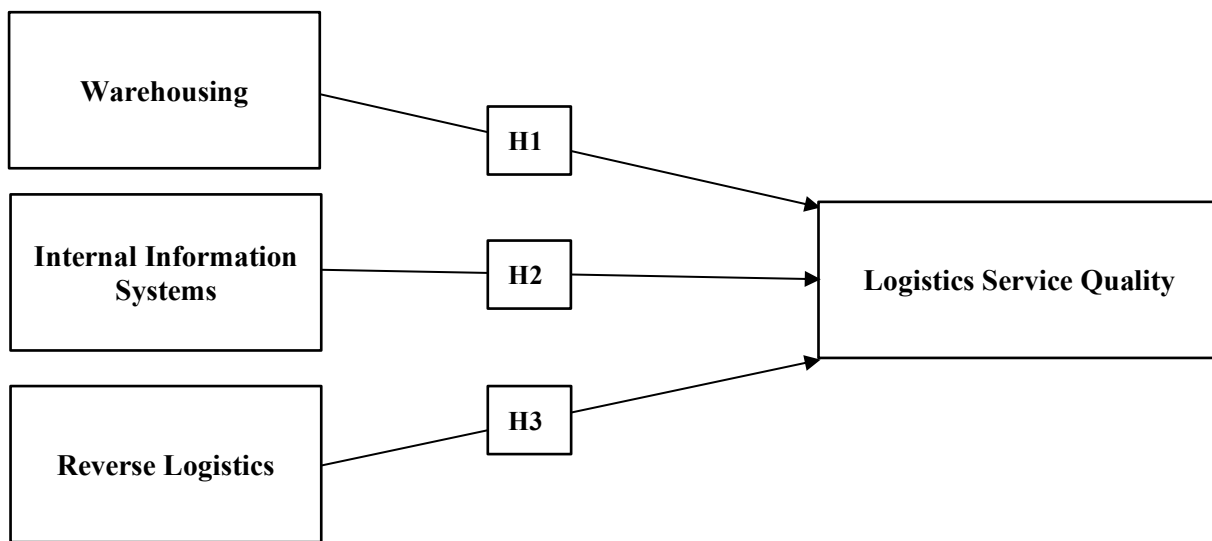
Figure 1: Conceptual framework
Source: Developed by authors, 2024

Based on the conceptual model presented in Figure 1, the following hypotheses have been developed:

H1: Warehousing has a positive significant relationship with logistics service quality.

H2: Internal information system has a positive significant relationship with logistics service quality.

H3: Reverse logistics has a positive significant relationship with logistics service quality.

LITERATURE REVIEW

A literature review is based on the theory used and research constructs in the model. Social Exchange Theory

This study pays attention to applying the social exchange theory (SET) in a retail context. The social exchange theory posits that individuals exchange resources with one another owing to the expectation of receiving something in return (Huang, Cheng, Huang & Teng, 2018). The SET model suggests that

individuals and organisations interact to make their rewards as great as possible and reduce costs (Dubihlela & Chauke, 2016). The SET has been applied recently in social networking studies, although the application of the SET area is yet to be fully examined (Chauke, 2014). SET postulates that interpersonal interactions from a cost-benefit perspective are an exchange where actors acquire benefits (Shiau & Luo, 2012). Furthermore, SET contends that attitudes and behaviours are determined by the rewards of interaction minus the consequences (Chauke, 2014). It is assumed that managing the retail logistics operations could contribute vastly towards service quality, ultimately enhancing supply chain effectiveness as customers have been rewarded with quality services. Hence, this theory is used as a cornerstone to understand retail logistics operations' influence on service quality and supply chain effectiveness.

Warehousing

Concepts such as warehouses and distribution centres are often used interchangeably to conceptualise warehousing. Warehouse is 'a planned space for the efficient storage and handling of goods and materials' (Abushaikha, Salhieh & Towers, 2018). In recent years, supply chain management experts have shown growing concern in warehousing as an area of research in retail and logistics (Bukhari, Asim & Manzoor, 2020). The operational efficiency of a warehouse is often crucial to the supply chain's performance because up to thousands of different products are stored and retrieved daily (Tran, 2018). One of the important issues in warehousing is the management of inventory. Abushaikha, Salhieh and Towers (2018) argue that warehousing should be regarded as more than just receiving, transferring, selecting, and shipping of goods. In a supply chain, the warehousing process represents a significant percentage of the total logistics costs (Osorio, Suárez, Montoya & Arrieta-Posada, 2020), and from a management perspective, warehousing can be regarded as a source of competitive advantage in relation to cost savings and lead-times by availing storage for surplus goods, which are not needed immediately (Faber, de Koster & Smidts, 2017). Operationally, a well-functioning warehouse has a strong governance structure for a smooth operations management system, and it provides the ability to monitor logistics service quality. Kabus (2016) posits that ineffective warehouse operations may cause the whole supply to be paralysed because goods transported from the manufacturer are stored in the warehouse before they reach consumers.

Internal Information Systems

Internal information systems are an integrated set of components for gathering, storing, and processing data and for distributing information and knowledge internally (Axhiu & Veljanoska, 2013). Internal information systems change the level of customer's intimacy and increase the level of customers' expectations of the supply chain (Maiga, 2017). Internal information systems make it possible for firms to coordinate the information of the various parties within a supply chain network into a cohesive whole (Maiga, Nilsson & Ax, 2015). Each firm's internal information system should support both proprietary and shared information so that information and reports can be sent to end users for transaction handling and to managers for their review and approval (Axhiu & Veljanoska, 2013).

Previous research has demonstrated that internal information systems significantly and positively influence the operational performance of many retail businesses (Maiga, 2017).

Reverse Logistics

Sanni, Jovanoski and Sidhu (2020) define reverse logistics as the process of moving goods from the point of destination to the point of origin for the purpose of recapturing value or proper disposal. Zarbakhshnia, Wu, Govindan and Soleimani (2020) state that reverse logistics is about scheduling and planning for the backward flow of products from customers and consumers to suppliers and manufacturers for several activities such as repairing, remanufacturing, recycling, and disposal. In the last decade, reverse logistics has received increased attention in many countries, especially in terms of waste management and legislation on waste management (Guarnieri, Cerqueira-Streit & Batista, 2020). Khor, Udin, Ramayah and Hazen (2016) posit that the repair and reconditioning of products and materials are precondition determinants of effective implementation of reverse logistics activities, and the critical value resulting from executing reverse logistics has been recognised by many retail organisations. The implementation of a reverse logistics network is a strategic decision, which includes a series of processes involving product return, repair, dismantling, refurbishing, recycling, and remanufacturing (Liao, 2018). The focus of reverse logistics is to maximise the value recovery from end-of-life (EOL) and end-of-use (EOU) products through reuse, re-fabrication, recycling, and remanufacturing (Yu, Sun, Solvang & Zhao, 2020). Retail firms have realised monetary benefits associated with instituting reverse logistics product disposition activities, given that the cost of remanufactured or otherwise reclaimed products is lower than new products due to reduced material and overhead costs (Khor et al., 2016).

Logistics Service Quality

Previous research on logistics service quality, especially transportation, creates time, place, and form utility to products by making them available to consumers (Zailani, Jafarzadeh, Iranmanesh, Nikbin & Selim, 2018). Service quality has been defined as the overall assessment that emerges from a comparison between expectations and results. The development of the concept logistics service quality started with the acknowledgement that the consumers' perception of logistics service quality consists not only in the aspects of physical distribution service, but also in other customer care elements, which they qualified as the elements of the consumer's service marketing (Rahmat & Faisol, 2016). Logistics service quality is considered a competitive advantage for firms, contributing to customer satisfaction and loyalty (Sohn, Woo & Kim, 2017). According to Shu, Qu and Wu (2020), logistics service quality has been widely investigated in the supply chain domain. Furthermore, the importance of logistics service quality has been largely acknowledged as a key competitive element by its visible impact on the consumers and their satisfaction (Rym, Olfa & Alexandru, 2013). When customers decide where to buy or if they must return to a retailer, logistics service quality plays an important role (Rahmat & Faisol, 2016). Logistics studies have concluded that operational and relational performance relative to logistics services have significant positive links to supply chain effectiveness (Vu, Grant & Menachof, 2020; Zailani et al., 2018). In addition, logistics service quality (LSQ) concentrates on the results of the company's performance in the process of bringing merchandise and information from the

company's warehouses to customers' homes, which represents the supply chain process (Mafini & Loury-Okoumba, 2018).

RESEARCH DESIGN AND METHODOLOGY

Research methodology is the systematic technique used to address a problem and a science of reviewing how research is conducted, including the study of methods wherein knowledge is gained (Lê, Smith, Crook & Boyd, 2019). This section covers research design, sampling design, procedures for data collection, analysis, and ethical issues. Data were collected from a sample size of 300 respondents consisting of departmental personnel, managers, and supply chain professionals in the retail businesses in the Gauteng province. A non-probability, purposive sampling technique was used in this study.

Research Design

Gray (2019) describes research design as the overarching plan for collecting, measuring, and analysing data, whereas Bath (2019) defines research design as a blueprint for conducting a study with maximum control over factors that may affect the study's validity. This study follows a correlation research design, specifically a single cross-sectional study, because data have been collected only once from the sample elements (Burns, Veeck & Bush, 2018). The single cross-sectional study is quantitative, meaning it seeks to understand the sample structure and thereafter recommend a final course of action (Polit & Beck, 2012). The cross-sectional strategy was chosen because it provides cheap methods of collecting data over a large sample and pairs well with a quantitative design (Creswell, 2014). Quantitative research, using the survey method, has been used in this study because it is the best method for testing relationships.

Reliability

According to Moradi and Groth (2019), reliability in research refers to the consistency of results, and if similar results can be consistently obtained by making means of the same methods under similar circumstances, the measurement is then considered to be reliable. The procedures used to test the reliability of this study included the Cronbach's alpha test (Cronbach α), composite reliability test (CR) and average variance extracted (AVE). The results obtained are demonstrated in Table 1.

Table 1: Accuracy analysis statistics

Research Constructs		Descriptive Statistics		Cronbach's Test		C.R.	AVE	Factor Loading
		Mean	SD	Item-total	α Value			
Logistics Service Quality	LSQ-1	2.955	1.103	0.60	0.901	0.99	0.93	0.835
	LSQ-2			0.60				0.701
	LSQ-3			0.5				0.689

Research Constructs		Descriptive Statistics		Cronbach's Test		C.R.	AVE	Factor Loading
		Mean	S D	Item-total	α Value			
	LSQ-4			0.50				0.733
	LSQ-5			0.50				0.829
Reverse Logistics	RVL-1	3.691	0.979	0.50	0.806	0.98	0.90	0.616
	RVL-2			0.59				0.712
	RVL-3			0.65				0.765
	RVL-4			0.58				0.564
	RVL-5			0.50				0.500
Warehousing	WRH-1	3.645	1.199	0.63	0.894	0.98	0.92	0.354
	WRH-2			0.69				0.818
	WRH-3			0.63				0.838
	WRH-4			0.62				0.920
	WRH-5			0.64				0.824
Internal Information Systems	IIS-1	3.753	1.029	0.50	0.889	0.98	0.86	0.792
	IIS-2			0.55				0.800
	IIS-3			0.70				0.784
	IIS-4			0.71				0.698
	IIS-5			0.50				0.593

LSQ=LogisticsService Quality; RVL=ReverseLogistics; WRH=Warehousing; IIS=Internal Information Systems; C.R=Composite Reliability; AVE=Average Variance Reliability.

Cronbach's Alpha Test

All four constructs about this study were measured for reliability using the Cronbach's alpha coefficient. The reliability of a construct is fortified by the greater level of Cronbach's coefficient alpha. The results of the reliability are revealed in Table 1, in which all constructs achieved a Cronbach alpha above the recommended threshold of 0.7. All the constructs are confined within 0.860 and 0.916 (with LSQ=0.901; RVL=0.806; WRH=0.894; IIS=0.889). Regarding the item total correlation, it can be observed that all the values related to all the latent constructs (LSQ to IIS) are well above 0.3 as prescribed by Field (2005) that item-total correlations below 0.3 signify that corresponding items do not correlate well within the scale and that the item is not measuring the same construct being measured

by other items. This, therefore, suggests that all the constructs are reliable as their values are above the recommended thresholds for both Cronbach alpha and item-total correlation.

Discriminant validity was ascertained in this study using correlations computed during CFA. It was further assessed by determining whether the value score of AVE is higher than the threshold of 0.5, as advised by Hair et al. (2010). Table 1 shows that all the AVE values are above the recommended threshold of 0.5, thereby confirming discriminant validity.

Table 2: Correlations between constructs

	LSQ	RVL	WRH	IIS
Logistics Service Quality (LSQ)	1.000			
Reverse Logistics (RVL)	0.513	1.000		
Warehousing (WRH)	0.680	0.520	1.000	
Internal Information Systems (IIS)	0.080	0.150	0.256	1.000

Table 2 exemplifies the correlations derived during the CFA process while assessing the discriminant validity. This figure proves that there is a positive correlation among all the individual contracts that were located under the cut-off value of 1, which confirms that discriminant validity is present within the measurement scales.

Path Analysis Results

Path analysis is a statistical analysis method used to evaluate models by examining the hypothesised dependencies or relationships between an independent variable and two or more dependent variables (Manohar & Kapur, 2019). Path analysis was used to test the three hypotheses and establish their validation or non-validation.

Table 3: Results of path modelling analysis

Structural Paths	Hypotheses Statements	Path Coefficient	Outcome
Warehousing and Logistics service quality	H1	0.58***	**Accepted**
Internal information systems and Logistics service quality	H2	0.55***	**Accepted**
Reverse logistics and Logistics service quality	H3	0.71***	**Accepted**

Significance level <0.001***

As portrayed in Table 3, all beta coefficients for the hypothesis paths are significant at a level of $p<0.001$. The table also shows that three hypotheses (H1, H2, and H3) were accepted.

DISCUSSION OF RESULTS

H1: Warehousing has a significant relationship with logistics service quality

The results depicted in Table 3 represent a lack of correlation between WRH and LSQ (β=0.08; p< 0.001). This shows that the relationship between WRH and LSQ was found to be insignificant and not supported. Thus, it could be explored that there is little influence between WRH and LSQ in the retail industry. These previous studies confirmed the results obtained (Abushaikha, Salhieh & Towers, 2018; Faber, Zailani, Jafarzadeh, Iranmanesh, Nikbin & Selim, 2018), which found strong and positive associations between warehousing and logistics service quality. Previous studies undertaken in the field of supply chain confirm that WRH operations have influential relationships with LSQ, and the management level of operations ensures that warehousing operations are monitored through quality conformance of logistics operations in a supply chain operation. In other words, the independent variable WRH might be greatly associated with the outcome variable SCE as this denotes the effectiveness of supply chain systems with any warehouse operation in a retail industry.

The study by Shareef (2023) reveals that customer service is crucial in a retail business, and therefore, analysing distribution and WRH activities and maintaining customer service requires the advancement in distribution operations that will eventually reflect on the LSQ of downstream retailers and contribute towards the competitive edge and maximise efficiency. Vasudevan, Varughese, Raman, John, Sagadavan, Ramachandran and Sam (2023) believe that high levels of customer satisfaction need high levels of service quality.

H2: Internal information systems have a significant relationship with logistics service quality.

ISS and LSQ were found to be positively and significantly correlated (β=0.25; p< 0.001). Although the association was considered to be weak, it illustrated that effective information sharing on logistics operations across the supply chain stimulates the need for LSQ as the risks and their potential impact become known. The empirical literature has supported the view that the sharing of internal information can facilitate effective service quality; thus, IS can help firms design and implement effective LSQ (Kumar & Singh, 2023). Angeleanu (2015) performed a conceptual investigation of logistics service quality, among others and found reduced costs, increased efficiency, and reduced capital expenditure as possible outcomes. Additionally, Gromovs and Lammi (2017:27) provided a conceptual study to investigate the impacts of technologies like blockchain, IoT and 3D printing on logistics service quality, stating that there is a need to adopt these new technologies in service quality. Focusing especially on retail shopping, Boon and van Wee (2017) developed a conceptual model for the influence of internal sharing on logistics systems based on expert contributions. The model contains several dimensions that were impacted, like consumer requirements and cost factors in transportation and discusses issues like spare parts inventory.

Zhou, Chan, and Wong (2018) developed an analytical model to incorporate logistics tasks in the scheduling objective function of distributed manufacturing systems of internal information systems. Tests in this study showed positive associations between the average logistics service time and other supply chain models. Concerning human-technology interaction, control and support systems can be considered. Concerning control systems, Overmeyer, Podszus and Dohrmann (2016) experimentally

investigated speech and gesture control of AGV and incorporated cognitive workload as an impact factor for adaptive speech control. Furthermore, Szafir, Mutlu and Fong (2017) conducted an experimental study to explore the collaboration between operators and logistics inventory control, which also ascertained correlations based on such concepts. Based on three prototypes, the study examined key factors for efficiency improvement, meaning interactive timelines for task planning. Regarding support systems, Toxiri, Koopman, Lazzaroni, Ortiz, Power, De Looze, O'Sullivan and (Caldwell, 2018) presented an experimental study developing an internal system that initiates logistics service quality. The study revealed that due to active back support, the logistical components of the logistics workers could be reduced by up to 35%. As a result, the path modelling revealed a weak association between information sharing and logistics service quality.

H3: Reverse logistics has a significant relationship with logistics service quality.

A strong positive correlation was observed between RVL and LSQ (β=0.71; p< 0.001). This highlights the importance of RVL as a major driving force in achieving LSQ for retailers. Product return and reverse logistics enable the reverse flow of materials, money, and information from the point of consumption to recapture their value, which can increase company profitability and mitigate pressure from government legislation (Radi & Shokouhyar, 2021). Logistics services can contribute to making responsive decisions in reverse logistics activities, such as forecasting product return rates (Minnema, Bijmolt, Gensler & Wiesel, 2016). This study supports the strong association that was attained in the study between RVL and LSQ. Typically, RVL increases opportunities for adding value and gaining a competitive advantage by aligning the best service quality within a retail entity (Dabees, Barakat, Elbarky & Lisec, 2023).

Customer-centric RVL adapts to customers' needs and expectations, which leads to increased customer satisfaction (Agrawal, Singh & Murtaza, 2016). When more customers are satisfied with service quality, fewer products are returned, resulting in less pollution. This study discussed efficient decisions on returned products as part of RVL and revealed a close relationship between RVL and LSQ with benefits such as improved customer service and satisfaction, tangible cost savings and improved inventory tracking, influencing most developing countries to apply its settings into their business operations and industries because it bears more success and value both for the business and customers (Salehi-Amiri, Zahedi, Akbapour & Hajiaghaei-Keshteli, 2021).

LIMITATIONS OF THE STUDY

The current study was encompassed by several hindrances, which could have been compromised partially to the research output. One of the major limitations of this research was accessibility of managers and proprietors in this sector. The challenge the researcher encountered was receiving a consent letter from the firms, as it took almost two months to meet the right persons to handle the request. Another limitation was identified as receiving a fixed scheduled date for an appointment; this took some time to be granted in some firms. This predicament was encountered with firms that could not complete the questionnaire at the first meeting with the researcher assistants. Other limitations encountered by the researcher emerged from the fieldwork whereby some of the managers and proprietors were unwilling to listen or understand the significance and purpose of this study. They

considered paperwork a waste of time when compared with their daily activities, while others indicated that they could not disclose the firm's information to outside parties and, hence, could not assist.

Owing to the limited time and resources, the study was conducted in a very short period from the start of April to the end of July and those who completed the questionnaires were not rewarded. Some of the retail firms in Gauteng were found to be branches of the main firm, mostly in Mpumalanga and others in KwaZulu-Natal. Most of these branches could not complete the entire questionnaire due to a lack of information on performance measures. They said that the head offices handled all related performance aspects of the firm. Hence, some of the questionnaires were returned though incomplete. This also means that the cross-sectional survey initiated in this study was inappropriate, as a longitudinal study would have been more effective.

SUGGESTIONS FOR FUTURE RESEARCH

Despite the various limitations, the study advances knowledge regarding retail firm's supply chain technologies, supply chain agility and firm performance, considering that there is a noticeable absence of prior research within a South African context related to this study. The sample size was set at 350 retail firms in Gauteng. The study only utilised a quantitative research approach. It is suggested that future research should use a mixed methodological approach technique, which may contribute to creating a more in-depth understanding of the relationships between the study constructs. Another implication for further study would be to replicate this study by analysing the population using different test instruments and different research techniques other than the one used in this study and then compare results with this study. The study could also be conducted in another geographical location in South Africa. Further research can be carried out in a similar context but in other developing countries in order to further validate the research model and findings. With all the limitations mentioned above, the study has revealed the influence of logistics operations on supply chain effectiveness in the retail industry in Gauteng province. In addition, this study empirically validates and confirms the research model. The research findings should be verified and refined in a new research context. This study also suggests to retail firm managers, proprietors, and the government in South Africa the importance of supply chain networking relationships for retail firms' performance and economic growth.

CONCLUSION

With the degree of retail supply chain processes in Gauteng province, the aspect of supply chain networks having a weak association might have a cognisance explanation in relation to compromised systems of how the retail firms associate themselves in terms of integration processes and alignment mechanisms; therefore, a careful analysis of two constructs that are having a weak association can be aligned to the generalisation of how well the network of specialists devote the network design with a retail workplace. In addition, this study empirically validates and confirms the research model. The research findings should be verified and refined in a new research context. This study also suggests to retail firm managers, proprietors, and the government in South Africa the importance of supply chain networking relationships for retail firms' performance and economic growth.

REFERENCES

Abushaikha, I., Al-Weshah, G., & Alsharairi, M. (2020). How do retail firms benefit from co-locating in logistics-intensive clusters? A focus on the inbound supply function. *The International Review of Retail, Distribution, and Consumer Research*, *30*(1), 27–45.

Abushaikha, I., Salhieh, L., & Towers, N. (2018). Improving distribution and business performance through lean warehousing. *An International Journal of Retail & Distribution Management*, *46*(8), 780–800.

Agrawal, S., Singh, R. K., & Murtaza, Q. (2016). Disposition decisions in reverse logistics: Graph theory and matrix approach. *Journal of Cleaner Production*, *137*, 93–104.

Angeleanu, A. (2015). New technology trends and their transformative impact on Logistics and Supply Chain Processes. *International Journal of Economic Practices and Theories*, *5*(5), 413–419.

Axhiu, M., & Veljanoska, F. (2013). Information systems as support to corporate management. *Management, 8*(4), 003–009.

Aziz, K., Ramaisa A., Rashid, M., & Rahat, Q. (2017). Supply chain effectiveness and efficiency: Case of Chinese onyx industry. *International Journal of Research. 4*, 1493–1500.

Bath, A. (2019). *Research design: definition, characteristics*. Retrieved 11 April 2020 from https://www.questionpro.com/blog/research-design

Boon, W., & Van Wee, B. (2017). Influence of 3D printing on transport: A theory and experts judgment based conceptual model. *Transport Reviews, 38*(5), 556–575.

Bukhari, A., Asim, M., & Manzoor, S. (2020). Role of lean warehousing in improving business performance and distribution. *Journal of Entrepreneurship and Business Innovation, 2*(1).

Burns, A. C., Veeck, A., & Bush, R. F. (2018). *Marketing research* (8th ed.). London: Pearson Education.

Chauke, X. D. (2014). *Online shopping satisfaction, loyalty and repurchase intentions of generation X consumers in Southern Gauteng*. Master's degree in marketing, Vaal University of Technology, Vanderbijlpark: South Africa.

Christopher, M. (2016). *Logistics & supply chain management*. Pearson United Kingdom.

Coetzee, N., & Bean, W. L. (2016). A green profitability framework to quantify the impact of green supply chain management in South Africa. *Journal of Transport and Supply Chain Management, 10*(1), 1–15.

Creswell, J. W. (2014). Research design: qualitative, quantitative, and mixed methods approach (4th ed.). Thousand Oaks, CA: Sage.

Dabees, A., Barakat, M., Elbarky, S. S., & Lisec, A. (2023). A framework for adopting a sustainable reverse logistics service quality for reverse logistics service providers: A systematic literature review. *Sustainability*, *15*(3), 1755.

De Villiers, G., Nieman, G., & Niemann, W. (2017). *Strategic logistics management: A supply chain management approach*. Van Schaik Publishers.

Dubihlela, J., & Chauke, D. (2016). South African generation-X online shopper satisfaction and their repurchase intentions. *Investment Management and Financial Innovations*, *13*(2–3), 371–379.

Faber, N., De Koster, R., & Smidts, A. (2017). Survival of the fittest: the impact of fit between warehouse management structure and warehouse context on warehouse performance. *International Journal of Production Research*, 1–20.

Faber, N., De Koster, R. B., & Smidts, A. (2018). Survival of the fittest: the impact of fit between warehouse management structure and warehouse context on warehouse performance. *International Journal of Production Research*, *56*(1–2), 120–139.

Field, A. P. (2005). Is the meta-analysis of correlation coefficients accurate when population correlations vary? *Psychological Methods, 10*(4), 444.

Gray, D. E. (2017). *Doing research in the business world*. Oliver's Yard, London: Sage Publication Ltd.

Gromovs, G., & Lammi, M. (2017). Blockchain and internet of things require innovative approach to logistics education. *Transport Problems,* 12 *(Special Edition),* 23–34. https://doi.org/10.20858/tp.2017.12.se.2.

Guarnieri, P., Cerqueira-Streit, J. A., & Batista, L. C. (2020). Reverse logistics and the sectoral agreement of packaging industry in Brazil towards a transition to circular economy. *Resources, Conservation, and Recycling*, *153*, 104541.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis* (7th ed.). Pearson, New York.

Huang, H. C., Cheng, T. C. E., Huang, W. F., & Teng, C. I. (2018). Impact of online gamers' personality traits on interdependence, network convergence, and continuance intention: Perspective of social exchange theory. *International Journal of Information Management*, *38*(1), 232–242.

Jie, F., & Gengatharen, D. (2019). Australian food retail supply chain analysis. *Business Process Management Journal, 25*(2), 271–287.

Kabus, J. (2016). Logistics of warehousing. *World Scientific News*, *48*(2016), 63–68.

Khor, K. S., Udin, Z. M., Ramayah, T., & Hazen, B. T. (2016). Reverse logistics in Malaysia: The contingent role of institutional pressure. *International Journal of Production Economics, 175*, 96–108.

Kruse, H., Mensah, E., Sen, K., & De Vries, G. (2023). A manufacturing (re)naissance? Industrialization in the developing world. *IMF Economic Review*, *71*, 439–473.

Kumar, A., & Singh, R. K. (2023). Supply chain management practices, retail outlets attributes and organisational performance: a case of organised food retailers in India. *Journal of Global Operations and Strategic Sourcing*, *16*(2), 568–589.

Lê, J. K., Smith, A. D., Crook, T. R., & Boyd, B. K. (2019). Why research methodology in strategy and management remains as important as ever. In Standing on the shoulders of giants. *Emerald Publishing Limited*, *11*, 1–13.

Liao, T. Y. (2018). Reverse logistics network design for product recovery and remanufacturing. *Applied Mathematical Modelling*, *60*, 145–163.

Mafini, C., & Loury-Okoumba, W. V. (2018). Extending green supply chain management activities to manufacturing small and medium enterprises in a developing economy. *South African Journal of Economic and Management Sciences*, *21*(1), 1–12.

Mena, C., & Bourlakis, M. (2016). Retail logistics special issue. *International Journal of Physical Distribution & Logistics Management*, *46*(6/7).

