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DIGITAL TECHNOLOGIES AND THE OPERATIONAL PERFORMANCE OF SMEs IN GAUTENG, SOUTH AFRICA

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ABSTRACT

This study explored the consequences of digital technologies on the performance of small- and medium-sized enterprises (SMEs) in Gauteng, South Africa. As digital tools and transformation become increasingly significant in improving business efficiency, competitiveness and growth, this study focuses on how organisations (SMEs) implement these technologies, the challenges of adaptation, and proposes strategies for improvement. This research is based on a qualitative approach, combining secondary data analysis and in-depth interviews with ten SME owners selected through purposive sampling. The findings show that, although digital tools and technologies contribute to operational efficiency, revenue growth, and customer engagement, their use remains largely limited to marketing activities rather than full-scale business integration. This study further highlights resource constraints, cybersecurity concerns, and data breaches as significant barriers to digital adoption. This research emphasises the need for increased awareness, financial support, and a strengthened regulatory framework to facilitate the full utilisation of digital technologies in SMEs. The findings contribute to both the academic literature and policy discussions on digital transformation in developing countries, offering practical insights for business owners, policymakers, and stakeholders to enhance digital adoption in the SME sector.

KEYWORDS: Digitalisation, Digital Transformation, Entrepreneurship, Gauteng, SMEs, South Africa, Technology.

1. INTRODUCTION

Digital technologies are a foundational force in the world today, shaping the world economy and business, especially since the COVID-19 pandemic (Amankwah-Amoah et al., 2021). Beyond efficiency, it is recognized as a driver of innovation, inclusivity, and sustainable growth. With studies connecting digital transformation to the progress of the United Nations Sustainable Development Goals (UN SDGs) by 2030 (African Union, 2020; Fitzgerald, 2022). Digital tools enhances economic growth and operational efficiency, enabling businesses to create value and remain competitive in a fast-paced interconnected world (Ravindran, 2023).

In South Africa, the shift in digital transformation is reflected in its national development framework, such as the National Development Plan (NDP) and the National Digital and Future Skills Strategy (2020), both of which aim to address socioeconomic challenges such as poverty, unemployment, and inequality while promoting digitalisation (NDP, 2015; SADT, 2020). Over the past decade, advancements in mobile technology and Internet accessibility have significantly impacted South African businesses, particularly within the small and medium enterprise (SMEs) sector, which is a major contributor to the country's economic growth (Gaglio et al., 2022).

Despite these developments, the extent to which SMEs in South Africa can adopt these technologies remains limited. Many businesses face practical constraints such as resource limitations, digital literacy, and cybersecurity concerns. Given that SMEs account for 60% of the workforce and 38% of businesses in Gauteng (SEDA, 2022), understanding their integration with digital technologies is crucial for economic sustainability.

Over the years, research on digital transformation has increased; however, a critical gap remains in understanding how the adaptation of technology specifically affects SME performance in the South African context, particularly in Gauteng. Existing studies have primarily focused on large corporations or generic trends, leaving limited empirical evidence on the practical challenges, success factors, and the impact of digital transformation within SMEs.

This study addresses these gaps by assessing the impact of digital transformation on SME performance in Gauteng, South Africa. Gauteng, often referred to as the "economic heartbeat of South Africa", serves as an ideal case study because of its high concentration of SMEs and its role as a technological hub (Makhura, 2018; Liezel, 2023). By identifying the key challenges and opportunities that

SMEs face with digital adoption, this study aims to generate actionable recommendations and insights for all stakeholders, including policymakers, to drive integration and economic growth.

2. LITERATURE REVIEW

SMEs do not have a unified acceptable definition as they vary across countries (Keskggn et al, 2010). Different countries use different yardsticks to categorise themselves as SMEs. Leopoulous et al. (2006) emphasised that SMEs should be defined by specific government legislation. In South Africa, SMEs have fewer than 200 employees (National Small Business Amendment Act, 2004). For the European Union, SMEs are based on a staff headcount of fewer than 250 employees or an annual turnover that should not exceed € 50 m or € 43 m for the balance sheet (European Commission, 2021). Globally, SMEs are dynamic contributors that play a crucial role in fostering economic growth and social development by serving job creation purposes and contributing substantially to the nation's GDP. SMEs in developing countries generate approximately 40% of their domestic income (Yahaya and Nadarajah, 2023). In the US and UK as well, SMEs contribute to GDP growth by 44% and 48%, respectively (Yahaya and Nadarajah, *ibid*). However, the OECD advocates tailored strategies to enhance SME performance in various countries (OECD, 2024).