Minnema, A., Bijmolt, T. H., Gensler, S., & Wiesel, T. (2016). To keep or not to keep: Effects of online customer reviews on product returns. *Journal of Retailing, 92*(3), 253–267.

Ngouapegne, C. N. M., & Chinomona, E. (2019). Modelling the influence of the drivers of supply chain performance in the food retail industry in South Africa. *Journal of Applied Business Research (JABR), 35*(2), 43–62.

Njoku, M. E., & Kalu, K. A. U. (2015). Effective supply chain management: A strategic tool for profitability enhancement in the competitive marketing environment. *European Journal of Business and Social Science*s, 3(12), 90–112.

Osorio, L., Suárez, J. J., Montoya, A., & Arrieta-Posada, J. G. (2020). Approach for profiling warehousing activity using customer's order data history. *Revista EIA*, *17*(33), 131–140.

Overmeyer, L., Podszus, F., & Dohrmann, L. (2016). Multimodal speech and gesture control of AGVs, including EEG-based measurements of cognitive workload. *CIRP Annals*, *65*(1), 425–428.

Polit, D. F., & Beck, C. T. (2012). Nursing research. *Generating and assessing evidence for nursing practice*, *9*(2), 600–615.

Radi, S. A., & Shokouhyar, S. (2021). Toward consumer perception of cell phones sustainability: A social media analytics. *Sustainable Production and Consumption*, *25*, 217–233.

Rahmat, A. K., & Faisol, N. (2016). Manufacturers satisfaction on logistics service quality: operational, relational, and national culture. *Procedia-Social and Behavioural Sciences*, *224*, 339–346.

Rejeb, A., Rejeb, K., Kayikci, Y., Appolloni, A., & Treiblmaier, H. (2023). Mapping the knowledge domain of green procurement: a review and bibliometric analysis. *Environment, Development and Sustainability*, 1–35.

Rym, B., Olfa, B., & Alexandru, C. (2013). Retail logistics service quality: a cross- cultural survey on customer perceptions. *International Journal of Retail & Distribution Management*, *41*(8), 627–647.

Sagar, P. (2023). *Manufacturing Industries Class 10 Notes: CBSE 10th Social Science Chapter 6 Geography*. Retrieved 18 March 2024, from https://www.jagranjosh.com/articles/cbse-class-10-social-science-geography-chapter-6-manufacturing-industries-notes-download-pdf-1688971604-1

Salehi-Amiri, A., Zahedi, A., Akbapour, N., & Hajiaghaei-Keshteli, M. (2021). Designing a sustainable closed-loop supply chain network for walnut industry. *Renewable and Sustainable Energy Reviews*, *141*, 110821.

Sanil, H. S., Ramakrishnan, S., Alwethainani, M., Kazi, A. G., & Siddique, M. (2016). Effectiveness of supply chain management with reference to apparel industry: A case study in India. *International Review of Management and Marketing, 6*(4), 176–184.

Sanni, S., Jovanoski, Z., & Sidhu, H. S. (2020). An economic order quantity model with reverse logistics program. *Operations Research Perspectives*, *7*, 100133.

Shareef, R. A. (2023). Managing logistics activities for improving business performance. *Cihan University-Erbil Journal of Humanities and Social Sciences, 7*(1), 42–49.

Shiau, W. L., & Luo, M. M. (2012). Factors affecting online group buying intention and satisfaction: A social exchange theory perspective. *Computers in Human Behavior*, *28*(6), 2431–2444. Retrieved from https://doi.org/10.1016/j.chb.2012.07.030.

Shu, L., Qu, S., & Wu, Z. (2020). Supply chain coordination with optimal pricing and logistics service decision in online retailing. *Arabian Journal for Science and Engineering, 45*, 2247–2261.

Sohn, J. I., Woo, S. H., & Kim, T. W. (2017). Assessment of logistics service quality using the Kano model in a logistics-triadic relationship. *The International Journal of Logistics Management, 28*(2), 680–698.

Szafir, D., Mutlu, B., & Fong, T. (2017). Designing planning and control interfaces to support user collaboration with flying robots. *The International Journal of Robotics Research*, *36*(5–7), 514–542.

Toxiri, S., Koopman, A. S., Lazzaroni, M., Ortiz, J., Power, V., De Looze, M. P., O'Sullivan, L., & Caldwell, D. G. (2018). Rationale, implementation, and evaluation of assistive strategies for an active back-support exoskeleton. *Frontiers in Robotics and AI, 5*(53).

Tran, T. (2018). *Warehouse in today's business and benefits of simulation in warehousing*. (Thesis submitted for Technology, Communication, and Transport degree programme in Logistics Engineering). JAMK University of Applied Sciences, Helsinki: Finland.

Vasudevan, A., Varughese, A., Raman, A., John, S., Sagadavan, R., Ramachandran, S. D., & Sam, T. H. (2023). Study on the factors influencing customer satisfaction towards SME logistics industry during pandemic COVID-19 in Klang Valley, Malaysia. *Resmilitaris*, *13*(2), 1491–1506.

Vu, T. P., Grant, D. B., & Menachof, D. A. (2020). Exploring logistics service quality in Hai Phong, Vietnam. *The Asian Journal of Shipping and Logistics*, *36*(2), 54–64.

Yu, H., Sun, X., Solvang, W. D., & Zhao, X. (2020). Reverse logistics network design for effective management of medical waste in epidemic outbreaks: Insights from the coronavirus disease 2019 (COVID-19) outbreak in Wuhan (China). *International Journal of Environmental Research and Public Health*, *17*(5), 1770.

Zailani, S., Jafarzadeh, S., Iranmanesh, M., Nikbin, D., & Selim, N. I. I. (2018). Halal logistics service quality: conceptual model and empirical evidence. *British Food Journal*, *120*(11), 2599–2614.

Zhou, Y., Chan, C. K., & Wong, K. H. (2018). A multi-period supply chain network equilibrium model considering retailers' uncertain demands and dynamic loss-averse behaviours. *Transportation Research Part E: Logistics and Transportation Review*, *118*, 51–76.

SSIRC 2024-012 P

THE INTERPLAY EFFECT OF MIGRATION AND INSTITUTION QUALITY ON TRADE IN NIGERIA (1960-2022).

T. O. Akinbobola
Obafemi Awolowo University, Nigeria

G. E. Yesufu
Obafemi Awolowo University, Nigeria

Abstract

This study examined the migration-institution interaction effect on trade in Nigeria. Secondary data across 1960 and 2022 was utilised. Data on migration, institution quality, trade, exchange rate alongside inflation rate were sourced from World Bank Development Indicators (WDI) alongside United Nations World Population Prospects databases. Data were analysed using Autoregressive Distributed Lag (ARDL) and VAR Granger Causality methods. This study found a positive effect of migration on trade. A bi-directional causation between migration, institution quality and a unidirectional causation from migration to trade was found in Nigeria. Hence, this study concluded that the migration-institution interaction negatively affects trade in Nigeria.

Keywords: Migration, institution quality, trade, ARDL, VAR, Nigeria

INTRODUCTION

Trade, which is an interchange of commodities within and between economies, is a conduit for improved welfare benefits, economic growth and economic development (Anowor & Agbarakwe, 2015; Nwinee & Olulu-Briggs, 2016). Economies participate in trade either to enlarge economies of scale or resolve factor endowment differences through one form of trade arrangement or the other. Furthermore, numerous studies such as Madichie, Osagu & Eze (2019) and Alayande (2020) view positive evolution in trade as a booster for economic growth and sustainable development. However, Genc (2014) opined that aside trade, migration serves as a basic network for the attainment of economic growth and development in an economy. In reiteration, WDI (2023) noted that apart from trade, migration meaningfully ensures the development of the economy and alleviates poverty. Albeit, scholars (Ojo, 2013; Olubiyi, 2013; Rodríguez-Pose, 2020) are yet to reach a consensus on the relationship between migration and trade in economies.

For instance, according to Ojo (2013) immigration, which implies a positive net-migration (or migration) has a dual effect on trade and by extension, economic growth. It was discovered that though immigration fosters economic growth, immigration also dampens economic growth due to factors such as diseases and imminent transfer of cultural heritage. Conversely, Olubiyi (2013) found that increase in trading activities shrink the outflow of nationals from a country and in turn improves economic performance. That is, increase in trade positively affects net migration via reduction in a country's rate

of emigration. diffuse growth in emigration, which in turn positively affects economic performance. Likewise, WDI (2023) stated that whilst economies gain from trade, both destination and origin countries also gain from migration (immigration or emigration). However, specifically in Nigeria, this relationship between trade and migration in Nigeria seemed not to be the case.

For instance, as depicted in Figure 1, while there was positive significant relationship between high growth in trade and immigration in the 80s, a negative significant relationship existed between low trade growth and emigration in the early 90s. However, this was not the case from 1995 to 2015 as increase in trade was coupled with an increase in emigration since the growth rate in net migration was negative. Interestingly, Nigeria is a significant destination country for immigrants and a well-resourced economy (in terms of natural resources) yet, the country experiences a growing outflow of nationals (high emigration) and weak growth in trade (Gignarta et al., 2020; UNWPP, 2023). Thus, the relationship between migration and trade in Nigeria is yet to be certain.
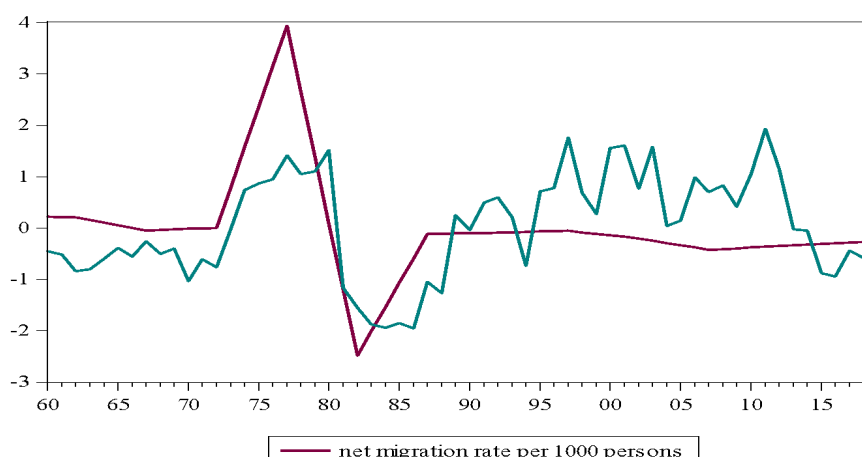
Figure 1: Graphical representation of trade and migration in Nigeria (1960-2022)
Source: Authors' estimation, 2023

On the other hand, studies (Schomaker, 2013; Tran, Cameron & Poot, 2017; Rodríguez-Pose, 2020) have discovered that the issue with poor economic performance (weak growth in trade, poor exchange rate, high inflation rate) and negative net migration is due to weak institutional quality in the economy. However, Schomaker (2013); Tran et al. (2017); Baudassé et al. (2016) also noted that though poor institutional quality yields an increase in emigration, migration can however strengthen the quality of institutions either at the origin or destination country. Besides, Di Berardino et al. (2018) and Jones & Fraser (2021) revealed that there is a bi-directional relationship between migration and institutional quality. WEF (2019) further stated that irrespective of an economy's level of institutional quality, an economy can still gain from trade without it being at the expense of the other country so long as the economic policies within are aimed at improving trade.

Nigeria asides being characterised as having a negative rate of migration (due to high emigration), it is also encumbered by a weak level of institutional quality such as low government effectiveness, low income per capita (poor living standard), corruption (Madichie et al., 2018; Onwuka & Ozegbe, 2020;

Alonso, et al., 2020). While it is necessary to investigate the effect of institutional quality and migration on trade, it is equally important to examine the interaction effect of institutions-migration on trade in Nigeria. It is also paramount to determine the direction of causation between migration, trade and institutional quality in Nigeria.

Hence, this study ascertains the effect of migration and quality of institutions on trade in Nigeria. Furthermore, it investigates the interaction effect of migration and institution quality on trade in Nigeria. In addition, this study determines the direction of causation between trade, migration and institutional quality in Nigeria. Subsequent segments of this study include survey of literature, methodology, analysis and interpretation, conclusion alongside policy recommendation.

LITERATURE REVIEW

In theoretical literature, the new trade school of thought explains the benefits from large and increasing trade, which emanate from innate economies of scale and innovation in economies. According to this theory, economies of scale fundamentally explain flows in international trade (Krugman, 1990). The new trade models argued that countries (with internal economies of scale) can mutually gain from trade without a need for comparative advantage since trade within identical economies is based on economies of scale (Krugman & Obstfeld 2003; Smit, 2010). According to Porter (1998), economies with poor institutions can boost its location advantages via adequate economic policies (and by implication, migration policies) aimed at increasing gains from trade. Thus, developing and developed economies with poor and strong institutions can equally benefit from trade without it being at the expense of other (WEF, 2019). By implication, the new trade theory posits that for a developing economy to gain from trade and in turn possess high economic performance, its economic policies must be centred on trade, which will in turn strengthen its quality of institutions.

In empirical literature, several economies are faced with high rates of migration as nationals either move within or in and out of countries. Research reveals that the surge in migration rates is linked to issues in institution quality and economic performance most especially in developing countries in Africa (Bertocchi & Strozzi, 2008; Baudassé et al., 2016; Gignarta et al., 2020). To address these issues, scholars have examined the connection between migration and institutional quality in addition to investigating the association between migration and trade.

Flahaux & De Haas (2016) argued that poor institutional quality such as corruption, absence of the rule of law and so on increases the rate of migration in an economy. In consonance, Gignarta et al. (2020) and Jones & Fraser (2021) added that such poor institutions and high rate of migration initiate brain drain (low skilled manpower and human capital) and slow economic development in a country. Meanwhile, in contrast to these findings, Schomaker (2013) opined that though institutions (strong or weak) drive changes (positive or negative) in migration, migration also induces changes on institutions. According to Schomaker (2013) whilst investigating migration and institutions in MENA countries (Middle East and North Africa), found that countries with weak institutions experience high rates of emigration in which nationals migrate to countries with strong institutions. However, this study

also opined that whilst migrating, emigrants contribute in diverse channels to the development of poor institutions in home countries.

In addition, Baudassé et al. (2016) argued that there is no certainty that immigrants negatively affect the quality of institutions in a country and as such, migration policies should not inhibit but promote migration whilst taking into cognisance the impact of migrants in destination countries. In reiteration to Schomaker (2013), Tran et al. (2017) while conducting research on 131 OECD countries noted that, strong or poor institutional quality in home countries serve as pull or push factors, which control the decisions to migrate in, out or back to a country. By implication, whilst the decision to migrate causes changes in the institution quality both at home and in destination countries, the quality of institutions also dampen or raise the decisions to migrate.

Asides the migration-institution nexus, numerous scholars such as Ojo (2013), Olubiyi (2013) and Rodríguez-Pose (2020) have also investigated the connection between migration and the economy. Ojo (2013) using Nigeria as a case study on the relationship between immigration and the economy found that immigration favourably contributes to economic growth. However, the study further noted that immigration has a dual impact on economic growth in Nigeria. That is, while immigration boosts growth in the economic activities such as trade, it hampers economic growth due to factors such as the transfer of diseases, the swallow-up of cultural heritage. Similarly, Olubiyi (2013) mentioned that there is an existent strong connection betwixt trade and emigration in Nigeria.

According to Olubiyi (2013), negative growth in emigration improves economic performance due to an increase in trade export activities (such as manufactured goods, and chemicals). More importantly, this study noted that increase in trade imports especially importation of food, beverages, textiles and agricultural products comparatively induce a rise in emigration.

Olubiyi (2013) further pointed out that policies that will aid import moderation and export stimulation be adopted to checkmate the surge in emigration. Rodríguez-Pose (2020) however notes that a country can achieve improvement in trade, human resource, economic development and effective migration policies, if its level of quality of institutions are well-developed. This study thus reveals that inability of studies to agree on the relationship between trade, migration and institutional quality. Specifically, it reveals that the effect of migration and institutional quality on trade needs to be ascertained. It also shows the need to investigate the interaction effect of migration and institutional quality on trade. Lastly, it brings to the fore, the importance of determining the direction of causation between migration, institutional quality and trade. Hence, the need for this study.

METHODOLOGY

Time series analysis was carried out on Nigeria from 1960 to 2022 via variables such as trade (a percentage of gross domestic product), institutional quality (proxied by income per capita) (Alonso et al., 2020), migration (proxied by net migration rate) and control variables such as exchange rate and inflation rate. While exchange rate, inflation rate and migration were in linear form, institutional quality and trade were in percentage and log forms respectively. This study is built on the new trade theory due to its assumption that the ability to gain from trade and in turn achieve positive economic

performance is dependent on strong institution quality with adequate economic policies. Also, this theory posited that economies with poor institutions can boost its location advantages via adequate economic policies aimed at increasing gains from trade, thus causing economies with either strong or weak economies to benefit from trade (Porter, 1998). Therefore, for an economy with either strong or weak institutions to achieve positive growth in trade, the interplay between institutional quality and migration (an economic policy) should pose a positive effect on trade growth.

This study addressed three objectives and thus carried out analysis on three models. In addressing the first two objectives, the Auto Regressive Distributed Lag (ARDL) estimation technique was utilised because all study variables were of *I(0)* and *I(1)* integration. Thus, both models were specified as:

$$TD = f(NM, IQ, IE) \tag{i}$$

$$TD = f(NM * IQ, IE) \tag{ii}$$

Equation (iii) and (iv) were further specified as:

$$TD = \beta + \sigma NM + \lambda IQ + \gamma ER + \varphi IR \tag{iii}$$

$$TD = \beta + \theta NM * IQ + \gamma ER + \varphi IR \tag{iv}$$

where: *TD, NM, IQ, IE* (that is, *ER* and *IR*) are trade growth, migration growth, institutional quality, exchange rate and inflation respectively. While *TD* represents the regress and, other variables are the regressors of which *IE* represented the control variables. Also, while β, σ, λ, γ, φ are parameters to be calculated, θ is the parameter of the interacted variable *NM*IQ* in equation *(iv)*.

Since this is a time series analysis, equation *(iii)* and *(iv)* are further depicted in linear form as (*v*) and (*vi*) respectively whilst incorporating the error term *(εₜ)*.

$$TD_t = \beta + \sigma NM_t + \lambda IQ_t + \gamma ER_t + \varphi IR_t + \varepsilon_t \tag{v}$$

$$TD_t = \beta + \theta NM_t * IQ_t + \gamma ER_t + \varphi IR_t + \varepsilon_t \tag{vi}$$

In examining the effect of migration and institutional quality on trade, equation *(v)* is respecified as equation *(vii)* and *(viii)* to denote both shortrun and longrun ARDL models respectively.

Shortrun ARDL model:

$$TD_t = \alpha_0 + \sum_{t=1}^{p} \beta_{1i} \Delta TD_{(t-i)} + \sum_{t=1}^{q} \beta_{2i} \Delta NM_{(t-i)} + \sum_{t=1}^{q} \beta_{3i} \Delta IQ_{(t-i)} +$$

$$\sum_{t=1}^{q} \beta_{4i} \Delta ER_{(t-i)} + \sum_{t=1}^{q} \beta_{5i} \Delta IR_{(t-i)} + \lambda ECT_{(t-i)} + \varepsilon_t \tag{vii}$$

Longrun ARDL model:

$$TD_t = \alpha_0 + \beta_1 TD_{(t-1)} + \beta_2 NM_{(t-0)} + \beta_3 IQ_{(t-0)} + \beta_4 ER_{(t-0)} + \beta_5 IR_{(t-0)} + \varepsilon_t \qquad (viii)$$

In examining the interaction effect of migration and institutional quality on trade, equation *(vi)* is respecified as equation *(ix)* and *(x)* to denote both shortrun and longrun ARDL models respectively.

Shortrun ARDL model:

$$TD_t = \alpha_0 + \sum_{t=1}^{p} \beta_{1i}\Delta TD_{(t-i)} + \sum_{t=1}^{q} \beta_{2i}\Delta NM*IQ_{(t-i)} + \sum_{t=1}^{q} \beta_{3i}\Delta ER_{(t-i)} +$$

$$\sum_{t=1}^{q} \beta_{4i}\Delta tIR_{(t-i)} + \lambda ECT_{(t-i)} + \varepsilon_t \qquad (ix)$$

Longrun ARDL model:

$$TD_t = \alpha_0 + \beta_1 TD_{(t-1)} + \beta_2 NM*IQ_{(t-0)} + \beta_3 ER_{(t-0)} + \beta_4 tIR_{(t-0)} + \varepsilon_t \qquad (x)$$

For the third objective, direction of causation between migration, institutional quality and trade, the VAR Granger causality model (1988) was utilised. The VAR Granger causality model is specified as:

$$TD = \alpha_0 + \sum_{k=1}^{p} \alpha_{1i}tNM_{(t-k)} + \sum_{t=1}^{p} \alpha_{2i}IQ_{(t-k)} + \varepsilon_{1t} \qquad (xi)$$

$$NM = \alpha_0 + \sum_{k=1}^{p} \alpha_{1i}tTD_{(t-k)} + \sum_{t=1}^{p} \alpha_{2i}IQ_{(t-k)} + \varepsilon_{1t} \qquad (xii)$$

$$IQ = \alpha_0 + \sum_{k=1}^{p} \alpha_{1i}tNM_{(t-k)} + \sum_{t=1}^{p} \alpha_{2i}TD_{(t-k)} + \varepsilon_{1t} \qquad (xiii)$$

Based on the relationship between trade, migration and institutional quality in Nigeria as captured in equation *(v)*, the study expects that while migration and institutional quality affects trade positively and negatively respectively, low inflation and high exchange rates affect trade positively. Similarly, from equation *(vi)*, the study expects that the interaction effect between migration and institutional quality has a direct effect on trade while low inflation and high exchange rates affect trade positively. Lastly, the study expects that the direction of causation (as depicted in equation *xi*, *xii* and *xiii*) between migration, trade and institutional quality flows from migration and institutional quality to trade in Nigeria.

Results and Discussion

Tests for the stationarity of the variables were carried out via the Augmented Dickey-Fuller (Dickey & Fuller, 1981) and Phillip Perron (Phillips & Perron, 1988) tests. From both tests as depicted in Table 1, all variables were either stationary at levels or first difference. Using the ADF test, Table 1 depicts that trade growth and exchange rate were stationary at first difference while others were stationary at levels that is, I(0). Employing the PP test, the stationary result designates that only trade growth, migration growth and exchange rate are stationary at first difference, that is, I(1).

Table 1: Unit root analysis

	Rmk	ADF Test		PP Test		Rmk
		I(0)	I(1)	I(0)	I(1)	
LTD	I(1)	0.1200	0.0000***	0.0738	0.0000***	I(1)
IQ	I(0)	0.0014***	-	0.0012***	-	I(0)
NM	I(0)	0.0328***	-	0.0720	0.0071***	I(1)
IR	I(0)	0.0016***	-	0.0103***	-	I(0)
ER	I(1)	0.9994	0.0000***	0.9992	0.0000***	I(1)
NM*IQ	I(0)	0.0023***	-	0.0018***	-	I(0)

*Note: *** designates 1% level of significance.*

Likewise, the optimal lags for the first two models (equation *v* and *vi*) using the standard VAR tool for both *LTD* and *LTD** (model with interaction) equation *v* and *vi* were two and one respectively. Also, using the ARDL bounds cointegration test, Table 2 shows that the calculated F-values were greater than the upper bound, which in turn revealed that a longrun relationship exists between the variables in the two ARDL models.

Table 2: Outcome of cointegration test

Model	F-value	No. of explanatory variables (K)
LTD	5.5144 ***	4
Critical values		
	Lower bound	Upper bound
10%	2.75	3.79
5%	3.12	4.25
1%	3.93	5.23
Model	F-value	No. of explanatory variables (K)
LTD*	5.7098***	5
Critical values		
	Lower bound	Upper bound
10%	3.03	4.06
5%	3.47	4.57
1%	4.40	5.72

*Note: *** represents 1% level of significance.*

Table 3 below, reveals that a unit increase in migration results in an 80.92% (t = 3.2889; p < 0.01) increase in trade at 1% significance level. This finding agrees with a-priori expectation that migration has a positive effect on trade in Nigeria and supports the findings of Ojo (2013), Olubiyi (2013) and

WDI (2023) that there is a strong connection between migration and trade in Nigeria. This however contradicts the assertions by Gignarta et al. (2020) and Jones & Fraser (2021) that migration negatively affects trade and results in low skilled manpower and slow economic development. In addition, Table 3 shows that an increase in exchange rate leads to 0.38% (t = -2.4510; p < 0.05) decrease in trade at 5% significance level. This agrees with a-priori expectation that there is an inverse relationship between trade and exchange rate implying that at a low exchange rate, the exchange rate of the economy is strengthened, trade imports are cheaper than trade exports and as such the purchasing power of nationals rises.

Furthermore, though the result below shows that a 1% rise in institutional quality results in a 0.02% (t = -1.5050; p > 0.10) fall in trade, institutional quality has no significant effect on trade in Nigeria. This thus agrees with the position of WEF (2019) that an economy's gain from trade is independent of the country's level of institutional quality. In the interaction effect model *(LTD*)* Table 3 depicts that a 1% increase in the interaction between migration and institutional quality yields a 0.05% (t = -2.6713; p < 0.05) decrease in trade at 5% significance level. This opposes a-priori expectation but supports the position of Porter (1998) and WEF (2019) that an economy with poor institutions can gain from trade and improve economic performance only if its economic policies are aimed at improving gains from trade.

Table 3: Outcome of the long-run values

		Coeff.	S.E	t-Stat.	Prob.
LTD	NM	0.8092***	0.2460	3.2889	0.0018
	IQ	-0.0149	0.0099	-1.5050	0.1385
	ER	-0.0038***	0.0016	-2.4510	0.0177
	IR	-0.0078	0.0086	-0.9122	0.3660
LTD*	NM	1.6212	0.4928	3.2900	0.0019
	IQ	-0.0247	0.0131	-1.8848	0.0655
	ER	-0.0042***	0.0012	-3.6544	0.0006
	IR	-0.0084	0.0062	-1.3706	0.1769
	NM*IQ	-0.0508***	0.0190	-2.6713	0.0103

Note: *** represents 1% level of significance.

The short run estimates for both *LTD* and *LTD** models are presented in Table 4. As depicted in the Tables below, the *ECT* values verify that a longrun relationship indeed exists in both models since the values: -0.3140 (t = -5.5487; p < 0.05) and -0.3409 (t = -6.0442; p < 0.05) were all negative and statistically significant at 1% level of significance.

In addition, Table 4 below show that in the shortrun, a 1% increase the first-lagged value of institutional quality leads to a 0.01% (t = 2.5889; p < 0.05) increase in trade. Also, 1% increase in the first-lagged value of the interaction between migration and institutional quality yields a 0.01% (t = 3.6902; p < 0.01) increase in trade. Thus, this reveals that while institutional quality has a positive effect on trade, the interaction effect between migration and institutional quality also has a positive effect on trade in Nigeria, though only in the shortrun. Based on the tests for the significance of the two models, Durbin-Watson Statistic values of 1.93 and 2.11 show the absence of serial correlation in

the residuals of the models estimated and verifies the values for both standard error and t-statistics coefficients in the equations.