2.1 Global Impact of Digital Technologies on SMEs

Digital technologies have reshaped the business environment with new avenues for growth and efficiency (Porter and Heppelmann, 2014). It has provided numerous benefits to businesses such as visibility, growth, and enhanced competitiveness (Rosin et al, 2020; Youssef et al 2021; Nkwei et al, 2023). Technologies such as cloud computing, Artificial Intelligence [AI], the Internet of Things (IoT), Data Analytics, Computer and Mobile Technologies, and Social Media Applications have altered the dynamics of SMEs by providing them with scalable solutions to optimize operations, improve customer engagement, and streamline decision-making processes (Brynjolfsson and McAfee, 2014; Manyika et al, 2016; Makoe et al, 2020). For example, Cloud Computing has emerged as a transformative force for SMEs, offering scalable and cost-effective IT solutions. In addition, applications such as machine learning and natural language processing help streamline processes, automate tasks, and enhance customer interaction (Manyika et al, 2016). The adoption of these

technologies by SMEs eases their operations as well as their delivery of services, and even gives them an avenue to compete with established businesses.

Data analytics is another tool that enables SMEs to make data-driven decisions, thereby leading to improved operational efficiency and strategic insights. Analytic tools such as Excel, Tableau, and Power BI can help SMEs extract valuable information from their robust data to understand what their customers want, easily track and account for supply chain materials, and identify market trends.

Digital technologies through e-commerce platforms and social media applications have also transformed SMEs' engagement with customers and market accessibility. These technologies have provided SMEs with opportunities to compete on a larger scale (Urban and Maphathe, 2021). For example, e-commerce platforms like Twiga (Kenya), Jumia (Nigeria), Konga (Nigeria), and Takealot (South Africa) are very popular in their respective countries (Urban and Maphathe, *ibid*). Likewise, social media platforms, such as Google Business, YouTube, and Facebook, are being used by SMEs to promote their businesses. In a report by Statista, 65% of SMEs consider social media advertising effective, and 51% of small enterprises rely on social media to grow their businesses (Chordia, 2021).

Digital technologies have proven to be useful for SMEs in their internal and external day-to-day operations, such as product awareness, exploring new markets, engaging in communications, transactions, sales recording and processing, and competing with established businesses in the industry. According to Chordia (2021), SMEs use an estimated expenditure of 684 billion US dollars globally to expand their technological scope. In another digitalisation survey carried out on SMEs in Malaysia in 2018, 79.7% of the respondents testified that digitalisation has improved their business productivity and efficiency (Chordia, *ibid*). The survey revealed that "productivity is directly proportional to the utilisation of digitalisation tools."

In Sub-Saharan Africa [SSA], the efficiency of SMEs has continually been emphasized, although the outlook towards digital technologies has been slow (Organization for Economic Cooperation and Development, 2019). Challenges such as cybersecurity concerns, resource constraints, digital literacy gaps, and rigid policies impede the widespread adoption of these tools by SMEs in developing regions (Chordia, 2021). (Achieng and Malatji, 2022., Mhlongo and Daya, 2023).

2.2. Relevance of SMEs in South Africa

The South African government has designated SMEs as significant economic builders, suggesting the importance of this sector in the country (Mahembe and Chiumya, 2011). According to a study by the Small Business Institute (2021), approximately 98% of South African businesses fall under SMEs, and 60% of the nation's workforce is employed by SMEs. This statistic depicts the influence of SMEs on South Africa's economy. In the 2023 State of Nation Address, it was highlighted that there are between 2.4 and 3.5 million SMMEs in the country (SONA, 2023). Among these, Gauteng has the highest concentration of SMEs (38.1%). (SEDA, 2022).

This proves that SMEs are significant contributors to the country's economy and GDP. Statistics show that SMEs contribute between 34% and 57% of the country's GDP (NCF, 2024). South African SMEs have proven to be avenues for job creation. According to Enaifoghe and Ramsuraj (2023), the South African Government has projected that 500000 new employments will be created yearly, with SMEs as a major contributor to its actualization. This action will also help achieve the UN sustainable development goals, particularly Goal 8 "promoting job creation and growing enterprises."

Another relevance of SMEs to South Africa is that they are at the forefront of innovation, thereby fostering a culture of entrepreneurship (Enaifoghe and Vezi-Magigaba, 2023). These innovations are crucial for economic growth because they tend to take advantage of technological or commercial opportunities overlooked by larger enterprises.

SMEs also have a direct effect on South African communities. The Growth of SMEs is a crucial part of the Local Economic Development (LED) strategy of municipalities that aims to "promote economic development at the grassroots level." SMEs contribute to sustainable development at the grassroots level (Ayandibu and Houghton, 2017). This LED strategy also helps address inequalities within the country.