Table 4: Outcome of short-run values for LTD and LTD* models

Variable	Coeff.	S.E	t-Stat.	Prob.
LTD Model				
C	0.9465	0.1775	5.333	0
@TREND	0.0096	0.0024	3.9516	0.0002
D[LTD(-1)]	-0.2024	0.1121	-1.8058	0.0769
D(IQ)	0.0006	0.0021	0.3006	0.7649
D[IQ(-1)]	0.0054**	0.0021	2.5889	0.0125
ECT	-0.3140***	0.0566	-5.5487	0
LTD* Model				
C	1.0849	0.1853	5.8545	0
@TREND	0.0114	0.0025	4.5885	0
D(LTD(-1))	-0.2184	0.1074	-2.0338	0.0475
D(IQ)	0.0006	0.0021	0.3137	0.7551
D(IQ(-1))	0.0068	0.002	3.3209	0.0017
D(NM*IQ)	-0.0033	0.0024	-1.338	0.1872
D(NM*IQ(-1))	0.0083***	0.0023	3.6902	0.0006
ECT	-0.3409***	0.0564	-6.0442	0

Note: *** and ** represent 1% as well as 5% level of significance.

This study also carried out diagnostic tests (serial correlation, heteroskedasticity, normality, cusum and cusum square) to ascertain the robustness of the models. Below, Table 5 shows that the models have no presence of serial correlation and heteroskedasticity since the probability values for both tests were higher than 5% significance level.

Table 5: Diagnostics test outcome

	F-value	P-value
LTD Model		
Test for Serial Correlation	0.4307	0.4755
Heteroskedasticity Test	0.8533	0.7934
LTD* Model		
Test for Serial Correlation	0.2402	0.4533
Heteroskedasticity Test	0.541	0.6926

Also, Figures 2, 3, 4 and 5 indicate via the cumulative sum (CUSUM) statistics and the cumulative sum of squares (CUSUMsq) statistics (Ntembe et al., 2018; Mohanty, 2018) that the models are stable. This is because the models were within the critical threshold at a 5% level of significance.
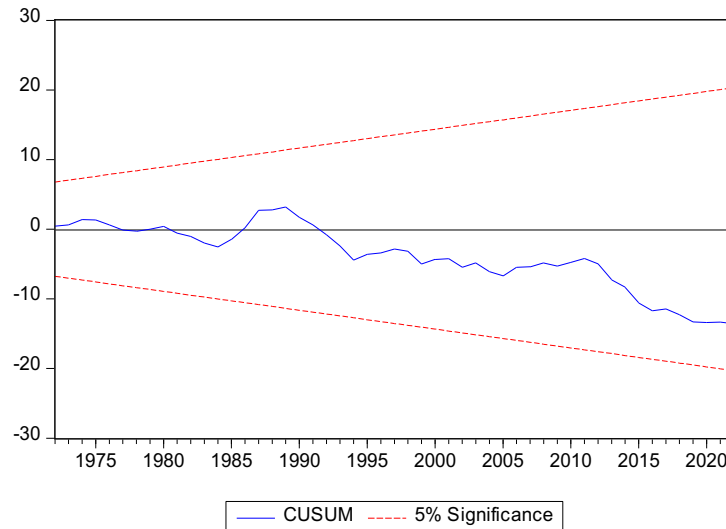
Figure 2: Stability test outcome for LTD model
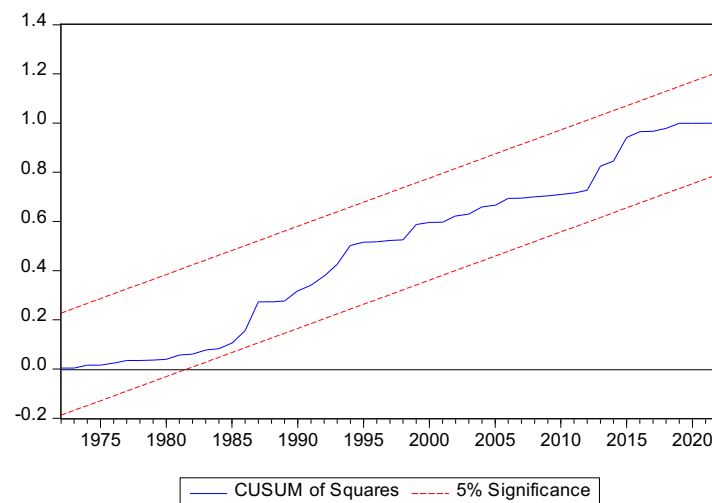
Figure 3: Stability test outcome for LTD model

This study also determined the direction of causation between migration, institutional quality as depicted in Table 6. Result in the first panel showed that the coefficients of net migration ($\chi^2 = 11.7659$; $p < 0.01$) and institutional quality ($\chi^2 = 8.3902$; $p < 0.05$) were significantly different from zero at 1% and 5% level of significance respectively. And that the direction of causation was statistically different from zero, flows from migration and institutional quality to trade in Nigeria. Furthermore, Table 6 showed that there was no direction of causation from institutional quality and trade to migration in Nigeria because its' coefficients were not statistically different from zero. This contradicts the assertions of Di Berardino et al. (2018) and Jones & Frase (2021) that there is a bi-directional relationship between migration and institutional quality.
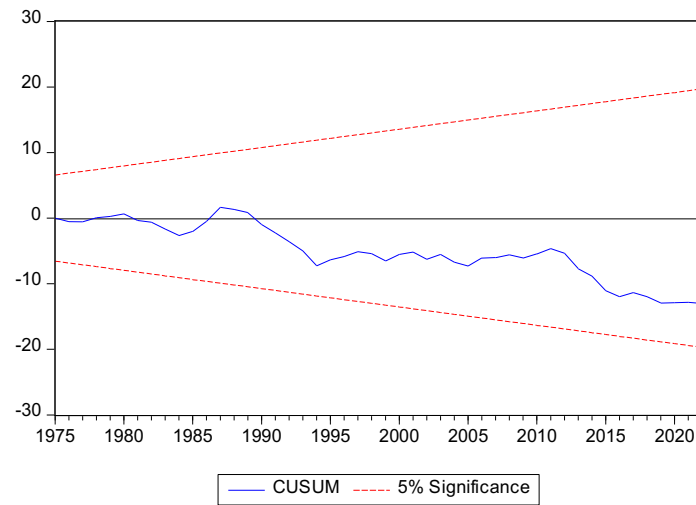
Figure 4: Stability test outcome for LTD* model
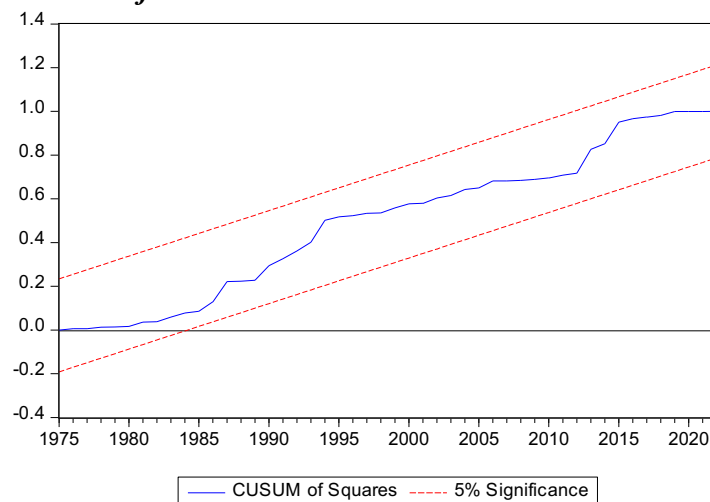
Figure 5: Stability test outcome for LTD* model

Lastly, it was found that while the coefficient of trade ($\chi^2 = 6.181021$; $p < 0.05$) was statistically different from zero, the coefficient of net migration was not statistically different from zero. Thus, this study found that the direction of causation between trade and institutional quality is bi-directional. This corroborates the view of Ojo (2013) that there is a bi-directional relationship between institutional quality and trade in Nigeria. Also, this study shows that there is a unidirectional causal relationship between trade and migration and that the direction of causation only flows from migration to trade in Nigeria. This reiterates the position of WEF (2019) that policies such as migration policies must be aimed at improving trade for gains from trade and strong economic performance to be achieved.

Table 6: Direction of causation outcome

Regressand: LTD				
	Chi-sq	df	P-value	Causation
NM	11.7659	2	0.0028	Migration to trade
IQ	8.3903	2	0.0151	Institution quality to trade
Regressand: NM				
LTD	1.1482	2	0.5632	-
IQ	3.3636	2	0.1860	-
Regressand: IQ				
LTD	6.1810	2	0.0455	Trade to institution quality
NM	1.01562	2	0.6018	-

Conclusion and Policy Suggestions

This study concludes that while migration has a strong positive effect on trade in the longrun, institutional quality has a weak but positive effect on trade in the shortrun. It also noted that overtime (in the longrun), institutional quality negatively but insignificantly affects trade in the. Thus, though institutional quality has a negative but non-significant effect on trade, migration still positively affects trade in Nigeria. Likewise, this study concludes that though the interaction between migration and institutional quality positively affects trade in the shortrun, the migration-institution interplay effect negatively affects trade in the longrun in Nigeria. Lastly, this study reveals that in terms of causation, a bi-directional causal relationship exists between institutional quality and trade whereas, the direction of causation only flows from migration to trade in Nigeria.

Therefore, this study recommends that, policies that will help improve the quality of institutions in Nigeria be implemented and monitored as this will strengthen the quality of institutions, and enhance a positive interaction effect between migration and institutional quality on trade in Nigeria. In addition, policies should be aimed at fostering trade so as to further heighten benefits from trade, which will in turn, improve economic performance in Nigeria.

REFERENCES

Alayande, F. (2020). Understanding shifts in Nigeria's trade policy: From realism to protectionism. *Africa Development*, *45*(1), 149–162.

Alonso J. A., Garcimartin C., & Kvedaras V. (2020). Determinants of institutional quality: an empirical exploration. *Journal of Economic Policy Reform*, https://doi:10.1080/17487870.2020.1719 102

Anowor, O., & Agbarakwe, H. (2015). Foreign trade and Nigerian economy. *Developing Countries Studies*, *5*(6), 77–82.

Badshah, W., & Bulut, M. (2020). Model selection procedures in bounds test of cointegration: theoretical comparison and empirical evidence. *Economies 2020, 8,* 49. https://doi.org/10.3390/Economies8020049

Baudassé, T., Bazillier R., & Issifou I. (2016). Migration and institutions: Exit and voice (from abroad)? *Laboratoire d'Économie D'Orléans,* Dr Leo 2016-20.

Bertocchi, G., & Strozzi C. (2008). International migration and the role of institutions. *Public Choice (2008)* 137*,* 81–102. https://doi.org/10.1007/S11127-008-9314-X

Di Berardino, C., D'Ingiullo D., Quaglione D., & Sarra A. (2018). Migration and institutional quality across Italian provinces: The role of human capital. *Papers in Regional Science,* 1–18. https://doi.org/10.1111/pirs.12371

Dickey, D. A., & Fuller, W. A. (1981). Likelihood ratio statistics for autoregressive time series with unit root. *Econometrica,* 49, 1057–1072. http://dx.doi.org/10.2307/191.

Flahaux, M. L., & De Haas, H. (2016). African migration: Trends, patterns, drivers. *Comparative Migration Studies*, 4, 1–25

Gignarta, T. S., Guan, Z., & Borojo, D. G. (2020). The impacts of economic freedom and institutional quality on migration from African countries. *South African Journal of Economics,* 1–11. https://doi.org/10.1111/saje.12254

Granger, C. W. J. (1988), Some recent development in a concept of causality. *Journal of Econometrics,* *39*, 199–211.

Jones, G., & Fraser, R. (2021, March). Immigration's effect on institutional quality: The place of simpler evidence. *Econ Journal Watch 18*(1), 3–20.

Karlsson, P. S., & Behrenz, L. (2019). Performances of model selection criteria when variables are ill conditioned. *Computational Economics.* 54, 77–98. https://doi.org/10.1007/S10614-017-9682-8

Krugman, P. R. (1990). Rethinking international trade. *Massachusetts: The MIT Press*.

Krugman, P. R., & Obstfeld M. Y. (2003). *International economics: Theory and policy*. New York, Harper-Collins.

Macrotrends. (2023). Inflation rate: Nigeria. Retrieved September 6, 2023, from https://www.macrotrends.net/countries/NGA/nigeria/inflation-rate-Nigeria

Madichie, C., Osagu, F., & Eze, E. (2019). Economic diversification: Imperative for trade and industrial policies in Nigeria. *Timisoara Journal of Economics and Business*, *11*(1), 67–86. https://doi.org/10.2478/tjeb-2018-0005.

Mohanty, R. K. (2018). An empirical investigation of twin deficits hypothesis: Evidence from India. *Journal of Quantitative Economics,* 1–23; https://https://doi.org/10.1007/S40953-018-0136-5.

Ntembe, A., Amin, A. A., & Tawah, R. (2018). Analysis of public investments and economic growth in Cameroun. *Journal of Economics and Finance, 42*(3), 591–614.

Nwinee, B. F., & Olulu-Briggs, O. V. (2016). Trade openness, financial development, and the Nigerian Economy. *American International Journal of Contemporary Research*, *6*(3), 170–183.

Ojo, O. (2013). The impact of immigration on Nigerian economy. *Department of Economics, University of Ibadan*. https://ssrn.com/abstract=2603708**.**

Olubiyi, E. A. (2013). Interdependence of international trade and migration in a globalising economy: The evidence from Nigeria. *Department of Economics, University of Ibadan.*

Phillips, P. C. B., & Perron, P (1988). Testing for a unit root in times series regression. *Biometrika, 75*(2)*.*

Porter, M. E. (1998). Clusters and the new economics of competition. *Harvard Business Review, 76*(6), 77–90.

Rodríguez-Pose, A. (2020). Institutions and the fortunes of territories. *Regional Science Policy & Practice. 12*, 371–386. https://doi.org/10.1111/rsp3.12277

Schomaker, R. (2013). Youth bulges, poor institutional quality and missing migration opportunities – Triggers of and potential countermeasures for terrorism in MENA. *Topics in Middle Eastern and North African Economies, electronic journal, 15,* http://www.luc.edu/orgs/meea/

Smit, A. J. (2010). The competitive advantage of nations: Is porter's diamond framework a new theory that explains the international competitiveness of countries? *Southern African Business Review 14*(1).

Tran, N. T. M., Cameron M. P., & Poot J. (2017a). International migration and institutional quality in the home country: It Matters Where you go and how long you stay! *IZA Discussion Paper Series* No. 10945*.* BONN- IZA Institute of Labor Economics*.*

Tran, N. T. M., Cameron, M. P., & Poot, J. (2017b). Local institutional quality and return migration: evidence from Vietnam. *Working Paper in Economics 10/17.* Working Paper in Economics 17/03. Hamilton: Department of Economics, University of Waikato.

United Nations World Population Prospects (UNWPP). (2023). *Nigeria net migration rate*. Macrotrends. Retrieved 6 September 2023, from https://www.macrotrends.net/countries/NGA/nigeria/net-migration

WDI (2023). World bank development indicators database, world development report (WDR). (2023). Migrants, refugees and societies. *International Bank for Reconstruction and Development.* The World Bank*.* www.worldbank.org

World Economic Forum (WEF). (2019). *Global economic outlook*. Geneva. Retrieved from https://www.weforum.org

SSIRC 2024-017

THE EFFECTS OF GENDER ON ORGANISATIONAL PERFORMANCE IN A MOBILE TECHNOLOGY ORGANISATION IN SOUTH AFRICA

J. D. Ngo Ndjama
Vaal University of Technology, South Africa

J. van der Westhuizen
Vaal University of Technology, South Africa

Abstract

The active engagement of employees contributes significantly to the overall performance of an organisation as they can propel it towards success and ensure the attainment of its strategic goals. Several factors have been identified as significantly impacting organisational performance, including personal characteristics such as employees' gender. Grounded on the stereotype threat theory, this study offers valuable insights into the intricate dynamics of gender within the workplace. Thus, this paper aims to understand if gender plays a role in improving the performance of an organisation. The study adopted a postpositivist perspective, descriptive research, quantitative method and simple random sampling as the sampling technique. Both male and female employees (90) had an equal chance of being selected from various departments and all job levels to constitute a subset of 50 individuals. The data was analysed using SPSS software version 27.0, employing both descriptive and ANOVA analyses. The results revealed specific areas of discontent among employees within the organisation, while also indicating a general inclination towards agreement when assessing the organisation's overall performance. The outcomes from ANOVA strongly suggested that females exhibited superior organisational performance compared to males. The stereotype threat theory elucidated the connection between gender and organisational performance. Organisations should strive for gender equality and create an inclusive environment that maximises all employees' performance, regardless of gender. Additionally, managers should actively work towards eliminating discriminatory workplace practices by implementing policies and procedures that promote equal opportunities for career advancement, providing training and development programs that address gender-related issues, and ensuring that all employees are treated fairly and respectfully.

Keywords: Organisational performance, stereotype threat theory, male, female, gender disparities, mobile technology organisation

INTRODUCTION

The performance of an organisation hinges primarily on the competence of its management team (Doval, 2020) who play a crucial role in driving the organisation towards its strategic objectives. However, employees' active engagement is equally essential (Doval, 2020), as they contribute significantly to the organisation's overall effectiveness. By working together harmoniously,

management and employees can propel the organisation towards success and ensure the attainment of its strategic goals. Long (2022) argues that the performance of an organisation in achieving its goals determines the potential success of a business, which is contingent upon the organisation's capacity to effectively execute strategies. Performance is defined by Conțu (2020) as the extent to which an organisation, functioning as a social system, accomplishes its goals using available resources and methods. Likewise, Benn, Abratt and O'Leary (2016) explain that employees considered vital assets and primary stakeholders of organisations, regularly make crucial decisions that significantly impact various business operations. With their integral role in business practices, research has shifted towards identifying factors that can ultimately enhance employee performance to improve organisational outcomes. Over the years, gender has emerged as a potential determinant in this regard. Furthermore, Mabai and Hove (2020) comment that several factors have been identified in the literature as having a significant impact on organisational performance; these factors include intellectual capital, human resource management (HRM), creativity and innovation, personal characteristics such as age and gender of employees (Mabai & Hove, 2020). Intellectual capital consists of individuals' knowledge, skills, and expertise. Organisations that effectively manage and leverage their intellectual capital are more likely to achieve higher performance levels. HRM plays a crucial role in shaping organisational performance through employee recruitment, selection, training, and development. HRM practices that foster employee engagement and satisfaction can positively impact performance (Alsafadi & Altahat, 2021). Organisations encouraging and supporting employee creativity are more likely to develop innovative solutions and stay ahead of the competition. This can lead to improved performance and a sustainable competitive advantage. Personal attributes like the age and gender of employees within an organisation can also impact performance.

Research suggests that organisations including individuals of different gender categories, bring various perspectives and ideas to the table. This diversity can lead to more innovative problem-solving and decision-making processes, ultimately enhancing organisational performance. According to Mabai and Hove (2020), organisations that effectively manage and leverage gender balance are more likely to achieve higher performance levels and maintain a competitive advantage in today's dynamic business environment. Macpherson (2001) points out that the performance of an organisation holds the utmost significance for both profit and non-profit organisations. Managers must thoroughly understand the factors that impact organisational performance to effectively capitalise on them and implement necessary measures to attain desired outcomes. The correlation between gender and organisational performance has been a focal point of research for more than thirty years. Nevertheless, organisations seeking guidance from this extensive body of literature to inform their recruitment strategies may struggle to uncover definitive conclusions (Joshi, 2017). Based on this, this paper aims to understand if gender plays a role in improving the performance of an organisation. In other words, it explores the impact of gender on the overall performance of an organisation, examining whether there are any significant differences between the performance of male and female employees.

SIGNIFICANCE OF THE STUDY

Gender inequality is a recognised issue globally, requiring attention across different societal levels. In South Africa, women account for 51.3% of the total population and makeup 46% of the labour force,

which falls behind countries like Canada, Israel, and the United States (Taylor & Peens, 2017). Ali, Kulik and Metz (2009) posit that researchers and practitioners have shown interest in the growing gender diversity in the workforce. Moreover, the existing literature lacks sufficient research on the impact of gender on organisational performance specifically within a cutting-edge mobile technology organisation in South Africa. One key inquiry is how the gender makeup of an organisation's employees impacts performance at the individual, group, and organisational levels (Ali et al., 2009). Turi, Khastoori, Sorooshian and Campbell (2022) are of the view that organisational bias is a result of the absence of diversity training and limited comprehension of diversity beliefs, particularly in developing nations with strong social and cultural ties. E-Vahdati, Zulkifli and Zakaria (2018) propose that organisations can address these biases by prioritising diversity. Hence, the study on gender and organisational performance holds great significance as it offers valuable insights into the intricate dynamics of gender within the workplace. Understanding the impact of gender on organisational performance is crucial in today's diverse and inclusive work environments. This study allows organisations to recognise the potential barriers and biases that may exist, hindering gender equality and impeding overall organisational performance; thus organisational success. Organisations can implement targeted interventions and policies to address these challenges effectively by identifying them.

Moreover, this research offers a comprehensive understanding of the gender's role in organisational performance. It goes beyond simply acknowledging the existence of gender disparities; but delves into the underlying factors that contribute to these disparities such as societal norms, the presence of unconscious bias and discrimination, and organisational culture and practices. By examining the relationship between gender and performance metrics such as productivity, innovation, and employee satisfaction, organisations can better understand how gender dynamics impact overall organisational success. Understanding these dynamics can assist organisations in developing effective strategies to promote gender equality, fostering an inclusive work environment, and ultimately enhancing overall performance. This study's significance lies in its potential to drive positive change by addressing gender disparities and creating a more equitable and productive workplace for all employees.

LITERATURE REVIEW

Theoretical Framework

Exploring the possible links between gender and organisational performance has fostered a substantial amount of academic research and the creation of numerous theoretical frameworks to underpin this connection (Ferrary & Déo, 2021). The theory that sheds light on this relationship is explained by the stereotype threat theory (STT), which posits that individuals may underperform when they are aware of negative stereotypes associated with their gender. Stereotypes are mental frameworks that encompass particular beliefs regarding specific social groups (Latu & Mast, 2015). Latu and Mast (2015) identify stereotypes related to gender: women are often perceived as more communal, while men are viewed as more agentic; women are seen as more egalitarian, whereas men are considered more hierarchical; women are typically associated with teaching professions, while men are commonly linked with engineering and accounting careers. According to a study conducted by Geraldes, Riedl,

and Strobel (2020), it was discovered that women tend to perform worse than men when faced with competitive incentives for a task that is stereotypically associated with favouring men. However, when it comes to a gender-neutral task or a task stereotypically favouring women, women perform at least as well as men. The authors propose that women may compete less in tasks where men are believed to excel due to the presence of stereotype threat. Similarly, Iriberri and Rey-Biel (2017) found that women tend to underperform in competition only when they perceive a task to be male-dominated. These studies provide valuable insights into how induced beliefs about the opposite gender's actual ability can impact women's competitive performance. The STT suggests that gender stereotypes can create a psychological burden that hinders performance. For example, women may feel pressured to conform to societal expectations and doubt their abilities in male-dominated fields. This self-doubt and fear of confirming negative stereotypes can lead to decreased confidence and hinder their performance in the workplace. By understanding the STT, organisations can implement strategies to mitigate its effects and create an inclusive environment that promotes equal opportunities for all genders.

Organisation Performance

In the current dynamic and fiercely competitive business environment, enhanced performance is an essential prerequisite for achieving organisational objectives, whether in the private or public sectors (Joseph-Obi & Nelson Arugu, 2019). Consequently, the authors argue that with human capital being recognised as the most valuable production asset, organisations are diligently working towards ensuring the continuous attainment of set goals. Organisational performance refers to an organisation's tangible outcomes or achievements, which are evaluated in comparison to its intended outcomes, goals, and objectives (Doval, 2020). Organisational performance encompasses the actual results that an organisation has accomplished, reflecting its effectiveness and efficiency in meeting its intended targets. Gutterman (2020) expanded the definition of organisational performance to encompass the organisation's ability to fulfil its stakeholders' requirements and its sustainability necessities. This redefinition moved beyond traditional market-oriented indicators like profit margin, market share, and product quality, which are crucial for specific stakeholders and the organisation's overall longevity, to incorporate various non-financial aspects (Gutterman, 2020). By assessing the organisational performance, one can gauge the extent to which the organisation has successfully translated its aspirations into concrete outcomes, providing insights into its overall effectiveness and ability to fulfil its intended purpose. Performance is achieved when an organisation demonstrates competitiveness, effectiveness, and productivity, allowing it to establish a strong market presence, which is influenced by various factors that interact in a multiform and complex manner (Dragomir & Pânzaru, 2014). These factors can include but are not limited to the organisation's strategic planning, organisational structure, management practices, technological advancements, employee skills and motivation, financial resources, market conditions, customer preferences, and overall industry dynamics. However, in their study, Luo, Huang and Wang (2011) proposed a different approach to measuring organisational performance. They argued that it should be evaluated from both economic and operational perspectives. (1) Economic performance entails assessing financial and market outcomes such as profits, sales, shareholder return on investment, and other financial metrics (Tahir, 2020). (2)

Conversely, operational performance focuses on observable indicators such as customer satisfaction and loyalty, the organisation's social capital, and competitive advantage derived from capabilities and resources (Tahir, 2020). Each element plays a crucial role in shaping the organisation's performance and determining its success in the marketplace. The interplay between these factors creates a complex web of relationships that must be carefully managed and optimised to achieve optimal performance outcomes.

The Root Causes of Gender Disparities Within Organisations

Gender disparities encompass inequalities in the treatment and results experienced by individuals based on their gender, which are unjustified considering their abilities or contributions to the organisation (Hing, Sakr, Sorenson, Stamarski, Caniera and Colaco, 2023). Various underlying factors can influence gender disparities within organisations.

Societal Norms and Stereotypes

One significant factor is societal norms and stereotypes that dictate traditional gender roles. These norms often assign specific tasks and responsibilities to individuals based on gender, leading to unequal distribution of power and opportunities within the organisation. For example, women may be expected to take on more administrative or supportive roles, while men are often favoured for leadership positions. Therefore, Stamarski and Hing (2015) observed that gender inequalities within organisations are a multifaceted issue that manifests in various aspects of organisational structures, processes, and practices. Moreover, Hing et al. (2015) add that these inequities can manifest in organisational operations, such as the screening of resumes, performance evaluations, instances of sexual harassment, and even during layoffs. An example of this would be favouring a less qualified man over a more qualified woman for the position of CEO (Hing et al., 2015). These inequalities perpetuate a cycle of gender inequality and limit the advancement of women in the workplace. Particularly for women, the detrimental effects of gender inequality are evident in human resources (HR) practices, including policies, decision-making processes, and their implementation, significantly impacting women's recruitment, training, compensation, and advancement opportunities (Stamarski & Hing, 2015).

Unconscious Bias and Discrimination

Another contributing factor is the presence of unconscious bias and discrimination. Tabassum and Nayak (2021) argue that despite the availability of equal opportunities in workplaces, gender stereotyping continues to persist. The authors add that this perpetuates gender-specific behaviour that can have a demotivating and demoralising effect on women in the workplace. Despite the efforts to promote equality, individuals may still hold unconscious biases favouring one gender over the other. These biases can influence decision-making processes, such as hiring, promotion, and allocation of resources, leading to unequal outcomes for men and women. Discrimination based on gender can also manifest in the form of unequal pay, limited access to training and development opportunities, and exclusion from decision-making processes. Within organisational settings, negative beliefs regarding

women's performance or effectiveness can hinder their aspirations for career advancement (Tabassum & Nayak, 2021).

Organisational Culture and Practices

Furthermore, organisational culture and practices can contribute to gender disparities. A culture that values long working hours and highly emphasises availability and commitment may disadvantage women who often face additional responsibilities outside of work, such as caregiving. This can result in women being overlooked for promotions or unable to fully participate in meaningful projects, which may hinder their performance. Therefore, there is a need for a culture shift. However, Bogdan and Diaconu (2020) explain that organisational culture change is an aspect that exceeds the top management authority sphere since it is influenced by many other factors such as the local culture, education, the organisational objective, group membership, personal interactions, and life experience. The authors point out that the realisation of organisational culture change can be challenging, primarily because of the unpredictable responses that individuals may have towards the efforts made to bring about the desired changes in the circumstances.

In conclusion, understanding the underlying factors contributing to gender disparities in organisational performance is crucial for addressing and rectifying these imbalances. By examining societal norms, unconscious bias, discrimination, and organisational practices, organisations can implement strategies to promote gender equality and create a more inclusive and equitable work environment.

METHODOLOGY

Research Design

Descriptive research design refers to a scientific approach that aims to systematically describe and analyse the characteristics, behaviours, or phenomena of a particular subject or population (Creswell & Creswell, 2017). This research design focuses on providing a detailed and comprehensive account of organisational performance, with an attempt to establish causal relationships between gender and organisational performance. It involves collecting and analysing data and presenting them clearly and objectively.

Research Method

The research adopted a postpositivist perspective, which emphasised the objective observation and measurement of phenomena. The purpose of conducting descriptive research was to provide a detailed description of the existing phenomena as well as a quantitative method that allowed a more objective and precise understanding of the phenomenon at hand. An empirical investigation was carried out to gather data, which involved collecting and analysing real-world data.

Sampling Method

To ensure a representative sample, the study employed simple random sampling as a sampling technique, where each member of the population had an equal chance of being selected. The research

sample comprised 90 individuals employed in various departments of a progressive mobile technology organisation in Johannesburg. Both male and female employees from all job levels, ranging from administrative clerks to managers, were included in the study. The target population was selected based on their familiarity with organisational performance. Employing a simple random sampling technique, a subset of 50 individuals was chosen as a sample.

Research Instrument

The demographic portion of the survey was designed to gather information regarding key demographic factors including age, gender, educational background, and job title. This section aimed to provide a comprehensive overview of the respondents' characteristics to better understand how one of these characteristics may influence their responses and performance within the organisation.

The subsequent section of the study focused on evaluating employee performance by customising the questionnaire originally developed by Uğurlu and Kurt (2016). By adopting this established tool, the researchers aimed to assess various aspects of organisational performance and identify any potential correlations between gender and organisational performance.

Data Collection

The collection of data involved the distribution of a structured questionnaire, which incorporated a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). This systematic approach ensured that the data collection process was conducted consistently, allowing respondents to express their level of agreement or disagreement with the statements presented.

Data Analysis

The investigation includes evaluating the reliability of the data, presenting a comprehensive overview of the data distribution, and using ANOVA to investigate any significant differences between the groups being studied. The analysis of the data was conducted using the statistical software SPSS version 27.0.

RESULTS AND DISCUSSIONS

Reliability of the Questionnaire

The variable organisational performance consisted of 18 items with a Cronbach alpha coefficient of 0.914. This suggests that the items within this variable were highly reliable and consistent in measuring the construct. The accuracy of the data collected is bolstered by the utilisation of robust measurement instruments to assess these variables, thereby assuring the reliability of the findings.

Respondent Profile

The gender distribution of the respondents in this study revealed a higher number of female respondents. Specifically, 56% of the respondents were female, while the remaining 44% were male. When examining the age distribution of the respondents, it became evident that the majority fell within

the 30 to 39 age group, accounting for 52% of the respondents. Following this, 22% of the respondents were under 30 years old. Additionally, the age groups between 40-49 years and 50-59 years were represented by 16% and 10% of the respondents, respectively. In terms of work experience, most respondents possessed between 11 to 15 years of working experience, making up 48% of the total. The next category consisted of respondents with 6 to 10 years of working experience, accounting for 28% of the respondents. Lastly, respondents with less than 5 years of working experience comprised 24% of the total. When considering the qualifications of the respondents, it is noteworthy that the majority held Matric/professional certificates, comprising 52% of the respondents. Following this, respondents with bachelor's degrees comprised 34% of the total. Additionally, 10% of the respondents possessed a diploma, while only 4% held a master's degree.

Description

The data in Table 1 illustrates the mean scores for various aspects of organisational performance.

Table 1: Mean values of organisational performance

Items	N	Minimum	Maximum	Mean	Std. Deviation	Variance
1. Return on assets (ROA, %) in our organisation is well above the industry average	50	1	4	3.10	.839	.704
2. Value-added per employee in our organisation is well below the industry average	50	2	5	3.36	.663	.439
3. We consider our relations with suppliers to be excellent because we maintain genuine partnerships with them	50	1	5	3.06	.740	.547
4. We change suppliers very often	50	1	4	2.38	1.338	1.791
5. We have long-term partner relationships with our suppliers	50	1	5	3.42	1.126	1.269
6. We strongly involve our suppliers in our research and development processes	50	1	4	2.42	.950	.902
7. There are no cases in our organisation of people leaving for internal reasons	50	1	4	2.10	1.249	1.561
8. The productivity of employees is much higher than the industry average	50	1	5	2.58	1.247	1.555
9. Employees' trust in leadership is high	50	1	5	2.78	1.200	1.440
10. Trust among employees is strong	50	1	5	2.34	1.206	1.453
11. Work organisation is efficient	50	2	5	3.12	1.062	1.128
12. Employees feel very committed to the organisation	50	2	5	2.86	1.010	1.021
13. Employees are prepared to go the extra mile for the organisation	50	1	5	2.76	1.238	1.533
14. Work costs per employee are well below the industry average	50	2	5	3.62	1.028	1.057
15. Absenteeism is in our organisation (relative to the competition) very low	50	2	5	3.30	.678	.459
16. Employees are very satisfied with the situation within the organisation	50	1	4	2.70	1.035	1.071
17. The learning ability and adaptability of employees is high (in comparison to competition)	50	1	4	2.80	1.050	1.102
18. Risk-taking within the organisation is better than it is by our competitors	50	3	4	3.22	.418	.175
Valid N (listwise)	50			2.88		

The data presented in Table 1 offers valuable insights into the average values of organisational performance across different dimensions. The mean values observed ranged from 2.10 to 3.62, indicating variations in performance levels. Additionally, the standard deviations, calculated as 0.418 (lowest) and 1.338 (highest), highlight the extent of dispersion within the dataset. These findings have significant implications for understanding the overall performance of the organisation. The range of mean values suggests variations in performance across different dimensions, indicating areas of strength and areas that may require improvement. The standard deviations measure the spread of data points around the mean, indicating the level of variability within each dimension.

By assessing respondents' responses on a scale that ranged from 1 (strongly disagree) to 5 (strongly agree), these findings provide valuable insights into the overall organisational performance of the organisation. The lower mean value of 2.10 suggests that there were instances where respondents disagreed with certain aspects related to the organisation's performance. This could indicate areas of concern or dissatisfaction among employees within the organisation, which may require attention and improvement. On the other hand, the higher mean value of 3.62 indicates that respondents generally leaned towards agreement when evaluating the organisation's performance. This suggests that the respondents perceived aspects of the organisation positively, potentially highlighting areas of strength and success.

Analysis of Variance (ANOVA)

Table 2 presents the results of the ANOVA analysis, which examines the impact of gender on organisational performance.

Table 2: ANOVA gender and organisational performance

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Organ_ perform	Male	22	48.18	9.106	1.941	44.14	52.22	42	72
	Female	28	54.86	13.049	2.466	49.80	59.92	41	78
	Total	50	51.92	11.856	1.677	48.55	55.29	41	78

Table 2 presents the results of organisational performance, specifically focusing on males and females. The data obtained from this study revealed a notable trend where females consistently displayed higher levels of organisational performance (mean =54.86) than their male counterparts (mean = 48.18). This intriguing outcome may be attributed to the possibility that a more significant proportion of females were involved in the study, thus influencing the overall results. Consistent with these results, Hoogendoorn, Oosterbeek and van Praag (2013) indicated that organisations with a balanced gender mix tend to outperform male-dominated organisations in terms of sales and profits. This intriguing outcome may be attributed to the possibility that a greater proportion of females were involved in the study, thus influencing the overall results. Consistent with these results, the findings of Hoogendoorn, Oosterbeek and van Praag (2013) indicated that organisations that have a balanced gender mix tend to outperform male-dominated organisations in terms of sales and profits. Conversely, the study of Taylor

and Peens (2017) revealed that gender diversity had no significant effect on firm financial performance of the South African listed organisations.

Table 3: ANOVA between and within groups

		Sum of Squares	df	Mean Square	F	Sig.
Organ_ perform	Between Groups	548.979	1	548.979	4.157	.047
	Within Groups	6338.701	48	132.056		
	Total	6887.680	49			

The results in Table 3 showcasing the relationship between gender and organisational performance indicate a significant difference between the gender groups (males and females). The sum of squares between groups is 548.979, which represents the variability between the different groups. The degree of freedom (df) for this factor is 1, indicating that only one factor is. The mean square between groups is 548.979, representing the variability between groups. The F-value of 4.157 suggests a significant difference between the groups. The significance level (Sig.) of.047 indicates that the probability of obtaining these results by chance is less than 5%. On the other hand, the sum of squares within groups is 6338.701, representing the variability within each group. The degree of freedom for this factor is 48, indicating the number of observations minus the number of groups. The mean square within groups is 132.056, obtained by dividing the sum of squares within groups by the degrees of freedom. The total sum of squares is 6887.680, representing the total data variability. Overall, these results suggest that there is a significant difference between the gender groups in terms of organisational performance.

IMPLICATIONS FOR MANAGERS AND ORGANISATIONS

The stereotype threat theory elucidated the connection between gender and organisational performance within the context of a mobile technology organisation, which is predominantly female-dominated. By understanding and addressing this phenomenon, organisations can strive for gender equality and create an inclusive environment that maximises all employees' performance, regardless of gender. Managers should play a crucial role in promoting gender equality and fostering an inclusive work environment that enhances the productivity and performance of all employees, irrespective of their gender. To achieve this, managers should first educate themselves about the importance of gender equality and the benefits it brings to the organisation. They should then actively work towards eliminating any biases or discriminatory practices within the workplace. This can be done by implementing policies and procedures that promote equal opportunities for career advancement, providing training and development programs that address gender-related issues, and ensuring that all employees are treated fairly and respectfully. Additionally, managers should encourage open communication and create a safe space for employees to voice their concerns or experiences related to

gender inequality. By taking these steps, managers can create a work environment that values diversity and empowers all employees to reach their full potential.

LIMITATIONS AND FUTURE STUDIES

Given the small sample size of 50 respondents, it is crucial to consider the limitations of generalising the findings to the entire mobile technology sector in South Africa. To ensure more accurate and reliable results, expanding the sample size by including a larger and more diverse group of individuals is recommended. Additionally, conducting further research with a larger sample encompassing various departments and levels within the organisation would enable a more comprehensive understanding of the role of gender in improving the level of performance of mobile technology organisations. This would provide a clearer picture of the overall trends and patterns, allowing for more informed decision-making and targeted interventions.

RECOMMENDATIONS

The findings of this study indicate a notable variance in organisational performance between gender groups. Managers should acknowledge and address this disparity to ensure a more equitable and efficient work environment. To bridge this gap, managers should consider implementing diversity and inclusion initiatives that promote equal opportunities for all employees, regardless of gender. This may involve conducting regular performance evaluations to identify any biases or barriers hindering the success of certain gender groups within the organisation.

Furthermore, managers should strive to create a culture of transparency and open communication within the workplace. By fostering an environment where employees feel comfortable discussing their concerns and experiences, managers can gain valuable insights into the factors contributing to the performance gap between gender groups. This can help develop targeted strategies and interventions to support the professional growth and development of all employees, irrespective of their gender.

FUTURE RESEARCH STUDIES

In future research studies, it is recommended that the specific factors influencing the organisational performance differences between gender groups be delved deeper into. This may involve exploring the impact of leadership styles, work assignments, training opportunities, and promotion practices on the career progression of male and female employees. Additionally, researchers could investigate the role of implicit biases and stereotypes in shaping performance evaluations and advancement opportunities within the organisation. By gaining a more comprehensive understanding of these factors, organisations can implement evidence-based strategies to promote gender equality and enhance overall organisational performance.

REFERENCES

Ali, M., Kulik, C., & Metz, I. (2009). The impact of gender diversity on performance in services and manufacturing organizations. *Academy of Management Proceedings,* 1–8.

Alsafadi, Y., & Altahat, S. (2021). Human resource management practices and employee performance: The role of job satisfaction. *Journal of Asian Finance Economics and Business*, *8*, 519–529.

Benn, S., Abratt, R., & O'Leary, B. (2016). Defining and identifying stakeholders: Views from management and stakeholders. *South African Journal of Business Management*, *47*(2), 1–11.

Bogdan, T., & Diaconu, R-I. (2020). Gender influences on organizational culture. *Cross Cultural & Strategic Management*, *22*(1), 17–26.

Conțu, E. G. (2020). *Organizational performance – theoretical and practical approaches: Study on students' perceptions. P*roceedings of the 14th International Conference on Business Excellence, 398–406.

Creswell, J. W., & Creswell, J. D. (2017). *Research design: qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.

Doval, E. (2020). Organizational performance by the process of knowledge creation. *Review of General Management*, *32*(2): 15–28.

Dragomir, C., & Pânzaru, S. (2014). Managerial performance. *Review of General Management*, 19 (1): 58–60.

E-Vahdati S., Zulkifli N., & Zakaria Z. (2018). A moderated mediation model for board diversity and corporate performance in ASEAN countries. *Sustainability*, *10*(2), 1–20.

Ferrary, M., & Déo, S. (2021). Gender diversity and firm performance: What organization layer matter? *Academy of Management*, 1–43.

Geraldes, D., Riedl, A., & Strobel, M. (2020). *Gender differences in performance under competition: Is there a stereotype threat shadow?* Bonn: IZA – Institute of Labor Economics.

Gutterman, A. S. (2020). *Organizational performance and effectiveness*. Retrieved from https://www.researchgate.net/publication/372935897_Organizational_Performance_and_ Effectiveness.

Hing, L. S. S., Sakr, N., Sorenson, J. B., Stamarski, C. S., Caniera, K., & Colaco, C. (2023). Gender inequities in the workplace: A holistic review of organizational processes and practices. *Human Resource Management Review*, 33 (3): 100968.

Hoogendoorn, S. Oosterbeek, H., & Van Praag, M. (2013). The impact of gender diversity on performance of business teams: Evidence from a field experiment. Havard: Management Science.

Iriberri, N., & Rey-Biel, P. (2017). Stereotypes are only a threat when beliefs are reinforced: On the sensitivity of gender differences in performance under competition to information provision. *Journal of Economic Behavior & Organization*, 135: 99–111.

Joseph-Obi, C., & Nelson Arugu, O. (2019). The impact of workers training on the organizational performance of the staff of the ministry of labour and productivity. Port Harcourt. Ife PsychologIA, 27 (2): 235 -266.

Joshi, R. (2017). Does gender diversity improve firm performance? Evidence from India. JustJobs Network Inc.

Latu, I., & Mast, M. S. (2015). The effects of stereotypes of women's performance in male-dominated hierarchies: stereotype threat activation and reduction through role models. Camden, USA: Rutgers University.

Long, B. (2022). Factors affecting organizational performance: A study on four factors: motivation, ability, roles, and organizational support. *Journal of Social Sciences and Humanities*, *1*(4): 1–15.

Luo, Y., Huang, Y., & Wang, S. L. (2011). Guanxi and organizational performance: A meta-analysis. *Management and Organization Review*, *8*(1), 139–172.

Mabai, Z., & Hove, G. (2020). Factors affecting organisational performance: A case of a human settlement department in South Africa. *Open Journal of Business and Management*, 8, 2671-2686.

Macpherson, M. (2001). Performance measurement in not-for-profit and public-sector organisations. *Measuring Business Excellence*, *5*(2), 13–17.

Stamarski, C. S., & Hing, L. S. S. (2015). Gender inequalities in the workplace: The effects of organizational structures, processes, practices, and decision makers' sexism. *Frontiers in Psychology*, *6*, 1–20.

Tabassum, N., & Nayak, B. S. (2021). Gender stereotypes and their impact on women's career progressions from a managerial perspective. *IIM Kozhikode Society & Management Review*, *10*(2), 192–208.

Tahir, S. (2020). *Organizational performance: What it is and how to measure and improve it*. Retrieved from https://www.ckju.net/en/organizational-performance-what-it-is-how-to-measure-and-improve-it

Taylor, N., & Peens, D. F. P. (2017). *Gender diversity and corporate performance in South African listed companies*. 5th International Conference on Management, Leadership and Governance. Wits Business School, Johannesburg, South Africa.

Turi, J. A., Khastoori, S., Sorooshian, S., & Campbell, N. (2022). Diversity impact on organizational performance: Moderating and mediating role of diversity beliefs and leadership expertise. PLoS One, 17(7).

Uğurlu, O. Y., & Kurt, M. (2016). The impact of organizational learning capability on product innovation performance: Evidence from the Turkish manufacturing sector. *Emerging Market Journal*, *6*(1), 69–84.

SSIRC 2024-021

RISK DISCLOSURE IN ANNUAL REPORTS OF SOUTH AFRICAN PUBLIC UNIVERSITIES

I. Langton
North-West University, South Africa

E. G. Lindeque
North-West University, South Africa

Abstract

Risk disclosure is critical for effective decision-making by stakeholders in organisations. Detailed risk disclosure practices are integral to South African universities in achieving their governance, operational, and strategic objectives. Although risk disclosure is a well-studied notion, most studies investigate this concept in financial institutions. Therefore, it is imperative that risk disclosure by South African universities be investigated. Using the Department of Higher Education and Training (DHET) regulations and King IV risk disclosure practices, a document analysis was conducted on 18 annual reports covering the 2015, 2019, and 2022 financial years of six selected universities. A non-probability, purposive sampling technique was employed, and the universities were purposively selected within the traditional and university of technology categories. A risk disclosure index was compiled from the DHET regulations and King IV requirements and was used as a data collection and analysis tool. The study revealed that the universities were disclosing most of their risk management practices, showing improved disclosure since the publication of the 2016 King IV report. Moreover, these universities incorporated the DHET regulations into their reporting on information relating to the delegation of responsibilities to management by university councils, the governance of risks, and disclosures on the audit and risk committee functions. However, it was found that most reports lacked the disclosure of information on administration-related risks, their risk approach, and the role of relevant parties in the combined assurance. The findings of the study are important to academics, who may replicate this study in other sectors to confirm the validity of the findings. Regarding practical implications, these findings are significant in that they assist risk professionals in understanding risk management requirements and disclosure boundaries within the university context.

Keywords: Risk, risk disclosure, public universities, annual reports, risk management, King IV

INTRODUCTION

The challenges, risks, and uncertainties faced by public universities in South Africa are caused by inadequate risk disclosure that allows improper risk management and governance (Moloi & Adelowatan, 2018). In response, institutions such as the DHET and the Council on Higher Education (CHE), which is the supreme oversight body for the quality assurance of all universities in South Africa, have provided guidelines on risk disclosure processes to be adopted by these institutions

(Mhlanga et al., 2022). Furthermore, organisations such as the Institute of Risk Management South Africa (IRMSA) and the Institute of Directors (IoD), among others, supported by the Higher Education Act (HEA), the DHET, and the King reports, have contributed to improved risk disclosure practices (Du Plessis et al., 2022). Although these efforts have triggered various stakeholders to propose approaches to risk management processes, these have not resulted in a uniform risk disclosure structure that universities should adopt (Moloi, 2017). This absence of a commonly approved risk disclosure approach has led some universities to report only financial risks in, and altogether omit qualitative risks from, their reports.

The significance of risk disclosure by higher education institutions (HEIs) has been documented by academics, regulators, and practitioners (Carnegie et al., 2022). Despite this rising appreciation, there is an apparent shortage of longitudinal studies investigating the degree to which South Africa's HEIs adopt and disclose their risk management practices. Moreover, most studies on risk disclosure have focused mainly on profit-making organisations (Elmagrhi & Ntim, 2023). South African universities play an important part in the political, economic, and social success of the country (Chakabva et al., 2020). Such success is realised by producing a proficient and capable labour force that contributes to the economic, political, and social functions of the country (Mbithi et al., 2020). Therefore, stakeholders are interested in witnessing universities continuing to add value to the economy. However, with emerging challenges such as the digital shift, artificial intelligence (AI), politician meddling, leadership crises, high student debt, and the future of these universities being questioned and uncertain (Moloi, 2017), Chakabva et al. (2020) note that these institutions are now operating in a dynamic and complex environment because of globalisation, technological advances, and economic challenges. While most South African HEIs are on a transformational path, they are also facing challenges such as reduced government funding, reputational risk, e-learning, and student activism, among other factors (Dubihlela & Ezeonwuka, 2018). Accordingly, as more stakeholders become involved, the demand for risk disclosure from universities is increasing. Consequently, when risk disclosure practices are unsuccessfully managed, they can lead to poor governance (Sityata et al., 2021).

The HEA obligates South African HEIs to disclose their operational information and activities. Such information includes risk management practices, accountability, and transparency. In South Africa, listed companies are mandated by the Companies Act and the Johannesburg Stock Exchange (JSE) listing requirements to adopt the King IV recommendations (Institute of Directors, 2022). South African universities are not protected against the risks emanating from different operational environments (Botha, 2019). Hence, they are also obligated to incorporate the practices recommended by the King IV code. In this regard, universities are expected to report information on risk management in their yearly reports (Moloi, 2016). While King IV guidelines have no legislative power, the DHET mandates universities to report their risk management practices, conforming with the reporting guidelines (Institute of Directors, 2022).

Most risk disclosure studies in South Africa have been carried out in other business sectors, such as the mining, financial, and insurance sectors, among others (Moloi & Iredele, 2020). Consequently, the appropriateness of their outcomes for universities is debatable. Previous studies have examined risk

disclosure practices by universities worldwide (Brusca et al., 2018; Carnegie et al., 2022; Sassen & Azizi, 2018). However, these studies seem to be impaired by several noticeable limitations. Firstly, the conclusions reached by these studies are considered not applicable to South African universities, as they follow disclosure guidelines that are not used in South Africa. Secondly, none of these other studies investigate risk disclosures by South African public universities by analysing post-COVID-19 annual reports. Existing studies on risk disclosure in HEIs are rare for South African public universities. The previous studies (Moloi, 2016) on risk disclosure by public universities were conducted before the publication of King IV and were based on previous King reports. Consequently, this study sought to address these gaps and make new contributions to the body of knowledge in the field of risk management. Hence, this study addressed these gaps by exploring risk disclosure practices of selected public universities in South Africa for several reasons. Firstly, public universities are encouraged to adopt risk disclosure practices and are significant contributors to risk management practices in South Africa (Moloi, 2017). Moreover, public universities stimulate research and are usually the pioneers in sharing knowledge with students and other stakeholders; hence, they should always be practical rather than theoretical (Moloi & Iredele, 2020). Lastly, HEIs are essential for the growth of the South African economy, and risk disclosure enhances public confidence in these institutions.

Therefore, the study addressed the lack of uniform risk disclosure practices in South African public universities, highlighting the importance of effective risk management for these institutions. Various stakeholders have called for improved risk disclosure to ensure better governance and management. While efforts have been made to provide guidelines and regulations, there is still a lack of consistency among universities in disclosing risks, with some focusing only on financial risks. Public universities in South Africa play a crucial role in the development of the country, and it is essential for them to effectively manage risks and disclose them transparently. This study analysed risk disclosure practices of selected public universities in South Africa, comparing them to the DHET regulations and King IV recommendations for effective risk management. This study attempted to answer the resulting research questions:

- What risk disclosure practices could be adopted by South African public universities as recommended by the DHET regulations?

- To what extent is the risk disclosure of these universities aligned with risk disclosure practices recommended by King IV for effective risk management?

To answer these questions, a document analysis using the DHET regulations and King IV code was carried out on 18 annual reports covering the 2015, 2019, and 2022 financial years of six purposively selected universities. The main finding was that these universities incorporated risk management as an important strategy in their operations. On average, these universities observed the DHET guidelines and regulations when reporting on information involving the delegation of responsibilities to management by university councils and to the governance of risks and disclosures on the audit and risk committee functions. However, the study also revealed a lack of disclosure of information about administration-related risks, even though the HEA had been in place for more than 25 years. This could be attributed to revisions that were always added to the Act, causing some of the regulations to

be omitted or completely disregarded. Most of the King IV recommendations on risk governance and management practices were incorporated in the annual reports of the observed HEIs. Overall, the study found that while universities followed the DHET guidelines in certain aspects of risk management reporting, there was a lack of disclosure on administration-related risks. However, most of the King IV recommendations on risk governance and management practices were incorporated into the universities' annual reports. Further research is needed to better understand and improve risk disclosure practices in South African public universities.

BACKGROUND

South African Public Universities

South African universities are grouped into three categories: traditional universities that offer mostly theoretical degrees, universities of technology that represent former technikons and offer technology-oriented curricula, and comprehensive universities that offer both theoretical and technological qualifications (Moloi, 2019). Table 1 illustrates these categories.

Table 1: South African public universities

Comprehensive universities	Traditional universities	Technology universities
Nelson Mandela University	North-West University	Cape Peninsula University of Technology
University of Johannesburg	Rhodes University	Central University of Technology
University of Mpumalanga	Sefako Makgatho Health Sciences University	Durban University of Technology
University of South Africa	University of Cape Town	Mangosuthu University of Technology
University of Venda	University of Fort Hare	Sol Plaatje University
University of Zululand	University of the Free State	Tshwane University of Technology
Walter Sisulu University	University of Limpopo	Vaal University of Technology
	University of KwaZulu-Natal	
	University of Pretoria	
	University of Stellenbosch	
	University of the Western Cape	
	University of the Witwatersrand	

Source: Moloi, 2016

Figure 1 presents the governance structure of a university as recommended in the HEA. University councils, selected by the Minister of Higher Education, manage South African universities. The university council appoints a chancellor as its head, and all these institutions should establish the structures as depicted in Figure 1.
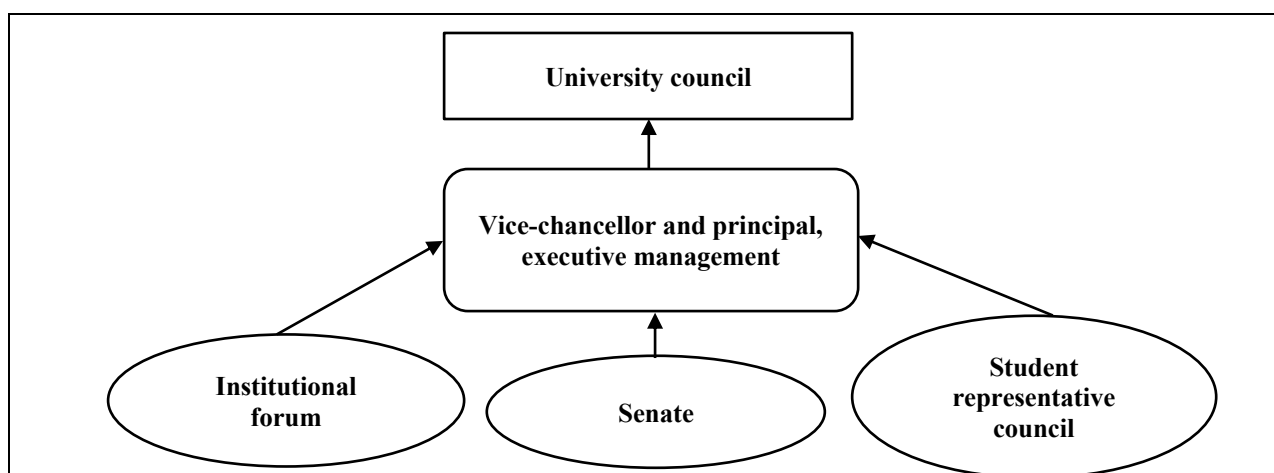
Figure 1: University governance structure
Source: DHET, 2020

The university council is the central body of the institution. Its members are selected by the Minister of Higher Education, to whom they report. It should consist of not more than 30 members, comprising executive officers, other employees of the institution, students, and external members. The senate is accountable for regulating matters related to the teaching, research, learning, and academic functions of the institution as delegated by the university council. The vice-chancellor and principal's senior executive team are liable for the management and running of the university; they are appointed by the university council. The student representative council represents the student body and community and resolves student matters. Lastly, the institutional (university) forum advises the university council on matters affecting the institution.