Despite the importance of SMEs in South Africa, the sector has faced challenges that hinder its growth and sustainability. These include limited access to finance and credit, low levels of R&D, low entrepreneurial culture and skills, access to the market, and a complex regulatory environment (Fatoki, 2014; Agwa-Ejon and Mbohwa, 2015; SEDA, 2016; Mhlongo and Daya, 2023). Additionally, SMEs often grapple with technology adoption (Modimogale and Kweze, 2011).

2.3 Digital Transformation amongst SMEs in South Africa

Digital technology has become increasingly vital to businesses. In South Africa, initiatives such as the National Broadband Policy and improved Internet access have enabled SMEs to access online platforms and e-commerce tools (Department of Communications and Digital Technologies, 2020). According to GITS (2016) on digital usage concerning businesses, 15 million people, which equates to 27% of the total population, make use of social media platforms in conducting business, and 13 million users, 24% of the total population, use their mobile cell phones to conduct business. However, these figures were further propelled by the COVID-19 pandemic. In a study conducted in 2021, almost half of South African businesses (46%) stated that the majority of their businesses have been conducted virtually since the start of the pandemic (engineerIT, 2021). Corroborating this, a study carried out by the SME Tech Index of 2023 revealed that 63.3% of SMEs make use of technologies to enhance productivity and customer engagement (Burger, 2023).

These technologies have enabled SMEs to tap into new markets, streamline their operations, and enhance their overall competitiveness in the global market. SMEs in South Africa have been able to leverage e-commerce, digital marketing, and data analytics to reach a wider audience and make informed business decisions (Khambule, 2022). Despite this progress, the adoption of digital technologies in South Africa has been uneven, particularly in rural areas. This imbalance in technological usage can be attributed to limited resources, data privacy concerns, cyber security, a dynamic shift in customer behavior, ethical use of digital technologies, and a lack of digital literacy (Ismail et al, 2017; Modimogale and Kroeze, 2018; Bannett, 2019; Hardenberg, 2022; Timmis, 2023). In a study by Bannett (2019) on why SMEs hold back from digital technologies, 30% of its findings attributed it to resource problems, 20% to security concerns, another 20% to lack of digital literacy, 19% to leadership problems where those in charge of the SMEs refused, and 11% to an absence of a digital strategy within the business.

The COVID-19 pandemic underscored the importance of digital transformation, as businesses with digital capabilities reported higher resilience and growth during the pandemic (EngineerIT, 2021). However, barriers such as cost, limited strategic direction and cybersecurity concerns continue to restrict the extent to which SMEs can fully benefit from digital transformation. These barriers point to the need for specific and practical interventions to support SMEs.

Although extensive research has shown the benefits of digital technology for SMEs globally, there is still a limited understanding of their impact on SME performance in the South African context, particularly in Gauteng Province. Existing studies emphasise the barriers to adoption, but offer no detailed insights into strategies for overcoming these challenges. Thus, this study examines the impact of digital technologies on SME performance in Gauteng, identifies key challenges, and proposes strategies to enhance digital integration.

3. AIMS

This study aims to create an empirical understanding of how digital transformation can impact SME performance, particularly in Gauteng, South Africa. It also explores the challenges and the long-term implications associated with digital integration.

4. METHODS

A qualitative research method was employed, combining secondary research with primary data collected through interviews. Participants were selected through a purposive sampling technique which focused on SME owners in Gauteng, South Africa, whose experiences and insights were deemed crucial for understanding the challenges and benefits of digital technology adoption.

For the primary data, total invitation sent out was 25; only 10 agreed to participate in the study. The relatively low response rate can be due to time constraints or a degree of sensitivity discussing business operations. While this limits the generalizability of the findings, it allows for a more detailed exploration of participants' perspectives, which is consistent with the study's qualitative focus.

Ethical approval was obtained from the university research ethics committee (JBSREC2023123), detailing that the study adhered to proper ethical standards involving human participants. All interviewees participated voluntarily and gave informed consent with the researchers' assurance of anonymity and confidentiality.

Each participant was engaged in a semi-structured interview held on different days, allowing participants sufficient flexibility with their time and their experience. This also enabled a more open discussion of how digital technologies are used within their businesses, including their challenges and benefits. These interviews varied in length and depth, depending on the participant's level of engagement and experience. The interviews were transcribed and subjected to textual analysis to

uncover themes and patterns that addressed the research objectives.