Risk Management

There is no commonly putative definition of risk, but several definitions are acceptable. Risk is defined in terms of uncertainty (Chakabva & Tengeh, 2023). However, Raimo et al. (2022) note that most authors define risk with a recognisable and similar theme. Most risk definitions address the following risk elements: the likelihood of an event, loss, the trigger or cause of the event, and its impact on the organisation (Lokuwaduge & De Silva, 2022). These views are confirmed by Qanga and Schutte (2021), who also highlight the ambiguity of an event and its impact. Moloi and Adelowatan (2018) assert that risk exists due to the decision-maker's lack of knowledge of the imminent event and its potential impact when realised. Furthermore, when losses or risks exist, stakeholders tend to require information from organisations to make informed decisions (Chakabva et al., 2020). Risk, in this study, is defined as uncertainty about the occurrence of a loss. Organisations are confronted by various risks emanating from different factors beyond their control (Weber & Müssig, 2022). Risk management is the systematic procedure of recognising, assessing, and developing responses to address the risk that could potentially affect the strategic objectives of the organisation (Chakabva et al., 2020). Every organisation is subject to unforeseen circumstances that could influence its operations, reputation, and continuity. To ensure readiness for these disruptions, organisations develop risk mitigation and business continuity plans to address risks and their severity (Institute of Directors, 2021). Most

organisations face risks emanating from operational, strategic, financial, and compliance environments, among others (Sityata et al., 2021). Universities are not immune to such risks. Therefore, universities are required to develop risk management strategies to cope with uncertainties. To organise risk, some universities have adopted risk-organising strategies from other business sectors. These strategies include using risk assessment tools, risk identification, mitigation, and risk avoidance. Risk management by universities is important, as the function permits better resource allocation and improves transparency (Ng, 2020).

Risk Disclosure

Risk disclosure is a dynamic process requiring organisation-wide involvement (Hassanein, 2022). Grobler (2017) posits that risk disclosure is the responsibility of the whole organisation to communicate risk to both internal and external stakeholders. It is the vehicle for communicating the value of the risk function to an organisation (Aras et al., 2021). Therefore, risk management processes in an organisation must communicate risk developments before they become incidents (Brusca et al., 2018). Disclosure allows for proactive risk management in organisations (Saggar et al., 2023). Abhayawansa and Adam (2021) postulate that risk disclosure is communicating performance data and real-time risk to stakeholders. Hassanein (2022) advises that risk disclosure should be executed consistently; its frequency relies on the stakeholders' reporting requirements (Hassanein, 2022; Saggar et al., 2023). Reporting regularity can be daily, monthly, quarterly, biannually, or yearly, depending on the regulations and policies in place (Abhayawansa & Adams, 2021).

Higher Education Act, King IV, and Risk Disclosure by South African Universities

The HEA mandates universities in South Africa to disclose information pertaining to their operations, performance, and risk-organising activities (Grobler, 2017). Universities use annual reports to interpret information for stakeholders to allow them to make well-informed decisions. Risk reporting, therefore, forms part of the annual reports (Sityata et al., 2021). Moloi and Iredele (2020) affirm that the information should include risk disclosure for accountability and transparency. King IV is a set of recommended, voluntary practices (Institute of Directors, 2022). It was envisaged to be implemented in all organisations, regardless of their type of incorporation (Brusca et al., 2018). Moreover, King IV expects the university council to report on its obligations concerning risk management procedures and practices. However, the university council has the option to choose which King IV risk disclosure recommendations to include in the reports. Most universities view risk disclosure practices with scepticism, and their relevance is disputed (Moloi et al., 2017; Mukuka et al., 2021). Furthermore, those universities that practise risk disclosure often adopt underdeveloped risk disclosure practices (Moloi & Adelowotan, 2018). Therefore, this study investigated risk disclosure practices of HEIs in South Africa.

METHOD

Research Approach and Design

This study adopted a document analysis approach using an exploratory research design. Document analysis incorporates qualitative data or information and tries to recognise essential meanings or trends. Document analysis was preferred in this study because it is an easily understood and low-cost research method. In addition, Elmagrhi and Ntim (2023) assert that it is very useful for analysing historical data, particularly for disclosing risk trends over time.

Sample Size and Sampling Technique

The sample in this study comprised six South African public universities. A non-probability sampling tool was applied, and the universities were purposively selected from the traditional university and university of technology categories. The selection of traditional universities and universities of technology was based on the disclosure challenges they were facing. The media is awash with negative information regarding the risk reporting of these universities. Purposive sampling is best used when the study aims to focus in-depth on relatively small samples (Mitchell, 2018). The sample was divided into three universities per category and examined over three years (2015, 2019, and 2022) for data triangulation and understanding of trends over this period. 2015 was selected as the year before the publication of the King IV code, 2019 as the year after the availability of the King IV code, and 2022 as the year following the COVID-19 pandemic.

Table 2: Assessed annual reports by category

University category	Number of annual reports analysed		
	2022	**2019**	**2015**
Universities of technology	3	3	3
Traditional universities	3	3	3
Total	**6**	**6**	**6**

Source: Authors' compilation

Data Source

This study's key data source was publicly accessible annual reports for the six South African HEIs. The names of the six universities were chosen to remain confidential and anonymous for ethical reasons. The list of all registered universities is available on the DHET website. The essential condition for inclusion was that their yearly reports were available. Where there were no reports available to download on a university website, contact was made through either phone calls or emails to request the documents. In addition, risk and audit committee reports were used to supplement the primary data in the annual reports.

Data Collection and Analysis

A risk disclosure index was compiled from the DHET regulations and King IV requirements, and it was used to collect data. It was also used to analyse and determine the amount of information disclosed in the various reports. Thus, the index was considered an important means to unearth the information reported in the reports as a proxy for current risk management practices. The method followed is aligned with Elmagrhi and Ntim's (2023) study. Moloi (2017) recommends the application of a disclosure measurement index to gain an understanding of the level of organisational risk management practices through the information specified in the reports. Jia and Li (2022) view the index as an effort to assess and evaluate risk management practices. This is in alignment with the insight proposed by Ramírez et al. (2022) in that the information obtained from reports through a disclosure measurement index represents the risk practices of the HEIs.

Procedure

Data extracted from the various annual reports were analysed and documented using Microsoft Excel. Deductive coding was employed in the data analysis. This involved a set of predetermined codes from the literature or previous studies. In this study, the codes were developed from the DHET risk practices and the King IV report. (Refer to Appendices A and B.) The index was applied to analyse the scope of risk management practices disclosed by the universities examined. For this purpose, three classes of reporting were formed: full disclosure, partial disclosure, and non-disclosure. A conceptual examination of the reports was then conducted to evaluate whether the university's risk disclosure statement contained the categorised disclosures or not. Universities with full disclosure were marked as incorporated, indicating best risk management and disclosure practices. Those that lacked disclosures on particular items were marked as not incorporated (non), whereas those that lacked detailed disclosure were marked as partial.

Disclosure Measurement Index

The risk disclosure measurement index contained 40 formulated risk management and governance items. (Refer to Appendix A.) The preliminary list of risk statements produced was based on several procedures. Duplicated items and statements were discarded, and similar statements were clustered together and grouped under appropriate captions and headings. After numerous iterative stages of modifications and a preliminary assessment with a sample of reports, the list of 40 risk statements was confirmed. Appendix A contains the detailed risk disclosure measurement index items, and Appendix B displays a few examples of how risk statements were grouped and recorded based on the reports. The index was separated into two main classes. The first class was a list of items in the DHET regulations regarding the governance of risk, risk tolerance, and risk appetite, as well as risk management, assurance, and risk disclosure as the main subheadings. The second section listed items from the King IV recommended disclosure best practices. (Refer to Appendix B.)

RESULTS AND DISCUSSION

Governance of Risk, Risk Tolerance and Risk Appetite

On average, 67% of the sampled universities disclosed information involving the university councils' delegation of responsibilities to management in 2022. This was a marked improvement from 2015. Interestingly, 83% – or five of the universities – reported on GR1 (See Appendices A and B for the description of these codes). These findings may indicate that most HEIs are implementing risk management practices, as recommended by the HEA, for compliance purposes or accountability and transparency issues, as demanded by different stakeholders. Sityata et al. (2021), note that the increased challenges have prompted most universities in South Africa to report on risks as a response. The challenges noted include the rapidly growing regulatory requirements, technological changes, increased public demands, and scrutiny. Another finding indicated that, on average, 67% of the universities in 2022 incorporated items relating to the governance of risks in their reports. The general trend from 2015 to 2022 was an improvement in disclosures related to this recommended practice. However, in 2022, three universities included GR2 and GR5 regulations in their reports. Although there was an improvement, these items remained below average in terms of their incorporation in the reports.

Table 3: DHET regulations on risk governance, risk tolerance, and risk appetite as recorded in the 18 annual reports for the years 2015, 2019, and 2022

DHET regulations	2022			2019			2015		
	Incorporated	Partial	Non	Incorporated	Partial	Non	Incorporated	Partial	Non
	%	%	%	%	%	%	%	%	%
Category: Annual report disclosure of information relating to the delegation of responsibilities to management by council (DR)									
DR1	83	17	0	33	17	50	17	0	83
DR2	67	33	0	33	17	50	17	33	50
DR3	50	17	33	17	33	50	0	17	83
DR4	67	33	0	50	33	17	0	0	100
Average	**67**	**25**	**8**	**33**	**25**	**42**	**8.5**	**12.5**	**79**
Category: Incorporation of statements relating to the governance of risks within higher education institutions (GR)									
GR1	67	0	33	50	33	17	0	33	67
GR2	50	17	33	17	50	33	33	0	67
GR3	83	17	0	50	33	17	0	17	83
GR4	83	0	17	50	33	17	17	0	83
GR5	50	33	17	33	17	50	0	33	67
Average	**67**	**13**	**20**	**40**	**33**	**27**	**10**	**17**	**73**
Category: Incorporation of statements relating to the relevant committee of the council (CC)									
CC1	83	17	0	50	33	17	17	0	83
CC2	83	0	17	33	50	17	0	33	67
CC3	67	33	0	50	17	33	33	0	67
CC4	33	50	17	33	50	17	17	0	83
Average	**67**	**25**	**8**	**41**	**38**	**21**	**17**	**8**	**75**
n (sample size) = 6. Refer to Appendix A for the meaning of these various regulations.									

Source: Authors' compilation

On average, an improvement in the incorporation of risk management practices in the information on the relevant committee charged with the governance of risk by the sampled universities was witnessed. A marked improvement, on average, from 2015 (17%) to 2022 (67%) was noted in reporting to risk and audit committees. Regarding CC1, it was observed that, in 2022, five of the universities disclosed this information. Disclosures were also observed regarding the information relating to CC2 (five universities in 2022, up from none in 2015). Despite the improvement in committee practices, non-disclosures were detected in the information concerning CC4. Two of the universities incorporated this item in 2022. The inability to incorporate CC4 items might expose councils to the retention of ineffective committee members, eventually exposing the institution to risk and adversely influencing its risk management strategies.

Previous studies (Brusca et al., 2018; Sityata et al., 2021) concur with these findings. The improvement is attributed to the advent of integrated reporting (IR) as an essential practice of corporate disclosure in South Africa. IR has improved university internal integration and management (Adhikari et al., 2023). Thus, these institutions now better understand their main value drivers and have a more systematic risk analysis, enhanced strategic resource plans, and reduced functional and departmental siloing. This has resulted in universities receiving training on risk disclosure, thereby improving their governance, risk tolerance, and risk appetite disclosures. Moreover, South Africa's big six accounting and auditing firms have specialised teams that offer governance risk disclosure advisory services for the HEIs of the country.

Risk Management, Assurance and Risk Disclosure

Although there was an improvement in disclosure in all three categories from 2015, the rate remained marginal. Reporting on combined assurance improved from an average of 10% in 2015 to 33% in 2022. On average, the disclosure of information related to risk approach increased from 10% in 2015 to 47% in 2022. Of particular interest, the reports disclosed little information related to administration risk. On average, 17% of universities incorporated information relating to administration-related risks in 2022 from an average of 3% in 2015. This category includes risks related to AR1, AR2, AR3, and AR4, where one university reported on AR1, AR2, and AR3 and two universities out of the six included AR4 in their 2022 reports. All the sampled universities failed to disclose information for AR5 for the three reporting periods.

Table 4: DHET regulations risk disclosure measurement index on risk management, assurance, and risk disclosure as recorded in the 18 annual reports for the years 2015, 2019, and 2022

DHET regulations	2022			2019			2015		
	Incorporated	Partial	Non	Incorporated	Partial	Non	Incorporated	Partial	Non
	%	%	%	%	%	%	%	%	%
Category: Disclosure of information in annual reports relating to the role of relevant parties in combined assurance (CA)									
CA1	50	17	33	33	17	50	17	0	83
CA2	33	17	50	33	17	50	17	33	50
CA3	33	50	17	33	0	67	17	0	83
CA4	17	33	50	0	17	83	0	17	83
CA5	33	17	50	17	33	50	0	0	100

DHET regulations	2022			2019			2015		
	Incorporated %	Partial %	Non %	Incorporated %	Partial %	Non %	Incorporated %	Partial %	Non %
Average	**33**	**27**	**40**	**23**	**17**	**60**	**10**	**10**	**80**
Category: Disclosure of information in annual reports relating to risk approach (RA)									
RA1	67	33	0	33	17	50	17	33	50
RA2	50	17	33	33	0	67	17	0	83
RA3	33	17	50	17	33	50	0	0	100
RA4	50	33	17	33	17	50	17	0	83
RA5	33	0	67	17	0	83	0	0	100
Average	**47**	**20**	**33**	**27**	**13**	**60**	**10**	**10**	**80**

Category: Disclosure of information in annual reports relating to administration-related risks (AR)									
AR1	17	0	83	0	33	67	0	17	83
AR2	17	33	50	17	33	50	0	33	67
AR3	17	33	50	17	33	50	0	33	67
AR4	33	0	67	17	50	33	17	0	83
AR5	0	33	67	0	33	67	0	17	83
Average	**17**	**20**	**63**	**10**	**36**	**54**	**3**	**20**	**77**

n (sample size) = 6. Refer to Appendix A for the meaning of these various regulations.

Source: Authors' compilation

This lack of or partial disclosure may be because of an unwillingness to consider risks related to procurement, leadership, and management issues. These matters are primarily regarded as of inside strategic significance and have less importance for outside stakeholders, who happen to be more concerned about financial and operational risks (Caputo et al., 2021). Moreover, as established in prior studies (Adhikariparajuli et al., 2021; Ntjane, 2022), most of the risk disclosure statements were impartial/indifferent, followed by positive information, with a few providing negative information. This outcome is consistent with proprietary cost theory perceptions, where institutions do not disclose information that could lead to detrimental effects on reputation and future cash-flow reduction (Nayak & Kayarkatte, 2022). However, hiding negative information could be disadvantageous to institutions, as risk information offered may be assumed to be undependable and prejudiced and, thus, not valuable to stakeholders (Hsiao et al., 2023).

These findings contradict previous studies (Adhikariparajuli et al., 2021; Hsiao et al., 2023), which found that most institutions disclosed most of their administration risks, particularly in developed countries. Ntjane (2022) noticed that failure to disclose risks associated with administration risks had detrimental effects on HEIs in South Africa. We have seen a rise in corruption issues, leadership squabbles, procurement fraud, and disgruntled students. The media covers such malicious practices by our local universities (Ntjane, 2022); yet the annual reports have not addressed such risks. Stakeholders expect issues such as institutions put under administration, leadership challenges, procurement collusion, and corruption to be reported on in integrated/annual reports. This non-disclosure of such information can be attributed to a lack of risk planning, poor strategy-risk integration, a lack of accountability by administration, an absence of oversight, and a poor risk culture.

University councils and executives are expected to disclose their risk management practices in their reports. Their institutions must remain compliant with an increasing array of stakeholders and regulations. Failure to address these disclosure compliance issues could lead to reputational risk, loss of funding, and – in extreme cases – litigation against the executive. Nayak and Kayarkatte (2022) assert that risk disclosure practices for risks related to administration enable HEIs to build a path to attaining their intended strategic goals. Furthermore, these allow universities to have a culture of risk oversight and to operate with the highest integrity (Ntjane, 2022). Therefore, it is crucial for HEIs in South Africa to ensure that the responsibility for risk disclosure is understood and embedded in the best risk management practices and culture in the institutions.

Risk Governance Structure

Table 5 reveals that HEIs in this study reported on issues about their risk governance structure. It illustrates that the institutions recognised and set up risk governance structures, such as risk management and audit committees. On average, 89% of the universities in 2022 disclosed risk governance structures, indicating an improvement from 50% in 2015 to 83% in 2019. Notably, in 2019 and 2022, all the universities in this sample reported information concerning RG2. This implies that universities formed either an audit committee or a risk committee within their risk governance structures.

Table 5: King IV practices related to risk governance structure disclosures as recorded in the 18 annual reports for the years 2015, 2019, and 2022

King IV practices	2022			2019			2015		
	Incorporated	Partial	Non	Incorporated	Partial	Non	Incorporated	Partial	Non
	%	%	%	%	%	%	%	%	%
RG1	83	17	0	67	33	0	50	17	33
RG2	100	0	0	100	0	0	33	17	50
RG3	83	17	0	83	0	17	67	0	33
Average	**89**	**11**	**0**	**83**	**11**	**6**	**50**	**11**	**39**
n (sample size) = 6. Refer to Appendix B for the meaning of these various practices.									

Source: Authors' compilation

Regarding RG1 and RG3, five of the universities disclosed these practices in their reports. These outcomes suggest that South African HEIs are moving towards an integrated disclosure practice (Tiron-Tudor et al., 2020). This policy guarantees the provision of high-quality reports. The results are vital evidence that the stakeholders of the institution are monitoring and controlling its risks and organising them against preset strategies (Leopizzi et al., 2020). These results support Mukuka et al. (2021), who reported that some HEIs embraced integrated disclosure within their structures. The practice mentioned above may be attributed to pressure from stakeholders who want all issues on governance integrated into annual reports. By disclosing and making governance risks transparent, the institutions provide stakeholders with an indication of how they function. This promotes public trust and improves the credibility of the (Elmagrhi et al., 2021).

Compliance, transparency, and accountability are also factors contributing to the disclosure of risk governance structures at universities. Increased disclosures related to transparency of the governance and management of the institutions make it easier for stakeholders to make informed decisions. These also reduce the likelihood of misuse and manipulation of the financial resources of the HEIs. Furthermore, engaging in accountability practices can enhance the congruence of the risk culture and goals of the university within the community, enabling sustainable operations by enhancing the goodwill and reputation of the institution. In a nutshell, more commitment to risk disclosure practices could have substantial liquidity (working capital), investment (capital budgeting), and financing (capital structure) implications. Therefore, these disclosures can be an effective strategy in addressing this information asymmetry and gaining the support of essential stakeholders of the institution, such as investors, regulators, staff, and government.

Risk Management Practices

Following the publication of the King IV code in 2016, the reporting on risk management practices by South African universities improved in 2022, with an average of 80% compliance. Most universities included RM3 in their annual reports, indicating that they had policies in place to assess and manage risks. However, some universities still lagged in reporting other critical risk management practices, such as RM5, RM6, and RM9, possibly due to a slow adoption of best practices.

Table 6: King IV practices related to risk management practices disclosures as recorded in the 18 annual reports for the years 2015, 2019, and 2022

King IV practices	2022			2019			2015		
	Incorporated	Partial	Non	Incorporated	Partial	Non	Incorporated	Partial	Non
	%	%	%	%	%	%	%	%	%
RM1	83	17	0	67	33	0	33	17	50
RM2	83	0	17	50	33	17	33	17	50
RM3	100	0	0	67	0	33	50	17	33
RM4	83	17	0	67	33	0	50	33	17
RM5	67	33	0	50	33	17	33	50	17
RM6	67	33	0	50	17	33	33	17	50
RM7	83	0	17	67	0	33	50	33	17
RM8	83	17	0	67	33	0	50	17	33
RM9	67	0	33	50	17	33	33	17	50
Average	**80**	**13**	**7**	**60**	**22**	**18**	**41**	**24**	**35**
n (sample size) = 6. Refer to Appendix B for the meaning of these various practices.									

Source: Authors' compilation

The importance of risk tolerance and risk appetite in risk management is emphasised, with organisations needing to set acceptable levels of risk. While there have been improvements in reporting on risk tolerance and risk appetite, there is still room for enhancement in evaluating the risks that South African universities are willing to take to achieve their strategic objectives. Sityata et al. (2021) assert that the evaluation, consideration, and monitoring of risk tolerance and risk appetite levels are still

lacking at South African universities. Additionally, these outcomes support Tsvetkov (2020), who reveals that universities struggle to quantify their risk exposure. Despite some shortcomings, universities are gradually incorporating risk management best practices as required by the King IV code. They may be using other measurement indices such as the Deloitte index, the Integrated Reporting Committee (IRC) of South Africa practices, the Committee of Sponsoring Organizations (COSO), the International Integrated Reporting Council (IIRC), the King III code, and the Basel Committee recommendations in their risk management processes. On the positive side, most of the King IV recommendations related to risk governance structure and risk management practices were incorporated in the annual reports of the HEIs. Notably, in 2022, all the universities examined reported information on their respective committees for risk management as having executive members, with the majority being non-executives.

MANAGERIAL IMPLICATIONS

This study was able to provide insights into the risk management disclosure practices by HEIs. Several recommendations were made on how the regulators, governors, council boards, administrators, policymakers, and academics could assist in further enhancing the degree of disclosure at the universities. Qualitative risks related to academic, operational, and senior administrative activities have driven the call for risk-linked evidence to evaluate the future performance of these institutions. Moreover, this study provided interesting implications for risk practitioners. The results of the study submitted that there was an empirical and theoretical accord on the importance of risk disclosure quality. (For example, stakeholders appeared to be better versed in good risk disclosure practices.) Risk professionals in HEIs should identify the various advantages from which their institutions could benefit when reporting on relevant risk matters. They must prioritise the disclosure of all kinds of risks that they encounter in their reports and must avoid using intricate or complex language in statements about risk. They are required to implement risk disclosure in informing stakeholders about the risks their institutions are encountering and how they should mitigate and organise them. HEIs must not use risk disclosure to confuse stakeholders by using impression management, a practice that refers to activities undertaken to coax others into thinking about a notion in a particularly convincing way. Additionally, national and international regulators have pressured both private and public organisations to disclose the diverse types of risks they encounter increasingly. These risks include the bigger threats, such as leadership, governance, environmental, and sustainability matters, which have a bearing beyond one organisation and involve societies or communities. Therefore, as HEIs in South Africa continue to encounter challenges, they would possibly be reviewing their risk disclosure strategies to consider recent events such as leadership crises, audit failures (recently, only eight out of 26 universities had clean audits), corruption, and fraud, and every strategic decision considered should be supplemented by an appropriate risk assessment to recognise possible threats and opportunities.

CONCLUSION

This study explored risk disclosure in the annual reports of six South African public universities. Statements related to a measurement index were based on the DHET regulations and King IV code.

The study addressed the lack of uniform risk disclosure practices in South African public universities, highlighting the importance of effective risk management for these institutions. Various stakeholders have called for improved risk disclosure to ensure better governance and management. While efforts have been made to provide guidelines and regulations, there is still a lack of consistency among universities in disclosing risks, with some focusing only on financial risks. Public universities in South Africa play a crucial role in the development of the country, and it is essential for them to manage risks and disclose them transparently effectively. The study analysed risk disclosure practices in selected public universities in South Africa, comparing them to DHET regulations and King IV recommendations for effective risk management. Overall, the study found that while universities followed the DHET guidelines in certain aspects of risk management reporting, there was a lack of disclosure on administration-related risks. However, most of the King IV recommendations on risk governance and management practices were incorporated into the universities' annual reports.

Several limitations can be considered, which may have implications for further research. For example, this study specifically targeted HEIs in South Africa and was confined to six public universities and 18 reports for three years. A longitudinal study would provide a greater possibility of comprehending the development of risk disclosure by HEIs. The regulations imposed by the HEA and the recommended King IV guidelines were the only codes used in developing the risk disclosure measurement index. It is recommended that future research explore more universities (both public and private) in the South African or African context to extend the generalisability of the results. Moreover, additional reports over a defined period should be included in future studies to allow for further evaluation of the findings. Further studies should be initiated by recommending an outline for risk disclosure standards. Additionally, qualitative studies could be carried out to investigate the insights of different stakeholders into the proposed risk disclosure standards that cover all types of risks. International and other risk disclosure measurement indices, such as the Basel Committee, International Financial Reporting Standards (IFRS), and Deloitte measurement indices, could be considered in future studies. Further research is needed to better understand and improve risk disclosure practices in South African public universities.

REFERENCES

Abhayawansa, S., & Adams, C. (2021). Towards a conceptual framework for non-financial reporting inclusive of pandemic and climate risk reporting. *Meditari Accountancy Research*, *30*(3), 710–738.

Adhikari Parajuli, M., Chhatbar, M., & Hassan, A. (2023). The impact of corporate governance on integrated reporting (IR) quality and sustainability performance: evidence from listed companies in South Africa. *Meditari Accountancy Research*, *31*(4), 1038–1067.

Adhikariparajuli, M., Hassan, A., & Fletcher, M. (2021). Integrated reporting implementation and core activities disclosure in UK higher education institutions. *Administrative Sciences*, *11*(3), 86.

Agarwal, R., & Kallapur, S. (2018). Cognitive risk culture and advanced roles of actors in risk governance: a case study. *The Journal of Risk Finance*, *19*(4), 327–342

Agasisti, T., & Soncin, M. (2020). Higher education in troubled times: on the impact of COVID-19 in Italy. *Studies in Higher Education*, *46*(1), 86–95.

Aras, G., Furtuna, O. K., & Kazak, E. H. (2021). Toward an integrated reporting framework in higher education institutions: evidence from a public university. *International Journal of Sustainability in Higher Education*, *23*(2), 426–442.

Azevedo, G., Oliveira, J., Sousa, L., & Borges, M. F. R. (2022). The determinants of risk reporting during the period of adoption of Basel II Accord: evidence from the Portuguese commercial banks. *Asian Review of Accounting, 5*(7), 177–206

Barac, K., Moloi, T., & Marx, B. (2011). Corporate governance practices at South African higher education institutions: An annual report disclosure analysis. *Journal of Economic and Financial Sciences*, *4*(2), 317–332.

Brusca, I., Labrador, M., & Larran, M. (2018). The challenge of sustainability and integrated reporting at universities: A case study. *Journal of Cleaner Production*, 188, 347–354.