5.RESULTS

To give credence to the study, this section presents empirical findings from interviews conducted with SME owners in Gauteng. The interviews were transcribed, and the data were grouped into themes. These themes formed the basis for the analysis and interpretation. Pseudonyms (BE1-BE10) were used to ensure participant anonymity. Similarly, some themes included direct extracts from the transcript.

5.1 Technology Adoption and Integration

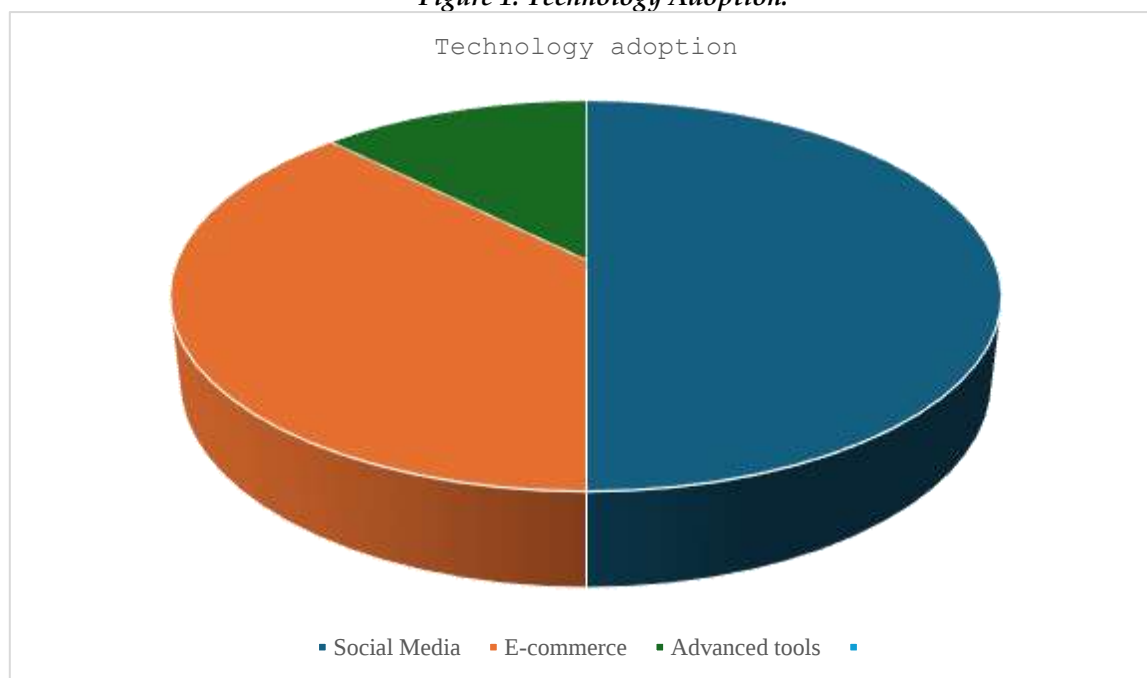
The study revealed that all respondents embraced technology in their businesses in one way or the other. According to BE 1, "Digitalisation is the forefront of my business enterprise right now. It's my major role in getting through to customers".

While some only use technology for advertisement, some use it in the dispensation of their services to make things easier. Eight of the ten (80%) participants interviewed utilise digital tools,

which are predominantly social media platforms such as Instagram, Facebook, YouTube, and Google My Business for marketing processes. For instance, BE 3 lays emphasis "on using digital tools only for marketing purposes and not as a tool to conduct their business"; and some enterprises, 6 out of 10 of the participants (60%) made use of the tools for e-commerce. Advanced digital tools such as ERP and Data Analytics were only utilised by two out of the 10 (20%) participants. From these findings, technologies such as social media applications, mobile phones, and emails are the most common digital tools used to promote and enhance businesses.

COVID-19 was also highlighted as a key factor influencing technology adoption, as six out of the ten participants reported migration to the use of technological tools during the COVID-19 pandemic. According to BE 2, "COVID-19, online shopping is safe and easier. Hence, it made sense for me to move online. Additionally, the reach is much higher than the storefront. For BE 3, "I have been using these tools before COVID, however, it became more prominent for me to use during COVID-19".

Figure 1: Technology Adoption.