Campbell, F (2023). *What is impression management? Reputation x*. Retrieved from https://blog.reputationx.com/whats-impression-management

Caputo, F., Ligorio, L., & Pizzi, S. (2021). The contribution of higher education institutions to the SDGs – An evaluation of sustainability reporting practices. *Administrative Sciences*, *11*(3), 97.

Carnegie, G. D., Guthrie, J., & Martin-Sardesai, A. (2022). Public universities and impacts of COVID-19 in Australia: risk disclosures and organisational change. *Accounting, Auditing & Accountability Journal*, *35*(1), 61–73.

Chakabva, O., & Tengeh, R. K. (2023). The relationship between SME owner-manager characteristics and risk management strategies. *Journal of Open Innovation: Technology, Market, and Complexity*, 100112.

Chakabva, O., Tengeh, R. K., & Dubihlela, J. (2020). A holistic assessment of the risks encountered by fast moving consumer goods SMEs in South Africa. *Entrepreneurship and Sustainability Issues*, *7*(4), 3321.

Deloitte. (2018). *Significant risks facing higher education: Taking an enterprise approach to risk management*. Retrieved from https://www.deloitte.com/content/dam/Deloitte/za/Documents/public-sector/za_top_risks_higher_education_up_digital.pdf

Di Tullio, P., & La Torre, M. (2022). Sustainability reporting at a crossroads in Italian universities: Is web-based media adoption deinstitutionalizing sustainability reporting? *Administrative Sciences*, *12*(1), 34.

Du Plessis, M., Jansen van Vuuren, C. D., Simons, A., Frantz, J., Roman, N., & Andipatin, M. (2022, January). South African higher education institutions at the beginning of the COVID-19 pandemic: Sense-making and lessons learnt. *Frontiers in Education, 6.* Frontiers Media SA.

Elmagrhi, M. H., & Ntim, C. G. (2023, April). Non-financial reporting in non-profit organisations: the case of risk and governance disclosures in UK higher education institutions. *Accounting Forum, 47*(2), 223–248. Routledge.

Elmagrhi, M. H., Ntim, C. G., Wang, Y., Elamer, A. A., & Crossley, R. (2021). The effect of vice-chancellor characteristics and internal governance mechanisms on voluntary disclosures in UK higher education institutions. *Journal of International Accounting, Auditing and Taxation*, 45, 100428.

Favato, K. J., Neumann, M., Sanches, S. L. R., Branco, M. C., & Nogueira, D. R. (2021). Integrated thinking and reporting process: sensemaking of internal actors in the case of Itaú Unibanco. *Journal of Risk and Financial Management*, *14*(6), 245.

Grobler, A. (2017). Conceptualisation of an ethical risk assessment for higher education institutions. *South African Journal of Higher Education*, *31*(2), 154–171.

Hsiao, P. C. K., Low, M., & Scott, T. (2023). Service performance reporting and principles-based authoritative guidance: an analysis of New Zealand higher education institutions. *Meditari Accountancy Research*, *20*(49), 1–29.

Institute of Directors. (2021). *King report on corporate governance for South Africa*. Johannesburg: Institute of Directors in Southern Africa. Retrieved from http://www.iodsa.co.za/?kingIII

Institute of Directors. (2022). *King report on corporate governance for South Africa*. Johannesburg: Institute of Directors in Southern Africa. Retrieved from http://www.iodsa.co.za/?kingIII

Jia, J., & Li, Z. (2022). Risk management committees and readability of risk management disclosure. *Journal of Contemporary Accounting & Economics*, *18*(3), 100336.

Leopizzi, R., Iazzi, A., Venturelli, A., & Principale, S. (2020). Non-financial risk disclosure: The state of the art of Italian companies. *Corporate Social Responsibility and Environmental Management*, *27*(1), 358–368.

Lokuwaduge, C. S., & De Silva, K. M. (2022). ESG risk disclosure and the risk of green washing. *Australasian Accounting, Business and Finance Journal*, *16*(1), 146–159.

Mbithi, E., Wang'ombe, D., & Moloi, T. (2020). Multi-theoretical perspectives for corporate risk disclosure: a literature review. *International Journal of Critical Accounting*, *11*(2), 125–143.

Moloi, K. C., Mkwanazi, T. S., & Bojabotseha, T. P. (2014). Higher education in South Africa at the crossroads. *Southern African Journal of Accountability and Auditing Research*, *5*(2), 469.

Moloi, T. (2016). Governance of risks in South Africa's public higher education institutions (HEIs). *Investment Management and Financial Innovations*, *13* (2), 226–234.

Moloi, T. (2017). A review of risk management planning and reporting in South Africa's Public Institutions. *International Public Administration Review*, *15*(5), 79.

Moloi, T., & Adelowotan, M. (2018). Exploring the risks disclosed in South African technical vocational education and training colleges' annual reports. *Southern African Journal of Accountability and Auditing Research*, *20*(1), 115–122.

Moloi, T., & Iredele, O. O. (2020). Firm value and integrated reporting quality of South African listed firms. *Academy of Strategic Management Journal*, *19*(1), 1–12.

Mukuka, A., Shumba, O., & Mulenga, H. M. (2021). Students' experiences with remote learning during the COVID-19 school closure: implications for mathematics education. *Heliyon*, *7*(7), e07523.

Nayak, P., & Kayarkatte, N. (2022). Education for corporate sustainability disclosures by higher educational institutions–A quantitative ABCD Analysis. *International Journal of Management, Technology, and Social Sciences (IJMTS)*, *7*(1), 465–483.

Ng, P. T. (2020). Timely change and timeless constants: COVID-19 and educational change in Singapore. *Educational Research for Policy and Practice*, *20*(1), 19–27.

Ntjane, M. R. (2022). Application of King IV principles by audit and risk committees of the top 6 higher education institutions in South Africa. (Doctoral dissertation). University of Johannesburg.

Qanga, E. J., & Schutte, D. (2021). Views from key university stakeholders on risk strategy implementation and disclosure: A case study of South African Universities. *Academy of Accounting and Financial Studies Journal*, *25*(6), 1–12.

Raimo, N., NIcolò, G., Tartaglia Polcini, P., & Vitolla, F. (2022). Corporate governance and risk disclosure: evidence from integrated reporting adopters. *Corporate Governance: The International Journal of Business in Society*, *22*(7), 1462–1490.

Ramírez, M., Rodríguez Ariza, L., Gómez Miranda, M. E., & Vartika. (2022). The disclosures of information on cybersecurity in listed companies in Latin America: Proposal for a Cybersecurity Disclosure Index. *Sustainability*, *14*(3), 13–90.

Saggar, R., Arora, N., & Singh, B. (2023). Financial performance and corporate risk disclosure: the moderating impact of board structure. *Global Business and Economics Review*, *28*(1), 39–61.

Saha, A. K., Al-Shaer, H., Dixon, R., & Demirag, I. (2021). Determinants of carbon emission disclosures and UN sustainable development goals: The case of UK higher education institutions. *Australian Accounting Review*, *31*(2), 79–107.

Sassen, R., & Azizi, L. (2018). Voluntary disclosure of sustainability reports by Canadian universities. *Journal of Business Economics*, *88*, 97–137.

Tirado-Valencia, P., Cordobés-Madueño, M., Ruiz-Lozano, M., & De Vicente-Lama, M. (2021). Integrated thinking in the integrated reports of public sector companies. Evidence and contextual factors. *Sustainability Accounting, Management and Policy Journal*, *12*(2), 330–352.

Tiron-Tudor, A., Oprisor, T., & Zanellato, G. (2020). *Are HEIs' intellectual capital disclosures consistent with the sustainability integrated reporting trend?* Accounting, Accountability and Society: Trends and Perspectives in Reporting, Management and Governance for Sustainability, 191–223.

Tsvetkov, T. (2020). Assessing maturity of the risk management system in higher education institutions. *Бизнес управление* (4), 45–59.

Weber, V., & Müßig, A. (2022). The effect of business strategy on risk disclosure. *Accounting in Europe*, *19*(1), 190–225.

APPENDIX A: RISK DISCLOSURE MEASUREMENT INDEX

DHET regulations: Governance of risk, risk risk tolerance, and risk appetite

Category: Annual report disclosure of information relating to the delegation of responsibilities to management by council (DR)	
Code	Description
DR1	Management has ensured that risk is integrated into the day-to-day activities of the university.
DR2	The university has risk management systems to execute the council's risk strategy.
DR3	The chief risk officer (CRO) has access to the council or its risk committee and executive management.
DR4	The CRO is experienced in strategic, as well as risk-related, matters.
Category: Incorporation of statements relating to the governance of risks within higher education institutions (GR)	
Code	Description
GR1	The council has commented in the integrated (annual) report on the effectiveness of the system and process of risk governance.
GR2	Council has approved the policy and plan for the system and process of risk management.

GR3	The approved risk management policy and plan have been widely distributed across the university.
GR4	Council continually monitors the implementation of the risk management plan.
GR5	Risks taken within the previous year and reported on are within the defined risk tolerance and risk appetite levels.

Category: Incorporation of statements relating to the relevant committee of council (CC)

Code	Description
CC1	Membership of the committee consists of executive members (as invitees) and non-executive members.
CC2	The relevant committee considers risk management policy and plans, and it monitors the risk management process.
CC3	The relevant committee has a minimum of three members who meet at least twice per annum.
CC4	The relevant committee has access to independent experts.

Risk management, assurance, and risk disclosure

Disclosure of annual reports of information relating to the role of relevant parties in combined assurance (CA)

Code	Description
CA1	Internal audit, as the second tier of defence, has provided a written assessment of the effectiveness of risk management and the entire system of internal controls.
CA2	Management (through an enterprise risk management division), as a first line of defence in the combined assurance, has provided assurance that risk management is integrated in the daily activities of the university and that controls are in place.
CA3	The university has an approved combined assurance framework.
CA4	Other external assurance providers, as the third tier of defence, have provided a written assessment of the effectiveness of risk management and the entire system of internal controls.
CA5	The university determines the levels of risk appetite and risk tolerance levels annually.

Disclosure of annual reports of information relating to the risk approach (RA)

Code	Description
RA1	A top-down approach to risk assessment is followed.
RA2	The university follows a systematic system to identify risks, which ensures that risks are documented.
RA3	Risks are ranked for prioritisation.
RA4	The council receives regular risk reports, and it reviews and deliberates on these reports.
RA5	Divergent risks have been raised.

Disclosure of annual reports of information relating to administration-related risks (AR)

Code	Description
AR1	Leadership
AR2	Procurement
AR3	Financial management
AR4	Student affairs
AR5	Institutional governance effectiveness

APPENDIX B: RISK DISCLOSURE MEASUREMENT INDEX BASED ON THE KING IV CODE

King IV recommended practices

Category: Risk governance structure (RG)	
Code	**Description**
RG1	The council should consider allocating the oversight role of risk governance to a dedicated committee or adding it to the responsibilities of another committee, such as the audit committee.
RG2	The committee for risk management should have executive and non-executive members, with the majority being non-executive members.
RG3	If the audit and risk committees are separate, the council should consider one or more members to be a member of both committees for more effective functioning.
Category: Risk management practices (RM)	
Code	**Description**
RM1	The council should treat risk as integral to the way it makes decisions and executes its duties.
RM2	The council should assume the responsibility of governing risk or through a dedicated committee by setting the direction for how risk should be approached and addressed in the university, including the following: the potential positive and negative effects of the risk in the achievement of objectives.
RM3	The council should approve policies that articulate and give effect to its set direction on risk.
RM4	The council should treat risk as integral to the way it makes decisions and executes its duties.
RM5	The council should delegate to management the responsibility to implement and execute effective risk management.
RM6	The council should evaluate and agree on the nature and extent of risks that the organisation is willing to take in pursuit of its strategic objectives, such as approving the risk appetite and risk tolerance of the university.
RM7	The council should consider the need to receive periodic assurance on the effectiveness of risk management.
RM8	The council should exercise ongoing oversight of risk management to ensure the following: ● An assessment of risks and opportunities ● The design and implementation of appropriate risk responses ● The establishment and implementation of business continuity arrangement ● The integration and embedding of risk management in the business activities and culture of the university
RM9	The following should be disclosed concerning risk: ● An overview of the arrangement for governing and managing risks ● Key areas of focus during the reporting period, including objectives, the key risks facing the university, as well as unexpected or unusual risks, and risks taken outside the risk tolerance levels ● Actions that were taken to monitor the effectiveness of risk management and how outcomes were addressed

SSIRC 2024-025

RELIVING HISTORY: EXPLORING MILITARY RE-ENACTORS PARTICIPATION MOTIVES IN SOUTH AFRICA

D. Venter

Vaal University of Technology, South Africa

Abstract

This study sought to explore military re-enactors' participation motives in South Africa. Eight military re-enactors took part in an open-ended interview on their participation motives. Their participation motives were explored through interviews subjected to a thematic analysis that revealed several key themes. A strong interest in military history emerged as a primary motivation for participation, often stemming from familial connections, personal fascination, or a desire for historical learning. Furthermore, the importance of connection and camaraderie with like-minded people, fostering relationships based on a shared interest in military re-enactment, was also significant. A desire to preserve and honour history and heritage, viewing re-enactments as a means of educating others and keeping history alive, also emerged as an important participation motive. Interviewees reflected on the personal lessons and insights gained from their involvement and recognised the educational value of military re-enactment not only to themselves but also to people who attend such events. Challenges also emerged such as historical accuracy, emphasising the need to balance authenticity and practicality when military re-enactments are done. Overall, military re-enactors are driven by various motives such as the appreciation for history, camaraderie, and educational experiences, striking a balance regarding accuracy, realism and affordability. The findings contribute to the knowledge base on the participation motives of military re-enactors in South Africa.

Keywords: Military re-enactors, participation motives, military re-enactment

INTRODUCTION

According to Venter (2017:1), many of history's most significant events have global implications for national defence and conflict. Human history has many examples of military conflicts, the outcomes of which can usually be boiled down to several key battles. Examples of land battles include Saratoga (1777) and Gettysburg (1863) in North America; Waterloo (1815) and Normandy landing sites (1944) in Europe; as well as Isandlawana (1879), Majuba Hill (1881) and Spioenkop (1901) in Africa. Various authors (Šantrůčková, Salašová, Sokolová, & Sedlacek, 2020; Wang, DiMeolo, & Du, 2021) have noted the importance of battlefields towards preserving military heritage as well as supporting the tourism industry. A modern supplemental visitor experience at battlefields takes the form of battlefield or military re-enactment. González-Álvarez, Alonso-González, and Rodríguez-Hernández (2022) believe that re-enactment(s) offer(s) a new, interdisciplinary approach to experiencing history, highlighting its social and pedagogical dimensions and examining its methodological approaches alongside museums and memorial sites. Not well known but of equal importance are the military re-

enactors (henceforth just referred to as re-enactors) who participate in such re-enactments of historic battles. Venter (2017) identified re-enactors as an important pillar that supports military heritage tourism. Perry (2020:152) states that re-enactment(s) has/have played a vital, albeit unacknowledged, role in what is remembered. Not only do these re-enactors travel to perform re-enactments, but they also attract military heritage tourists. Venter (2017) further explained that battlefield re-enactments are carried out by re-enactors who seek to recreate past battles and, in doing so, not only preserve military heritage but bring it to life. This study seeks to address a gap in the literature by exploring military re-enactors' participation motives in South Africa.

LITERATURE REVIEW

Military Re-enactment

Military re-enactment event studies have seen an uptake in academia in the past two decades with various authors (Brædder, 2018; Fu, Zhang, Lehto, & Miao, 2018; Glenn, 2021; Schaffer, 2020) investigating the practice. According to González-Álvarez et al. (2022:49), the impact of military re-enactment festivals (and events) has grown steadily in recent years, involving more and more participants and the public. Likewise, the debate regarding military re-enactment is becoming increasingly common among scholars who point out that such endeavours allow re-enactors the opportunity to investigate history and its representations (Zurné, 2023:437). Classified as heritage events, military re-enactment events serve to bring people together around a common theme and strengthen community bonds and unity (Venter, 2017; Fu et al., 2018). Gordin and Dedova (2013) observe that military re-enactment plays a crucial part in the field of events since they serve as cultural reconstructions of historical reality in the present. Getz and Page (2016:608) point out that military re-enactment blurs the lines between entertainment and cultural festivities, offering cultural, educational, and entertainment benefits to both tourists and the local population. Perry (2020:152) describes military re-enactment as straddling the spheres of popular culture and high art, fitting equally well on staged battlefields as in museums or films. Immersive practices such as virtual reality, computer games, and reality TV have a positive effect on people's desire to connect with past events (Perry, 2020:153). It can be argued that this stimulates interest in attending or participating in military re-enactment. Venter (2017:12) describes the role of the re-enactors through their portrayal as combatants (or period-related support roles) as crucial for preserving military history and bringing the period to life through the re-enactment of famous battles.

Participation Motives

Understanding participation motivation in military re-enactment is essential for understanding the complexities of this niche activity. The roots of such participation can be traced back to historical connotations embedded in the term *participation*, originating from the Latin word *particeps*, meaning 'partaker, comrade, fellow soldier' (Etymonline.com, 2024). From linguistic origins, Dann (1981) explains that motives originates from the Latin word *movere*, which emphasises the inherent drive to move towards specific goals. Bond and Falk (2013) define motivation as the internal impetus propelling human behaviour. This notion is further expanded on by Gaya (2013), who depicts

motivation as the force driving human actions and reveals its activation and direction. The fundamental influence of push and pull factors on motivation distinguishes between internal psychological stimuli as push factors and external incentives related to the destination as pull factors (Bozic, Kennell, Vujicic, & Jovanovic, 2017). Horner and Swarbrooke (2016) offer a comprehensive classification of participation motivation within the thematic exploration of battlefield (military) re-enactment. Here, it becomes evident that participants are driven by personal and emotional factors. Çakar (2020) sheds light on the role of remembrance as a specific motivating factor driving military re-enactment. Further insights into participant motivation emerge from studies examining specific contexts, such as war-related tourism sites, including the American Civil War re-enactments by Bigley, Lee, Chon, and Yoon (2010). The aforementioned authors explore the motivations for visiting such sites and suggest a blend of educational and experiential drivers. Wilhelm and Mottner (2005) highlight experiential consumption and the desire for authentic experiences as motivations for the American Civil War re-enactors' participation. Based on the above, it can be argued that the motivation to participate in military re-enactment is multifaceted, and encompasses a desire for authenticity, experiential consumption, and personal engagement with history.

Goal of the Study

This study aims to explore military re-enactors' participation motives in South Africa. The primary question of this study is: *What are the participation motives of military re-enactors in South Africa?*

The study findings could deepen the understanding of the underlying participation motives that drive individuals to engage in military re-enactment, providing valuable insights into their goals and aspirations. This understanding could, in turn, inform the development of tailored interventions or support systems to address the specific needs and challenges faced by re-enactors, ultimately enhancing their well-being and satisfaction. The findings could also peak greater community understanding and support for re-enactors, by recognising their significance towards the preservation of history and education through military re-enactment. Furthermore, the findings may have implications for future arts and culture policy development or organisational practices related to military re-enactment. Finally, the study could offer valuable insights into both national and international literature regarding the participation motives of re-enactors, thereby advancing understanding in this field and potentially leading to further research and exploration.

METHODOLOGY

Study Population and Procedure

Ethical clearance for the study was provided by the Vaal University of Technology (FREC/HS/26/02/2021/6.2.1). Due to the small number of re-enactors in South Africa, the researcher approached the administrators of the relevant social media groups. Permission was sought to post a call to members to contact the researcher via email if they were interested in taking part in the study. Therefore, convenience sampling was used. Some eight re-enactors affirmed their interest, which falls within the recommended sample size of eight to ten interviewees (Kumar, 2011). Each interviewee

received a formal invitation letter via email or WhatsApp before the interview. This letter contained a brief description of the study and their rights during the interview, which includes their anonymity, refusal to answer questions, withdrawal from the study at any time before the thematic analysis and that the questions asked would involve no foreseeable emotional discomfort or inconvenience to them but may require some personal reflection. A note was also made that the interview would be recorded for transcription purposes only. Individual interviews were conducted via telephone at a time convenient to the interviewee. At the commencement of the interview, an audio recording device was activated and the interviewee needed to consent that the interview could be recorded. If the interviewee responds negatively, the interview is cancelled. If the interviewee provided verbal consent, the interviewer asked the interviewees if they received the formal invitation letter and understood their rights. On verbal affirmation, the interview commenced. This was done for each interviewee at least two weeks before and two weeks after the military re-enactment they took part in. The researcher made use of laddering as described by Grünbaum (2017), which entails the use of a lead question with sequential follow-up questions being posed if the interviewee's answer was positive. Laddering stimulates more profound insights into an individual's motives and reflections about a subject.

Research Instruments

The interview questions were framed after those used in previous military heritage-themed studies (Venter, Kruger, & Uysal, 2022; Venter, 2020; Venter & Kruger, 2019; Venter & Burger, 2018). The measuring instrument was divided into two sections (A-B). A brief definition of each section's terminology was given to the interviewee to help frame their answers within the scope of each section. Section A focused on participation motives, namely *Why do you participate in military re-enactment? Do you learn more from or about the past?, How do you prepare physically and mentally for a military re-enactment?, Personally, how do you define the importance of your equipment?, How do you view the educational nature of military re-enactment?* Section B established the interviewee's demographic profile, which includes their age, gender, occupation, military service, education and marital status.

Interview Analysis

A thematic analysis and inductive content analysis, as described by Burnard, Gill, Stewart, Treasure, and Chadwick (2008), was done with the results of Section A. The data collected during the pre-military re-enactment and post-military re-enactment interviews was manually transcribed in Microsoft Word 2013 (Microsoft Office Software, 2013) and analysed in three sequential steps for accuracy. Step 1 involved grouping the transcribed interview content into a table based on the interviewees' answers to the questions. The second step involved a systematic search of the transcriptions using the artificial intelligence tool Chat GTP 3.5 for repeating words, themes or phrases, which were then affirmed manually by the researcher. Finally, the thematically linked phrases were grouped by Chat GTP 3.5, creating a master theme with numeric value based on the frequency of its occurrence, known as open coding (Burnard et al., 2008).

RESULTS AND DISCUSSION

Findings are considered under each of the lead questions for the interviews: Section A: Participation motives, and Section B: Demographic profile. Illustrative statements from the interviews substantiate the key observations and conclusions.

Section A: Participation Motives

Table 1: Master themes associated with interviewee participation motivation

Lead question	*Pre- and post-re-enactment themes
1. **Why do you participate in military re-enactment?**	Interest in military history (8) Connection and camaraderie (4) Preservation of history and heritage (4)
2. **Do you learn more from or about the past?**	Personal lessons and reflections (5) Educational value and historical accuracy (4)
3. **How do you prepare physically and mentally for a military re-enactment?**	Mental preparation and reflection (7) Historical authenticity (6) Personal experience and reflection (4)
4. **Personally, how do you define the importance of your equipment?**	Historical accuracy of equipment and costumes (8) Challenges in obtaining authentic equipment (4)
5. **How do you view the educational nature of military re-enactment?**	Engagement and interest generation (5)

As the interviewees' participation motives were unlikely to change between pre- and post-re-enactment, Section A sought to determine participation motives as an overlapping concept.

The first question, *Why do you participate in and travel to military re-enactment?* revealed that **interest in military history** ($n = 8$) was viewed as important to all interviewees who expressed a strong interest in military history as a primary motivation for participating in and travelling to military re-enactments. This interest often had its origin in close connections, family history, personal fascination, or a desire to learn more about historical events. Interviewee 1 said, *I've always had a very keen interest in military battles, wars and whatnot. My family's been quite deep in it.* Half of the interviewees ($n = 4$) also revealed **connection and camaraderie** as a theme they experience with others who share their interest in military re-enactment. Participating in these events provides an opportunity to bond with like-minded individuals and form relationships based on a common interest. Interviewee 2 explains, *It's also for me one of the ways that I actually connect to other men in my life. Because we are sharing a common activity and our battle to relate to men on a conversational level.*

Preservation of history and heritage ($n = 4$) was also revealed as interviewees expressed a desire to preserve and honour history and heritage, whether it is their personal family history, national history, or cultural identity. They view military re-enactment as a means of keeping history alive and educating others, especially younger generations. Interviewee 5 mentions, *My hope is to... remind the younger generation... of the religious background of the Afrikaner people, which was a pillar in the development of the nation.*

The following question asked, *Do you learn more from or about the past*? **Personal lessons and reflections** emerged as a theme ($n = 5$) with interviewees reflecting on the personal lessons and

insights they gained from studying and participating in military re-enactments. The latter often involves understanding the realities of historical events and their implications for individual actions. Interviewee 2 stated, *One of the lessons that I've learned is not all plans survive first contact with the enemy... I've learned of myself that if I were actually on a battlefield, my chances of survival would be really low.*

Educational value and historical accuracy were regarded by half (*n* = 4) in terms of learning about historical events and gaining a deeper understanding of the past. However, there are also mentions of discrepancies between military re-enactment and historical accuracy. Interviewee 4 mentions, *I learn more about some of the things that we do and [they're] not completely accurate to the happenings... it wasn't typically accurate so from what I had learned beforehand.*

Interviewees were then asked, *How do you prepare physically and mentally for a military re-enactment?*

Mental preparation and reflection emerged from the majority (*n* = 7) of interviewees who expressed the importance of mentally preparing themselves for military re-enactment, often reflecting on historical context, personal motivations, and the psychological demands of portraying historical figures. Interviewee 1 shares, *I often sit and I just ponder those thoughts beforehand... I try and focus on what went on here and what can I do to make it more realistic.* Interviewee 4 mentions, *Mentally, yeah, I make sure that my uniform is absolutely clean... I don't want to be the guy that stuffs something up.*

Historical authenticity was also important to most (*n* = 6), who emphasised the importance of historical accuracy in terms of uniforms, equipment, and behaviour during military re-enactment. They discussed efforts to ensure realism and the difficulties they experienced in achieving it. Interviewee 3 stated, *I think it's very important that the equipment is as close to the real thing as possible... we just have to make do as best as possible.* Interviewee 8 mentioned, *I take great pride in ensuring the uniforms are period correct to the smallest button worn... preparing beforehand to ensure the history is as accurately shown as possible.* Finally, half of the interviewees (*n* = 4) mentioned **personal experience and reflection** on their own experiences and emotions during the military re-enactment, including moments of realisation, learning, and personal growth. Interviewee 2 shared, *The first time it really struck me was last year at Majuba..., & it hit me straight up. Now where we stand out like sore thumbs all over the shelf.* Interviewee 5 stated, *Although I wanted to play the role of a Boer, I was asked to portray a British soldier... accepting the possibility and pushing through and accepting.*

The following question asked interviewees *Personally, how do you define the importance of your equipment?* **The historical accuracy of equipment and costumes** was mentioned by all interviewees (*n* = 8) who emphasised the significance of using historically accurate equipment and costumes to enhance the authenticity of the military re-enactment. They discuss difficulties in obtaining authentic gear and the importance of accuracy towards realism in military re-enactment. Interviewee 1 recounts an experience where inaccurate costumes detracted from the realism of an event, stating, *A pretty blonde girl with no rifle, just by the way, Jeans and a normal casual shirt just looks so wrong.* Interviewee 2 mentioned, *For me, it's about getting the uniforms and everything together... it's more about the actual experience than it is about the prep.*

Challenges in obtaining authentic equipment emerged as a theme by many ($n = 6$) interviewees who discussed the difficulties and limitations in acquiring authentic equipment, such as the high cost of specific weapons and the scarcity of accurate materials for uniforms and gear. Interviewee 3 describes the financial challenges in obtaining authentic weapons, stating, *Unfortunately, we don't have the correct weapon reselling... if there's a 303 every time we pull the trigger, it's R10 down the barrel*. Interviewee 4 talks about his efforts to procure accurate equipment, saying, *I have two different uniforms... you have to make sure that you're wearing the correct stuff with the times that you're actually re-enacting*.

The last question posed to interviewees was *How do you view the educational nature of military re-enactment?*

Engagement and interest generation were viewed by most ($n = 5$) interviewees who discussed how military re-enactment serves as a tool to engage spectators, particularly children, and generate interest in historical events. Interviewees highlighted the importance of action-packed displays and interactive experiences to spark curiosity and stimulate questions. Interviewee 1 recounts the experience of engaging with a young enthusiast, stating, *To see the guy face when you explain who was where, when, how, and where the Zulus were, where the British were, how things unfolded – to me, that is the most rewarding thing ever*. Interviewee 4 mentions, *When children see us, then it gets them interested... they start to wonder now what happened to you? Why are these guys running around in red coats and why they're fighting them*?

A strong interest in military history as the primary motivation for participating in military re-enactment was expressed by interviewees. This interest is often rooted in their family history, personal interest, or a goal to learn more about military history.

Interviewees revealed the importance of connection and camaraderie experienced with others who share their interest in military re-enactment. Participating in such events provides an opportunity to bond with individuals who have a shared interest and form relationships based on a common curiosity. Interviewees were adamant about the importance of preserving history through military re-enactment. They view these events as a means of keeping history alive, educating others, and reminding younger generations of their cultural identity and its historical significance.

Interviewees reflected on the personal lessons and insights they gained from studying and participating in military re-enactment, which often involves understanding the realities of historical events and their implications for individual actions and survival. However, there are also mentions of discrepancies between military re-enactment and historical accuracy, highlighting the need for a balance between authenticity and practicality.

Section B: Demographic Profile

The demographic profile of the interviewees reveals a varied representation in terms of age, gender, occupation, military service, education, and marital status. The participants include individuals from different age groups, ranging from 42 to 75 years old. The majority ($n = 7$) are male, with only one female participant. Occupations span across various fields, including pensioners, professionals,

individuals in management roles, and those in the education sector. A significant portion ($n = 6$) of the interviewees have military service experience, while two do not. Education levels range from certificates and diplomas to matric and postgraduate degrees, reflecting a diverse educational background among the participants. Most ($n = 7$) interviewees are married, except for one who is single. This demographic diversity provides a comprehensive perspective on the impact of military re-enactment across different segments of the population.

Findings

Participation in military re-enactment has profound implications for re-enactors. Related research highlighted education and knowledge (Olechnicki & Szkebdak, 2020), immersive experience (Winter, 2020) and social and community engagement (Miciccu, 2022) as primary themes. The motives driving participation, as revealed in Section A, emphasise a deep-rooted interest in military history, camaraderie with like-minded individuals, and a commitment to preserving history and heritage. The intrinsic motivation found from re-enactors in this study highlights the educational value of military re-enactment, facilitating personal reflection, and providing opportunities for learning and growth. The latter is echoed by González-Álvarez et al. (2022:256) in that the possibilities of historical re-enactment in formal and non-formal education are immense.

Furthermore, the process of preparing for military re-enactment, as discussed in Section A, requires not only physical readiness but also mental preparation and historical accuracy. Re-enactors conduct thorough research before taking part, aiming to portray their roles accurately and mentally preparing themselves to embody historical figures as authentically as possible. This attention to detail reflects their commitment to accurately honouring and representing the past. Hall (2016) found that Civil War re-enactors ensure historical authenticity by focusing on authentic objects or interactions, using specific historical scenarios, and emphasising important immediate meaning. Similarly, Brædder, Esmark, Kruse, Nielsen, and Warring (2017) found that re-enactors in Denmark focus on historical accuracy and re-capturing lost experiences and values while preserving a true representation of the past. Finally, the demographic profile presented in Section B underscores the diverse backgrounds of re-enactors, highlighting the inclusive nature of the military re-enactment community. From pensioners to professionals, individuals with varying levels of military experience and education come together to share their passion for history and heritage through military re-enactment.

Overall, participation in military re-enactment not only enriches individuals' understanding of history, but also fosters social connections, personal growth, and a greater sense of well-being. The findings point towards the significant value of military re-enactment, thereby highlighting the need for support in order to ensure its continued existence within the South African context.

RECOMMENDATIONS

Given the strong interest in military history among re-enactors and the desire to preserve heritage, tailored interventions or support systems could be developed to address the specific needs or challenges faced by re-enactors. These interventions should focus on fostering community

engagement, providing resources for historical research, and facilitating connections with younger generations to promote educational outreach.

Recognising the positive impact of military re-enactment on social interactions, camaraderie, and leisure activities, strategies should be developed to promote a positive experience among re-enactors. This could involve organising social events, facilitating networking opportunities, and offering support to manage the time and financial commitments associated with participation in military re-enactment. Understanding the diverse demographic profiles of re-enactors, highlighted in Section B, suggests the importance of inclusive practices and policies within the military re-enactment community.

Overall, the study's comprehensive examination of participation motives and demographic profiles provides valuable insights that can guide future research, intervention strategies, and community practices within the military re-enactment community.

LIMITATIONS AND SUGGESTIONS

The study exhibits several limitations that warrant consideration. The sample size was limited and comprised participants who volunteered to take part. To ensure findings that can be more broadly applied to the study population, future research should aim to involve a random sample of participants. Furthermore, the single-method approach focuses solely on qualitative interviews that provide descriptive comparisons rather than statistical tests. This limits the ability to draw causal inferences about the impact of military re-enactment on participants' lives. Additional data sources, such as observational data or quantitative surveys, could offer complementary insights. The latter serves to motivate further research using quantitative methods. Given the small size of the military re-enactment community in South Africa, it would be advised that such a study should be done globally. The latter would reveal a greater diversity within the military re-enactment community. Additional areas of consideration for future studies include variables that could influence participants' experiences and perceptions, such as socio-economic status or prior military experience. Broader background factors, such as organisational support or community dynamics, which may influence participants' experiences can also be included. Addressing the limitations would enhance the strength and validity of future findings, providing a more nuanced understanding of the implications of participating in military re-enactment on re-enactors.

CONCLUSION

While the military re-enactment seemed to have a positive impact on participants' overall life satisfaction, additional research into the specific factors contributing to these changes and their long-term effects would offer a deeper understanding of the intervention's effectiveness.

REFERENCES

Bigley, J., Lee, C., Chon, J., and Yoon, Y. (2010). Motivations for war-related tourism: A case of DMZ visitors in Korea. *Tourism Geographies*, *12*, 371–394. https://doi.org/10.1080/14616688.2010. 494687

Bond, N., & Falk, J. (2013). Tourism and identity-related motivations: Why am I here (and not there)? *International Journal of Tourism Research, 15*(5), 430–442. https://psycnet.apa.org/doi/10.1002/jtr.1886

Bozic, S., Kennell, J., Vujicic, M. D., & Jovanovic, T. (2017). Urban tourist motivations: Why visit Ljubljana? *International Journal of Tourism Cities, 3*(4), 382–398. https://doi.org/10.1108/IJTC-03-2017-0012

Brædder, A. (2018). Embodied simulations of pasts: The past as present to WWII reenactors and living historians. *Public History Review*, *25,* 20–32. https://doi.org/10.5130/phrj.v25i0.6391

Brædder, A., Esmark, K., Kruse, T., Nielsen, C., and Warring, A. (2017). Doing pasts: Authenticity from the reenactors' perspective. *Rethinking History, 21,* 171–192. https://doi.org/10.1080/13642529.2017.1315969

Burnard, P., Gill, P., Stewart, K., Treasure, E., and Chadwick, B. (2008). Analysing and presenting qualitative data. *British Dental Journal, 204*(8), 429–432. https://doi.org/10.1038/sj.bdj.2008.292

Çakar, G. (2020). Investigation of the motivations and experiences of tourists visiting the Gallipoli peninsula as a dark tourism destination. *European Journal of Tourism Research, 24(*2405), 1–30. https://doi.org/10.54055/ejtr.v24i.407

Dann, G. M. S. (1981). Tourism motivations: an appraisal. *Annals of Tourism Research*, *8*(2), 189–219. https://doi.org/10.1016/0160-7383(81)90082-7

Etymonline.com. (2024). *Participation*. Retrieved from https://www.etymonline.com/search?q=participation

Fu, X., Zhang, W., Lehto, X. Y., and Miao, L. (2018). Celebration of heritage: Linkages between historical re-enactment festival attributes and attendees' value perception. *Journal of Travel and Tourism Marketing*, *35*(2), 202–217. https://doi.org/10.1080/10548408.2017.1350618

Gaya, E. (2013). *Understanding the motivation of visitors at dark tourism sites: A case study of August 7th Memorial Park, Kenya*. (Bachelor's thesis), HAAGA-HELIA University of Applied Sciences, Helsinki. https://www.theseus.fi/bitstream/handle/10024/64777/Gaya_Esther.pdf?sequence=1&isAllowed=y

Getz, D., & Page, S. J. (2016). Progress and prospects for event tourism research. *Tourism Management*, *52*, 593–631. Retrieved from https://doi.org/10.1016/j.tourman.2015.03.007

Glenn, L. T. (2021). *Aiming to reenact: The efficacy of military living history as a learning tool*. (Museum Studies thesis), State University of New York College at Buffalo – Buffalo State College. https://digitalcommons.buffalostate.edu/museumstudies_theses/31

González-Álvarez, D., Alonso-González, P., and Rodríguez-Hernández, J. (2022). Historical reenactments in Spain: A critical approach to public perceptions of the Iron Age and Roman Past. In M. Carretero B. Wagonery E. Perez-Manjarrez (Eds.), *Historical Reenactment. New Ways of Experiencing History*. New York: Berghahn Books (Making sense of History) (43), 49–65. ISBN: 978-1-80073-540-8

Gordin, V., and Dedova, M. (2013). Social entrepreneurship in the informal economy: A case study of re-enactment festivals. *Journal of Enterprising Communities: People and Places in the Global Economy*, *9*(1), 6–16. http://dx.doi.org/10.1108/JEC-03-2013-0008

Grünbaum, N. N. (2017). The laddering method in service innovation research. In F. Sørensen & F. Lapenta (Eds.), *Research methods in service innovation,* 60–7). Edward Elgar Publishing. https://doi.org/10.4337/9781785364860.00010

Hall, G. (2016). Selective authenticity: Civil War reenactors and credible reenactments. *Journal of Historical Sociology, 29,* 413–436.https://doi.org/10.1111/JOHS.12089

Horner, S., and Swarbrooke, J. (2016). *Consumer behaviour in tourism* (3rd ed.). Oxford: Butterworth-Heineman.

Kumar, R. (2011). Research methodology: a step-by-step guide for beginners (3rd ed.). SAGE: New Delhi.

Micocci, A. (2022). Le rievocazioni storiche, la ricerca dello svago e il regime fascista: il Palio di Asti e Siena. *Storicamente*. https://doi.org/10.52056/9791254691984/29

Olechnicki, K., and Szlendak, T. (2020). Historical re-enactment in Poland: Between faithfulness to history and the imperative of spectacularity. *Polish Sociological Review*, *209*, 3–22. https://doi.org/10.26412/PSR209.01

Perry, R. E. (2020). The Holocaust is present: Reenacting the Holocaust, then and now. *Holocaust Studies*, *26*(2), 152–180. https://doi.org/10.1080/17504902.2019.1578460

Šantrůčková, M., Salašová, A., Sokolová, K., and Sedlacek, J. (2020). Mapping military landscape as a cultural heritage: a case study of the Austerlitz/Slavkov battlefield site. *AUC Geographica*, *55*(1), 66–76. https://doi.org/10.14712/23361980.2020.2

Schaffer, J. (2020). *Walking memories: The origins and significance of civil war*. (Thesis), Texas A&M University-Corpus Christi Corpus Christi, Texas. https://tamucc-ir.tdl.org/server/api/core/bitstreams/a8d6bd6a-7880-433f-bbed-050c5964d415/content

Venter, D. (2017). Examining military heritage tourism as a niche tourism market in the South African context. *African Journal of Hospitality, Tourism and Leisure, 6*(1), 1–19. https://www.ajhtl.com/uploads/7/1/6/3/7163688/article_28_vol_6__1__2017.pdf

Venter, D. (2020). Angolan battlefield tourism: Impact on the quality-of-life of South African Defence Force (SADF) veterans, *Journal of Psychology in Africa, 30*(5), 451–458. https://doi.org/10.1080/14330237.2020.1821986

Venter, D., and Burger, E. (2018). Determining the travel motives and life domain effect on the quality-of-life of visitors to a military museum. *International Journal of Social Sciences and Humanity Studies*, *10*(1), 113–132. http://www.sobiad.org/ejournals/journal_ijss/arhieves/ijss_2018_1_ek/d-wenter.pdf

Venter, D., and Kruger. S. (2019). From war to peace: Military festival visitors' quality-of-life, *Journal of Psychology in Africa*, *29*(3), 237–242. https://doi.org/10.1080/14330237.2019.1616425

Wang, Y. W., DiMeolo, J., and Du, G. (2021). Issues in conserving 'orphan heritage' in Asia: WWII battlefield conservation in Hong Kong and Malaysia. *Built Heritage*, *5*(12), 1–20. https://doi.org/10.1186/s43238-021-00031-z

Wilhelm, W., and Mottner, S. (2005). An empirical study of the motivations and consumption behaviors of Civil War re-enactors: Implications for re-enactment tourism. *Journal of Hospitality and Leisure Marketing*, *12*, 27–56. https://doi.org/10.1300/J150v12n04_03

Winter, J. (2020). Unfinished business: Remembering the great war between truth and reenactment. *Transactions of the Royal Historical Society, 30*, 119–140. https://doi.org/10.1017/s0080440120000067

Zurné, L. (2023). Women at the front: Remediating gendered notions of WWII heroism in historical re-enactment. *Journal of War and Culture Studies*, *16*(4), 437–466. https://doi.org/10.1080/17526272.2023.2228587

SSIRC 2024-026

PREDICTORS OF ROAD ACCIDENT INVOLVEMENT IN SOUTH AFRICA: A CASE OF GAUTENG PROVINCE

M. S. Mashiya
Vaal University of Technology, South Africa

E. Chinomona
Vaal University of Technology, South Africa

Abstract

Transportation focuses on the movement of goods and services via various modes of transportation, including land transportation, marine and air from point of origin to point of consumption in time and in full. Most goods and services in South Africa are transported via road freight transportation. This industry plays a significant role in the economy of South Africa; hence, the freight transportation industry needs to operate at the most efficient level to achieve its mandate of delivering the right quantity and the right quality of products to the right place and at the right time. A quantitative approach was employed where a survey questionnaire was used as an instrument measurement to collect data from 272 road freight transportation drivers, fleet, and operations managers. This study used a non-probability convenience sampling technique to select participants. The collected data were analysed using descriptive statistics and structural equation modelling (SEM). The results of the research study exhibit significant relationships between the study variables, namely irregular driving hours, negligent driving, driver fatigue and road accident involvement. Furthermore, this study determines that tracking, measuring and controlling driver road accident involvement within road freight transportation will improve road freight industry performance by eliminating the inefficiency caused by delays and financial losses due to driver road accident involvement. Road freight transportation stakeholders will have to solve the problem by eliminating symptoms of the problem. This means that recommendations on how to reduce and eliminate the predictors of road accident involvement indicated in the current study should be extensively implemented in the road freight transportation industry. South African Road Freight Association (SARF) and its stakeholders must fast-track the use of artificial intelligence, such as dashcams, regarding data extraction that can be used to gain insight and knowledge and have better control over road accident involvement and driver performance. Road accident involvement records must be included in all road freight transportation companies' financial risk assessment and operating baseline risk assessment.

Keywords: Irregular driving hours, negligent driving, driver fatigue, accident, road freight industry and performance

INTRODUCTION

The transport and storage industry plays a significant role in a nation's economy. In South Africa, it contributes approximately 9.55 percent to gross domestic product (GDP), that is, R273 192 556 983 billion, and employs almost 332 000 of the workforce (South African Market Insight 2019). It is estimated that heavy vehicles deliver up to 72 percent of the total freight task. This figure is expected to almost double in the next 20 years; therefore, a shortage of experienced drivers becomes a critical economic issue in South Africa (Statistics South Africa 2019). Additionally, in South Africa's landlocked economic hub, 79% of goods are transported using road infrastructure (de Coning, Hoffman & Mouton 2023). However, road accident involvement within the transportation and storage industry is increasing in Gauteng and Kwazulu-Natal provinces, with the highest percentage of 21 and 20 percent, respectively (World Health Organisation 2019). Furthermore, road transportation will remain a vital part of the substantial majority of all supply chains for the anticipated future due to the flexibility, speed, cost, low capital investment in infrastructure and equipment, and ease of using road transport compared to other modes of transportation (du Plessis, Van Eeden, Goedhals-Gerber & Else 2023). According to Williamson, Lombardi, Folkard, Stutts, Courtney and Connor (2011) and Khan and Lee (2019), fatigue has been identified as a contributing factor for transportation accidents, injuries and death in a wide range of settings, with the implications that tired people are less likely to produce safe performance and actions. Although it is difficult to determine the exact number of accidents due to fatigue, it is much more likely to be underestimated. The effect of fatigue on driving performance has been widely studied by physiologists and transportation experts (Zhang & Hua 2015; Rolison, Regev, Moutari & Feeney 2018).

Fatigue has been proven to be a main cause of road accidents in different settings, including transport operations such as road, aviation, rail and maritime, as well as other occupational settings such as hospitals, emergency operations and law enforcement, particularly when irregular hours of work are involved (Zhang & Hua 2015). Almost everyone becomes fatigued at some time, either at their work or during their leisure time, and so may be at increased risk of accident or injury (Jiang, Ling, Feng, Wang & Shao 2017). The most general factors that cause fatigue are a lack of sleep, bad quality sleep (Radun, Ohisalo, Radun, Wahde & Kecklund 2013), psychological features (Yang, Lin & Bhattacharya 2010), drowsiness (Wei, Qi-changa, Xiu-Min & Zhi-Min 2012), and prolonged driving (time-on-task) (Jiang et al., 2017). For specific groups of drivers, such as professional drivers, these general factors often play a more persistent role due to long or irregular work schedules. A small part of the general population (3-104, 5%) has to cope with obstructive sleep apnoea, a sleeping disorder, which contributes to above-average day-to-day sleepiness (Sando, Moses & Mtoi 2010). It is evident from the above-mentioned factors that most of the researchers focused on similar factors, neglecting factors such as irregular driving hours and negligent driving.

Drivers' irregular driving hours play a critical role in driver fatigue, which is consequently linked to road accident involvement (Hanowski, 2013:12). It is also believed that irregular driving hours lead to negligent driving on the road (Li, Yamamoto & Zhang 2018). These two identified under-researched factors are incorporated into this study as the influencers of driver fatigue, road accidents and road freight transportation performance.

PROBLEM STATEMENT

In many countries, including South Africa, road accidents are challenges faced by many companies, including logistics businesses. Road freight transportation companies face challenges related to compensation, damages, and a lack of client trust due to road accident involvement (Steyn Monismith, Nokes, Harvey, Holland & Burmas 2012). Fatigue is identified as a contributing factor in a considerable proportion of road transport accidents (Watling, Armstrong, Obst & Smith 2014). Estimates of the role of fatigue in crashes can vary, depending upon the severity and circumstances of the crashes examined. Typical ranges cited are 1 to 3 percent of all crashes, to up to 20 percent of crashes occurring on major roads and motorways (Lemke, Apostolopoulos, Hege, Sönmez & Wideman 2016). There is general agreement that any percentages based on crash data underestimate the true magnitude of the problem, since the evidence for fatigue involvement in crashes is often questionable, being based on criteria that exclude other factors rather than identifying definite involvement of fatigue (Li, Yamamoto & Zhang 2018). Several studies have been conducted to identify the causes and effects of fatigue, which causes road accident involvement (Williamson, Friswell, Olivier & Grzebieta 2014; Lemke et al., 2016; Jiang et al., 2017). These studies have identified task-related, psychological, internal and external factors as the causes of fatigue (Williamson et al., 2014). A lack of sleep, inferior quality sleep and sleep demands induced by the internal body clock were identified by Rolison, Regev, Moutari and Feeney (2018). However, other important aspects, such as drivers' irregular driving hours and negligent driving, have been neglected in the literature as the main cause of driver fatigue. In filling this void, this study investigated the impact of negligent driving, irregular driving hours, driver fatigue and road accidents by logistics road freight vehicle drivers within the transportation industry in Gauteng province, South Africa.

CONCEPTUAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

This study adopted the conceptual framework presented in Figure 1.1 conceptualising the relationship between irregular driving hours, negligent driving, driver fatigue, road accidents and business performance. Irregular driving hours and negligent driving form the predictor variables, with driver fatigue acting as the mediating variable and road accidents and business performance as the outcome variables.

Based on the conceptual model presented in Figure 1.1, the following hypotheses were developed:

H1: There is a relationship between irregular driving hours and road accident involvement.

H2: There is a relationship between driver fatigue and road accident involvement.

H3: There is a relationship between negligent driving and road accident involvement.
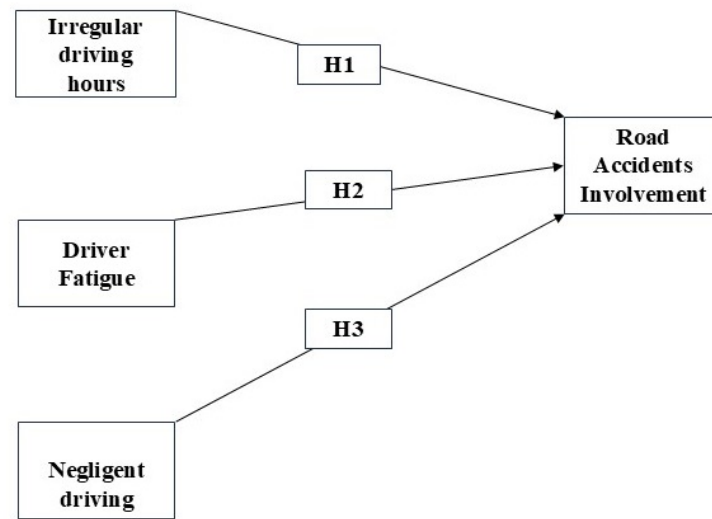
Figure 1: Conceptual frame

LITERATURE REVIEW

The theory underlining this study and explanation of constructs is done under the literature review.

The Theory of Planned Behaviour

According to the theory of planned behaviour (TPB), attitude, subjective norm and perceived behavioural control together influence intentions and behaviour (Jiang, Ling, Feng, Wang & Shao 2017). People arrive at their behaviour, normative and control beliefs, attitudes towards the behaviour, subjective norms and perceptions of behavioural control follow automatically and consistently from their beliefs (Verma & Chandra 2023). The TPB is an extension of the theory of reasoned action (TRAS) and is mainly used to explain the individual behavioural decision-making process. At the same time, the theory of planned behaviour has demonstrated its superiority over other theoretical approaches in many road safety contexts, including traffic violations (Castanier, Deroche & Woodman 2013), speeding (Chen & Chen 2011), pedestrians' illegal road-crossing (Jiang et al., 2017) and drivers' mobile phone use (Gauld, Lewis & White 2013). TPB is a widely used theory that examines the factors influencing drivers' decisions to drive while fatigued; driver attitudes towards fatigued driving have proved to be a significant factor (Watling 2014). Therefore, this study attempted to use the TPB to examine driver Irregular driving hours and negligent driving as factors that affect drivers' decisions to drive while fatigued, which ultimately cause road accidents.

Irregular Driving Hours

According to the Federal Motor Carrier Safety Administration (FMCSA) (2015), drivers may work no more than 60 hours on duty over seven consecutive days. Drivers may be on duty for up to 14 hours following 10 hours off duty, but they are limited to 11 hours of driving time (Bowden & Ragsdale 2018). This window is usually considered as a 'daily' limit even though it is not based on a 24-hour

period. However, truck drivers tend to work overtime due to added incentives, which reduces sleeping time. This nature of the trucking sector, with long working time, and irregular sleep patterns, can negatively impact drivers' health and well-being (Ren, Pritchard, van Vreden, Newnam, Iles & Xia 2003). Moreover, South African truck drivers should only work nine hours a day, six days a week, but the Bargaining Council permits them to work a maximum of 30 hours overtime per week. This translates into five additional hours a day. Overtime is time on the job beyond the hours scheduled for the individual shift and/or work week (Road Ahead 2018). Overtime is frequently used in transportation industry settings to meet staffing needs due to employee shortages and meeting client expectations (Gander, Hartley, Powell, Cabon, Hitchcock, Mills & Popkin 2011). It is reasonable to believe that restrictions on hours-of-service reduce the percentage of fatigued drivers (Hanowski 2013). However, this linkage is complicated by other dynamics that argue against such a simple causal statement. Managing driver hours of service could prevent accidents caused by driver fatigue. This could be accomplished by limiting the number of driving hours per day and the number of driving and working hours per week (Bowden & Ragsdale 2018).

Negligent Driving

Negligent driving can be defined as any driver's violation behaviour conducted to cause pain (physically or psychologically) or cause damage to pedestrians (Jovanovic, Lipovac, Stanojevic & Stanojevic 2011). Researchers such as Jovanovic et al. (2011) and Castanier, Deroche and Woodman (2013) have documented that the human factor is the main contributor to road accidents and, in most cases, accidents happen in situations where one or more driving rules have been dishonoured. Nordfjærn, Jørgensen and Rundmo (2010) indicated that variables such as demographics, character variables and driver attitudes might influence behaviour in traffic. Violations demote an intention to behave alongside laws related to safe driving, and for example, the driver disregards the speed limit on a residential road (Mehdizadeh, Shariat-Mohaymany & Nordfjaern 2018). According to Öz, Özkan and Lajunen (2013), driver's behaviour can be divided into two categories: errors and violations. These behaviours contribute to driver fatigue and road accident involvement (Mehdizadeh et al., 2018). Similarly, Soliani, Da Silva and Barbosa (2023) emphasise that the after-effects of fatigue, including delayed reactions, diminished concentration, reckless behaviour, and falling asleep at the wheel, have been implicated in many serious road accidents.

Driver Fatigue

Driver fatigue is defined as undesirable changes in driving performance that could be linked to continued activity (Di Stasi, Renner, Catena & Cañas, Velichkovsky & Pannasch, 2012:123). Jamroz and Smolarek (2013) define driver fatigue as reduced driving alertness that impairs performance. Likewise, a study by Ebiai and Mgbeanuli (2023) indicates that drivers who are more stressed due to driving longer hours, travelling long journeys for several days and experiencing fatigue from driving are more likely to be involved in road traffic accidents. It can be operationalised as the effects drivers experience following and during prolonged driving periods of demanding cognitive activity (Watling, 2014). Fatigue has been identified as a contributing factor to accidents, injuries and death in a wide range of settings, with the implication that tired people are less likely to produce safe performance and

actions (Zhang & Hua 2015). A lack of sleep, inferior quality sleep, and sleep demand induced by the internal body clock are the most common factors that cause fatigue. In addition, Sando, Mtoi and Moses (2010) state that prolonged driving periods can increase driver fatigue, especially when drivers do not take enough breaks. Hence, this study proposes that driver fatigue influences negligent driving and road accident involvement.

Road Accidents Involvement

The advances in cognitive science, psychology and related fields have indicated that human emotions (such as anger, fear, stress, distraction and fatigue) play a critical role in a person's behaviour. Research documented that driver accidents can be forecast by self-reported tendencies to commit diverse kinds of violations (Warner, Ozkan, Lajunen & Tzamalouka 2011). Rolison, Regev, Moutari and Feeney (2018) maintain that road accidents are complex but broadly depend on characteristics of drivers. Skill levels, inexperiences and risk-taking behaviours have been implicated in the collisions of young drivers compared to drivers in older age ranges. Investigations of accident records have also implicated excessive speed, driving recklessly and traffic violations, as well as drugs and alcohol (Singh, Singh, Kumaran & Goel 2016; World Health Organisation 2018). Additionally, Amoadu, Ansah and Sarfo (2023) postulate that driver irregular driving hours and fatigue increase the possibility of road traffic accident. These and other factors, including fatigue, irregular driving hours and violation behaviours, contribute to road accidents.

METHODOLOGY

It has been suggested in research that all scientific research must be conducted using some relevant methodology (Creswell 2014). A methodology provides a piece of research with its philosophy, the values and assumptions that drive the rationale for the investigation, as well as the standards that will be utilised for the interpretation of information and the drawing of conclusions (Neuman 2010). This section covers subjects such as the research design, sampling design, procedures for data gathering, analysis and ethical issues.

RESEARCH DESIGN

A research design is defined as a plan or framework for formulating and addressing research objectives and hypotheses (McDaniel & Gates 2013). It enables a researcher to develop a specific structure to solve a particularly growing research problem, question or opportunity (Malhotra 2010). This study followed a nonexperimental cross-sectional survey because the study intended to collect data on more than one case and at a single point in time to collect a body of quantitative and/or quantifiable data in linking two or more variables, which were then examined to identify patterns of association (Creswell 2017). A quantitative research approach, using the survey method, was employed in this study.

Target Population

A target population is a group of individuals or objects that meet specific requirements for inclusion in the overall group from which information is required (McDaniel & Gates 2013). In other words, it

is a group of individuals from which questions can be asked or observations made, with the intent to establish required data structures and information. The target population can include individuals, groups, organisations, sales, territories and companies (Babin & Zikmund 2016). The target population relevant to this study comprised drivers, fleet and transport managers from the road freight transportation companies within the Transportation Industry in Gauteng and insurers of heavy haulage vehicles in Gauteng as well. Males and females from all racial groups in South Africa constituted the sample.

Sampling Method

Gupta, Kumar and Sharma (2011) identify probability and non-probability sampling as the two sampling methods available to researchers. In probability sampling, the members of a population have a known and equal chance of being selected. With non-probability sampling, the researcher's subjective opinion determines which sampling elements will be included in a study and which will not (Clow & James 2014). A non-probability convenience sample was used in this study. Truck drivers, fleet, and transport managers from the heavy haulage vehicle transportation company were visited in order to complete the questionnaire. Convenience samples are sometimes regarded as 'accidental samples' because elements may be selected in the sample because they just happen to be situated or are administratively near where the researcher is conducting the data collection (McDaniel & Gates 2013). The rationale behind convenience sampling is that it is affordable and easy, and the subjects are readily available and identified based on their in-depth knowledge (Malhotra 2010).

Sample Size

A sample size refers to the actual number of population elements chosen for inclusion in a study (McDaniel & Gates 2013). There are various factors to be considered when determining the sample size, such as the nature of the research, completion rates and resource constraints (Hair, Black, Babin & Anderson 2014). The chosen sample size for this study was set at n=300. The sample size determination was based on two approaches. Firstly, the historical evidence approach was used, which focuses on previous similar studies. For example, Jiang et al. (2017) sampled 214 drivers in China. Another study by Bener, Yildirim, Ozkan and Lajunen (2017) sampled 512 drivers in Turkey, while Zhang and Hua (2015 sampled 215 drivers. Secondly, considering that various multivariate statistical analysis techniques were used to analyse the data and test the hypotheses in this study, it was noted that these statistical techniques required a substantial amount of sample units (Hair et al., 2014). For example, Pallant (2007) recommends a minimum of 150 respondents, while Tabachnick and Fidell (2007) propose a sample size of at least 200 cases for a multivariate analysis.

Data Collection and Measuring Instrument

Once the target population, sampling frame, sampling method and sample size have been determined, data has to be collected (Babin & Zikmund 2016). Data were collected through a survey using a self-administered questionnaire. Surveys are renowned for reducing response bias, as well as the ability of the respondents to interact with the researcher (Creswell 2014). Self-administered questionnaires are

characterised by several benefits. The benefits include respondents being able to answer the questionnaires at their own convenience and the low cost-per-completion, which makes it an economical method for surveying large samples (Bryman & Bell 2007).

Irregular driving hours with measuring items were adapted from Kemp, Kopp and Kemp (2013). Negligent driving behaviour with the measuring items were adapted from Cheng, Liu and Tulliani (2015) were used. Driver fatigue with measurement items were adapted from Smith (2016). Road accident involvement with measuring items were adapted from Smith (2016). This study adopted a five-point Likert scale ranging from 1= strongly disagree to 5= strongly. The adapted questions were adjusted accordingly to fit the current context of this study, using feedback collected from a pilot study. The questions were closed-ended (structured) for simplicity of answering.

Measuring Scale Internal Consistency (Reliability Test)

For the current study, reliability was tested through Average Value Extracted (AVE), Cronbach's alpha (Cronbach's α) and Composite Reliability (CR). Table 1, displays the results of the reliability descriptive statistics, Composite Reliability, Average Value Extracted, Cronbach's test and factor loadings.

Table 1 shows the Cronbach's Alpha results, which confirm that all the constructs measured are reliable and fit for the study.

Table 1: Accuracy analysis statistics (Scale accuracy)

Research construct	Indicators	Descriptive statistics		Reliability statistics			Validity statistics		
		Mean ($\bar{x}$)	SD	Alpha (α)	*Rho*	CR	AVE	Factor loading	Item-total correlation
Irregular driving hours (IDH)	IDH1	4.00	0.970	0.900	0.907	0.920	0.744	0.802	0.705
	IDH2	4.02	0.886					0.942	0.790
	IDH3	4.10	0.895					0.914	0.799
	IDH4	4.18	0.907					0.782	0.777
Negligent Driving (NGD)	NGD1	4.05	0.900	0.847	0.884	0.876	0.505	0.599	0.711
	NGD2	4.10	0.910					0.780	0.751
	NGD3	4.21	0.852					0.800	0.774
	NGD4	4.00	0.718					0.818	0.768
	NGD5	4.27	0.838					0.816	0.683
	NGD6	4.21	0.833					0.558	0.785
	NGD7	4.20	0.810					0.725	0.737
	NGD8	4.20	0.810					0.760	0.779
	NGD9	4.20	0.810					0.513	0.843
	DRF1	4.11	0.816	0.931	0.944	0.948	0.785	0.909	0.848
	DRF2	4.16	0.909					0.912	0.875

Research construct	Indicators	Descriptive statistics		Reliability statistics			Validity statistics		
		Mean (x̄)	SD	Alpha (α)	*Rho*	CR	AVE	Factor loading	Item-total correlation
Driver Fatigue (DRF)	DRF3	4.26	0.810					0.801	0.799
	DRF4	4.23	0.706					0.946	0.801
	DRF5	4.20	0.837					0.855	0.777
Road Accidents Involvement (RAI)	RAI1	3.55	1.076					0.837	0.717
	RAI2	3.17	1.432					0.832	0.768
	RAI3	4.00	0.705	0.901	0.914	0.927	0.717	0.834	0.788
	RAI4	4.06	0.677					0.911	0.790
	RAI5	4.10	0.850					0.825	0.724

Table 2: Hypotheses testing

Proposed path relationship	Hypothesis	Path Coefficient	P-Value	T-Value	Outcome
Irregular driving hours (IDH) Road Accident Involvement (RAI)	H1 (+)	0.340	0.000	4.720	Supported
Driver Fatigue (DRF) Road Accident Involvement (RAI)	H2 (+)	0.228	0.000	4.205	Supported
Negligent Driving (NGD) – Road Accidents Involvement (RAI)	H3 (+)	0.374	0.000	4.927	Supported

Results for Hypothesis 1

On the first hypothesis (H1), there is a positive relationship between irregular driving hours and road accident involvement. This relationship is significant and supported as it was greater than the required significant rate of (path coefficient=0.340; p=0.000; t=4.720). The result displays a positive relationship between irregular driving hours and road accident involvement. This finding in this study illustrates that increased irregular driving hours will result in increased chances of road accident involvement. Akbari et al. (2022) concluded that the main factors that cause the driver to get involved in a traffic accident and dangerous driving behaviour are the driver's education level, driver experience, and hours of driving, amongst others. Shin and Jeong (2020) indicate that long working hours and unpredictable schedules are related to sleep problems, and sleep-related problems increase the risks of incidents and injuries. Amoadu, Ansah and Sarfo (2023) demonstrated that professional drivers are exposed to job strain and fatigue because of irregular driving hours and are also exposed to driver risky driving behaviours, which result in driver road traffic crashes.

Professional drivers' irregular working hours have consequences inclusive of fatigue, delayed reactions, diminished concentration, reckless behaviour, or even falling asleep at the wheel and they have been involved in many serious accidents (Soliani, Da Silva & Barbosa 2023). Based on a conclusion drawn from the study by Amoadu, Ansah and Sarfo (2023), irregular driving hours inclusive of long driving hours, irregular job schedules, work-family conflicts, job insecurity, and lack of safety motivation are the main psychosocial work factors that influence risky driving behaviours and road traffic crashes among professional drivers. Drawing from the research conclusion by Soliani, Da Silva and Barbosa (2023), truck drivers who spend long hours on the roads are particularly at risk of being involved in road accidents. Given the stated results, it can be concluded that irregular driving hours will increase the chances of road accident involvement.

Results for Hypothesis 2

A positive correlation was hypothesised between driver fatigue and road accident involvement on the sixth hypothesis (H2). Previous studies have found that fatigue is a danger to drivers, which decreases their performance and causes road crashes (Fancello et al., 2020:6752). After testing H6, the results displayed a path coefficient of ($r=0.228$) and p-value and t-value ($p=0.000$ and $t=4.205$). This means driver fatigue increases the chances of road accident involvement.

Naude and Chitakunye (2014) postulate that fatigue is a problem that results in unsafe driving and thus increases the probability of an accident. However, Soliani, Da Silva and Barbosa (2023) state that irregular working hours and fatigue are among the factors that increase the likelihood of road accident involvement. Drawing from a study conducted by Al-Mekhlafi et al. (2023), long working hours, irregular schedules, and high-stress levels can lead to fatigue and reduced arousal levels, negatively impacting driving performance. Furthermore, Amoadu, Ansah and Sarfo (2023) found that fatigue driving is a significant predictor of road traffic crashes and related fatalities and injuries. Adeleke, Osayomi, and Iyanda (2020) state that previous studies identified careless driving, violation of traffic laws, and fatigue as major factors that contribute to road accident involvement within the road freight transportation environment. Given the indicated results it can be concluded that driver fatigue has a significant correlation with driver accident involvement in the road freight transportation industry.

Results for Hypothesis 3

The third hypothesis (H3) was supported and accepted. Therefore, there is a positive relationship between negligent driving and road accident involvement. To confirm this, a positive and significant correlation was obtained with the path coefficient of 0.374. Likewise, the p-value and t-value are significant ($p=0.000$ and $t=4.927$), which means this hypothesis is supported and significant. These findings have support from numerous scholars, such as Luke and Heyns (2014), who state that the risk of incurring an accident will increase if risky driving behaviour or negligent driving is performed with an overloaded or improperly loaded truck. Rashmi and Marisamynathan (2023) report that aberrant driving behaviours increase the fatality risk of truck drivers.

El-Nabi et al. (2023) also reviewed the relationship between these two contracts and stated that fatigue, drowsiness and drivers' negligence are the main causes of fatal road accidents. Giri, Shahi and Poddar

(2023) concluded that road accidents are caused by a variety of reasons, but driver error is the most important, accounting for 80 per cent of total accidents. In addition, Amoadu Ansah and Sarfo (2023) indicate that drivers who drive overtime may be involved in risky driving drivers and are more likely to be involved in road traffic crashes. The above results and statements prove that the chances of road accident involvement will increase if the drivers keep on engaging in negligent driving behaviour. Disassa and Kebu (2019) concluded that human factors contribute greatly to road traffic accidents and driving behaviour was identified as the most central of these factors. From this research study, it can be concluded that there is a significant relationship between negligent driving and road accident involvement within the road freight transportation industry. Previous authors further point out that negligent driving increases the chances of driver-road accident involvement.

LIMITATIONS OF THE STUDY

The current study had a few limitations that suggested a way forward for future studies. The study was limited only to Gauteng province. Other road freight transportation companies and provinces within the country did not form part of the study. The participants of the study were working different shifts, and for this reason, the questionnaires were distributed and collected at a later stage. This means the participants completed the questionnaires at their own place and time and the researcher could not monitor how participants completed the questionnaires. The company where the study was conducted has branches in different locations in and around Gauteng, which required a lot of driving around to collect the questionnaires and delayed the data collection process.

SUGGESTIONS FOR FUTURE RESEARCH

Future researchers can also conduct this study in other road freight transportation companies and provinces within the country to test if they will get the same results. Sufficient time should be allocated to the study plan for distribution and collection of questionnaires. The use of mixed methods, qualitative research, and online data collection methods should be considered for future studies to obtain deep knowledge and understanding of the impact of predictors of road accident involvement and road freight financial performance while saving time. Additionally, further research within the road freight transportation space should be conducted to identify internal controls and performance measurements that can be used to measure the impact of road freight accident involvement on the performance of the road freight industry. This knowledge will assist in creating a better understanding of road freight drivers' accident involvement and its complexity within this industry. As road freight transportation companies strive to be competitive and remain relevant, this knowledge and information must be available and accessible to all road freight transportation stakeholders within South Africa.

CONCLUSION

The empirical results of this study add to the existing knowledge of road accident predictors inclusive of irregular driving hours, negligent driving and driver fatigue, and road accident involvement in South Africa. The outcomes of the reliability have revealed positive values among all the constructs. Furthermore, structural equation modelling was used to measure the relationship between the

theoretical constructs through path coefficients using SMART-PLS software. All the results proved to be reliable and valid. Therefore, the hypotheses in this study were positive, significant, supported, and accepted. The results suggested that the predictors of road accident involvement have a positive and significant relationship.

REFERENCES

Akbari, H., Motalebi Kashani, M., Dehghani Bidgoli, S., Koochaki Nasrabadi, M., Hannani, M., & Karamali, F. (2022). The effect of dangerous driving behaviors on the risk of traffic accidents using structural equation modeling. *Archives of Trauma Research*, *11*(2), 74–79.

Al-Mekhlafi, A. B. A., Isha, A. S. N., Al-Tahitah, A. N., Kineber, A. F., Al-Dhawi, B. N. S., & Ajmal, M. (2023). Modelling the impact of driver work environment on driving performance among oil and gas heavy vehicles: SEM-PLS. *Safety*, *9*(3), 48.

Amoadu, M., Ansah, E. W., & Sarfo, J. O. (2023). Psychosocial work factors, road traffic accidents and risky driving behaviours in low-and middle-income countries: A scoping review. *IATSS Research*.

Babin, B. J., & Zikmund, W. G. (2016). *Essentials of Marketing Research* (6th ed.). USA: Cengage Learning.

Bener, A., Yildirim, E., Özkan, T., & Lajunen, T. (2017). Driver sleepiness, fatigue, careless behavior and risk of motor vehicle crash and injury: Population based case and control study. *Journal of Traffic and Transportation Engineering (English edition)*, *4*(5), 496–502.

Bowden, Z. E., & Ragsdale, C. T. (2018). The truck driver scheduling problem with fatigue monitoring. *Decision Support Systems*, *110*, 20–31.

Bowen, L., Budden, S. L., & Smith, A. P. (2020). Factors underpinning unsafe driving: A systematic literature review of car drivers. *Transportation research part F: Traffic Psychology and Behaviour*, *72*, 184–210.

Bryman, A., & Bell, E. (2007). *Business Research Methods* (2nd ed.). Oxford: University Press.

Castanier, C., Deroche, T., & Woodman, T. (2013). Theory of planned behaviour and road violations: The moderating influence of perceived behavioural control. *Transportation Research Part F: Traffic Psychology and Behaviour*, *18*, 148–158.

Chen, C. F., & Chen, C. W. (2011). Speeding for fun? Exploring the speeding behavior of riders of heavy motorcycles using the theory of planned behavior and psychological flow theory. *Accident Analysis & Prevention*, *43*(3), 983–990.

Cheng, A. S., Liu, K. P., & Tulliani, N. (2015). Relationship between driving-violation behaviours and risk perception in motorcycle accidents. *Hong Kong Journal of Occupational Therapy*, *25*, 32–38.

Clow, K. E., & James, K. E. (2013). Essentials of marketing research: *Putting research into practice*. SAGE publications.

Creswell, J. W. (2014). A concise introduction to mixed methods research. Sage publications.

Creswell, J. W., & Creswell, J. D. (2017). Research design: Qualitative, quantitative, and mixed methods approaches. Sage publications.

De Coning, A., Hoffman, A. J., & Mouton, F. (2023). Traffic control centre optimisation on South African freight corridors through intelligent weigh-in-motion. *South African Computer Journal*, *35*(1), 63–90.

Disassa, A., & Kebu, H. (2019). Psychosocial factors as predictors of risky driving behavior and accident involvement among drivers in Oromia Region, Ethiopia. *Heliyon, 5*(6).

Di Stasi, L. L., Renner, R., Catena, A., Canas, J. J., Velichkovsky, B. M., & Pannasch, S. (2012). Towards a driver fatigue test based on the saccadic main sequence: A partial validation by subjective report data. *Transportation Research Part C: Emerging Technologies*, *21*(1), 122–133.

Du Plessis, M. J., van Eeden, J., Goedhals-Gerber, L., & Else, J. (2023). Calculating Fuel Usage and Emissions for Refrigerated Road Transport Using Real-World Data. *Transportation Research Part D: Transport and Environment*, *117*, 103623.

Ebiai, A. E., & Mgbeanuli, C. C. (2023). Driving behavior and work stress as predictors of road traffic accidents in Borno State, *Nigeria. European Journal of Educational and Development Psychology*, *11*(2), 1–6.

El-Nabi, S. A., El-Shafai, W., El-Rabaie, E. S. M., Ramadan, K. F., Abd El-Samie, F. E., & Mohsen, S. (2024). Machine learning and deep learning techniques for driver fatigue and drowsiness detection: a review. *Multimedia Tools and Applications*, *83*(3), 9441–9477.

Fancello, G., Daga, M., Serra, P., Fadda, P., Pau, M., Arippa, F., & Medda, A. (2020). An experimental analysis on driving behaviour for professional bus drivers. *Transportation Research Procedia*, *45*, 779–786.

Gander, P., Hartley, L., Powell, D., Cabon, P., Hitchcock, E., Mills, A., & Popkin, S. (2011). Fatigue risk management: Organizational factors at the regulatory and industry/company level. *Accident Analysis & Prevention*, *43*(2), 573–590.

Gauld, C. S., Lewis, I., White, K. M., Fleiter, J. J., & Watson, B. (2017). Smartphone use while driving: What factors predict young drivers' intentions to initiate, read, and respond to social interactive technology? *Computers in Human Behavior*, *76*, 174–183.

Giri, O. P., Shahi, P. B., & Poddar, S. (2023). August. Analysis of road traffic crashes in the Narayanghat to Mugling road segment in Nepal. In AIP *conference proceedings. 2854*(1). AIP Publishing.

Gupta, S., Kumar, D., & Sharma, A. (2011). Data mining classification techniques applied for breast cancer diagnosis and prognosis. *Indian Journal of Computer Science and Engineering (IJCSE), 2*(2), 188–195.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). Multivariate data analysis: Pearson New International Edition; Essex Pearson Educ. *Ltd.: Harlow, UK*, *1*.

Hanowski, R. J. (2013). Behavioural adaptation and unintended consequences: Examples from commercial vehicle operations. *In Behavioural Adaptation and Road Safety*, 344–357.

Jamroz, K., & Smolarek, L. (2013). Driver fatigue and road safety on Poland's national roads. *International Journal of Occupational Safety and Ergonomics*, *19*(2), 297–309.

Jiang, K., Ling, F., Feng, Z., Wang, K., & Shao, C. (2017). Why do drivers continue driving while fatigued? An application of the theory of planned behaviour. *Transportation Research Part A: Policy and Practice, 98*, 141–149.

Jovanović, D., Lipovac, K., Stanojević, P., & Stanojević, D. (2011). The effects of personality traits on driving-related anger and aggressive behaviour in traffic among Serbian drivers. *Transportation Research Part F: Traffic Psychology and Behaviour*, *14*(1), 43–53.

Kemp, E., Kopp, S. W., & Kemp, E. (2013). Six days on the road: will I make it home safely tonight? Examining attitudes toward commercial transportation regulation and safety. *The International Journal of Logistics Management*, *24*(2), 210–229.

Khan, M. Q., & Lee, S. (2019). A comprehensive survey of driving monitoring and assistance systems. *Sensors*, *19*(11), 2574.

Lemke, M. K., Apostolopoulos, Y., Hege, A., Sönmez, S., & Wideman, L. (2016). Understanding the role of sleep quality and sleep duration in commercial driving safety. *Accident Analysis & Prevention*, *97*, 79–86.

Li, Y., Yamamoto, T., & Zhang, G. (2018). Understanding factors associated with misclassification of fatigue-related accidents in police record. *Journal of Safety Research*, *64*, 155–162.

Luke, R., & Heyns, G. J. (2014). Reducing risky driver behaviour through the implementation of a driver risk management system. *Journal of Transport and Supply Chain Management*, *8*(1), 1–10.

Malhotra, N. K. (2010). *Marketing Research: An Applied Orientation* (6th ed.). USA: Pearson Education.

Mcdaniel, C., & Gates, R. (2013). *Marketing Research*. Singapore.

Mehdizadeh, M., Shariat-Mohaymany, A., & Nordfjaern, T. (2018). Accident involvement among Iranian lorry drivers: Direct and indirect effects of background variables and aberrant driving behaviour. *Transportation ResearchPpart F: Traffic Psychology and Behaviour*, *58*, 39–55.

Mosala, K., & Chinomona, E. (2020). Motorists' attitudes towards implementation of E-tolls in Gauteng Province, South Africa. *International Journal of Ebusiness and Egovernment Studies*, *12*(1), 48–62.

Naude, M. J., & Chitakunye, P. (2014). Factors that contribute to road accidents caused by heavy commercial vehicles: a South African perspective. *Journal of Contemporary Management*, *11*(1), 431–450.

Neuman, W. L. (2016). *Understanding Research*. Pearson.

Nordfjærn, T., Jørgensen, S. H., & Rundmo, T. (2010). An investigation of driver attitudes and behaviour in rural and urban areas in Norway. *Safety Science*, *48*(3), 348–356.

Öz, B., Özkan, T., & Lajunen, T. (2013). An investigation of professional drivers: sOrganisational safety climate, driver behaviours and performance. *Transportation Research Part F: Traffic Psychology and Behaviour*, *16*, 81–91.

Rashmi, B. S., & Marisamynathan, S. (2023). Factors affecting truck driver behavior on a road safety context: A critical systematic review of the evidence. *Journal of Traffic and Transportation Engineering (English Edition)*.

Ren, X., Pritchard, E., van Vreden, C., Newnam, S., Iles, R., & Xia, T. (2023). Factors associated with fatigued driving among Australian truck drivers: a cross-sectional study. *International Journal of Environmental Research and Public Health*, *20*(3), 2732.

Road Ahead. (2018). *Truck drivers on SA roads 2018*. Retrieved 27 November 2019, from http://www.roadaheadonline.co.za/articles/truck-drivers-on-sa-roads-24484.html.

Rolison, J. J., Regev, S., Moutari, S., & Feeney, A. (2018). What are the factors that contribute to road accidents? An assessment of law enforcement views, ordinary drivers' opinions, and road accident records. *Accident Analysis and Prevention*, 115, 11–24.

Sando, T., Mtoi, E., & Moses, R. (2010). November. Potential causes of driver fatigue: A study on transit bus operators in Florida. *In Transportation Research Board of the National Academies 2011 90th Annual Meeting, paper, 11*, 3398.

Shin, D. S., & Jeong, B. Y. (2020). Relationship between negative work situation, work-family conflict, sleep-related problems, and job dissatisfaction in the truck drivers. *Sustainability*, *12*(19), 8114.

Singh, D., Singh, S. P., Kumaran, M., & Goel, S. (2016). Epidemiology of road traffic accident deaths in children in Chandigarh zone of North West India. *Egyptian Journal of Forensic Sciences*, *6*(3), 255–260.

Smith, A. P. (2016). A UK survey of driving behaviour, fatigue, risk taking and road traffic accidents. *BMJ Open, 6*(8), 011461.

Soliani, R. D., Da Silva, L. B., & Barbosa, A. D. S. (2023). The effects of fatigue on truck drivers in cargo transportation: A literature review. *Interciencia, 48*(5), 228–235.

South African Market Insights. (2019). *South Africa's manufacturing industry 2019*. Retrieved 20 July 2019 from https://www.southafricanmi.com/south-africas-manufacturing-industry.html

Statistics South Africa. (2019). *Category archives: Economic growth 2019.* Retrieved 20 July 2019 from http://www.statssa.gov.za/?cat=30&paged=2.

Steyn, W. V. M., Monismith, C. L., Harvey, J. T., Holland, T. J., Nokes, W. A., & Burmas, N. (2012). Challenges confronting road freight transport and the use of vehicle-pavement interaction analysis in addressing these challenges. *Journal of the South African Institution of Civil Engineering*, *54*(1), 14–21.

Tabachnick, B. G., & Fidell, L. S. (2007). Logistic regression. Using multivariate statistics, *Journal of Cleaner Production*, *4*(1), 333–354.

Verma, V. K., & Chandra, B. (2018). An application of theory of planned behaviour to predict young Indian consumers' green hotel visit intention. *Journal of Cleaner Production*, *172*, 1152–1162.

Watling, C. N. (2014). Sleepy driving and pulling over for a rest: Investigating individual factors that contribute to these driving behaviours. *Personality and Individual Differences, 56*, 105–110.

Warner, H. W., Özkan, T., Lajunen, T., & Tzamalouka, G. (2011). Cross-cultural comparison of drivers' tendency to commit different aberrant driving behaviours. *Transportation Research Part F: Traffic Psychology and Behaviour, 14*(5), 390–399.

Wei, L., Qi-chang, H., Xiu-mina, F., & Zhi-min, F. (2012). Evaluation of driver fatigue on two channels of EEG data. *Neuroscience Letters*, *506*(2), 235–239.

Williamson, A., Friswell, R., Olivier, J., & Grzebieta, R. (2014). Are drivers aware of sleepiness and increasing crash risk while driving? *Accidental Analytical Previous*, *70*(6), 225–234.

Williamson, A., Lombardi, D. A., Folkard, S., Stutts, J., Courtney, T. K., & Connor, J. L. (2011). The link between fatigue and safety. *Accident Analysis and Prevention*, 43, 498–515.

World Health Organization. (2018). *Global status report on road safety 2018*. Retrieved 20 July from http://www.who.int/violence_injury_prevention/road_safety_status/ 2018/en.

Yang, G., Lin, Y., & Bhattacharya, P. (2010). A driver fatigue recognition model based on information fusion and dynamic Bayesian network. *Information Sciences, 180*(10), 1942–1954.

Zhang, Y., & Hua, C. (2015). Driver fatigue recognition based on facial expression analysis using local binary patterns. *Optical, 12*(2), 4501–4505.