5.2 Operational Efficiency

Digital technologies significantly enhance the daily and operational efficiency of these SMEs. The findings show that digital technology allows SMEs to reduce their overall expenditure by reducing operational and marketing costs. According to BE4 ".... Before now, I used to pay for advert pages in all

these big stores' magazines as well as newspapers, but now I spend far less because my business is registered on Google Business and I run ads on Instagram, which I believe even has a wider reach than what I did before.... and it is cheaper". Participants noted improved processes and access to a broader customer base. BE 3 asserted that they had received more than four clients outside Gauteng

between January and September 2023 because they had come across her services online. Similarly, other BEs, such as BE1, BE2, BE3, BE5, BE6, and BE 7, emphasised their financial growth due to the increase in the number of customers leading to improved sales. BE2 indicated to be doing “all their marketing online via various social platforms. They also process payments and orders online and use technology to gather data for their in-person market days”. Their method, according to them, minimises costs and saves labour.

5.3 Increase in Revenue

Most participants reported an increase in revenue, which they attributed to a broader customer base enabled by digital marketing. Participants also highlighted the cost-effectiveness of digital marketing compared to the traditional advertising method, which enabled them to save more money. BE5 outlined the advertising of her business using digital marketing tools, and social media platforms were not costly compared to using multimedia channels. Hence, they can save and obtain proper returns on their income at the end of the day.

5.4 Business Growth and Productivity

The participants reported that digital technologies helped their businesses in Gauteng with growth and productivity. Participants (BE 1,2,3,4,5,7,8) highlighted smoother end-to-end processes, improved customer retention, and the ability to attract clients from outside Gauteng and South Africa. Reiterating BE 1, “There is an easy end-to-end process when clients order online, and clients like a seamless and stress-free process when it comes to business. That way, we can get more customers while retaining the ones we have.” BE 3 believed that their business would not have witnessed growth if it had not been for the use of digital technology. In their words, “digital tools have helped me grow my business. Without these tools, I will say my business would not have grown the way it is now. For example, Google My Business has helped me. I have clients who are outside Gauteng, and even outside South Africa, able to book my services. This has had a positive impact on my business. I think without Google’s business and other tools like it, I would not have had such access”.

In addition, owing to data analytics, it is easy to access customer intelligence and gain insights into analysing and predicting their needs. In this way, new products are designed to meet customer needs at the right time and at a good price, as per BE8.

Digital Technology also provides an opportunity

to improve customer relations. As stressed by BE 2, “We use technology to gather data for our in-person market days. That way we can know what our customers want, how impressed they are with our services, and how we can improve to serve them better.”

5.5 Market Reach and Customer Engagement

Participants emphasised that their online presence significantly expanded their market reach; for instance, BE6 stated, “We do not have to sit back and wait for clients to book our services, but instead we get new clients regularly because people can see our work and advertisement online”. Digital tools, such as search engine optimisation and online advertisements, have widened business horizons, enabling them to connect with customers outside their geographical zones. For BE3, “Back in the day, people who are close to you can access the business space. Alternatively, people would access the business space through referrals from people close to you, but now digitalisation has helped widen the horizon. People can access services from any part of the world. People can see me from anywhere they are, and I can push my market in their faces compared to back in the day; if you do not have money for a TV advert and the likes, you can hardly advertise. However, now there is free access to Google ads, Instagram ads, Facebook community, and search engine optimization, which has helped small businesses like mine to grow”. Additionally, technologies such as chatbots and data analytics have helped improve customer engagement and tailor products and services according to customer preferences. BE2 provided “through our online store, we have the opportunity to discuss what we do and why to create a recognizable brand so that by the time it reaches the retail market, it is familiar to most.” For BE 10, “there are chatbots are created to engage with customers in knowing how to serve them better. Customers sometimes want a particular product. However, the products they seek are not suitable for their purpose. Through our engagement, we can advise them appropriately.”

5.6 Challenges and Barriers

The findings of the study revealed factors that participants saw as problems hindering their full usage of technologies in their business. This includes:

5.6.1 Digital Illiteracy: Over half of the participants make use of digital tools only to market their goods and services. Many SME owners are unfamiliar with advanced tools beyond social media.

In addition, some of the participants made references to customers who lacked technological proficiency to engage digitally, leading to inefficiencies. BE 7, expounding on their experience, emphasised that “dealing with someone who is not technologically inclined and giving them their deliverables is like doing the same job twice because the person is not at the same frequency as you are. Hence, you must repeat the job until the person is clear. Hence, you discover in most cases that you end up consuming more time and energy”.

5.6.2 Data Breach and Privacy: A high number of participants expressed their fear of not using more than social media applications for their business because of a lack of security and privacy issues. Part of the persistent issue raised is the fact that people can hack into their businesses, such as their web pages and phones. They can even clone business/SME owners’ identities online and use them to try and rip people off. BE3 gave a narrative of how her number was hacked, and funds were requested by her clients until an individual reached out to her to inform her about what was going on.

5.6.3 Technology Maintenance: The findings also

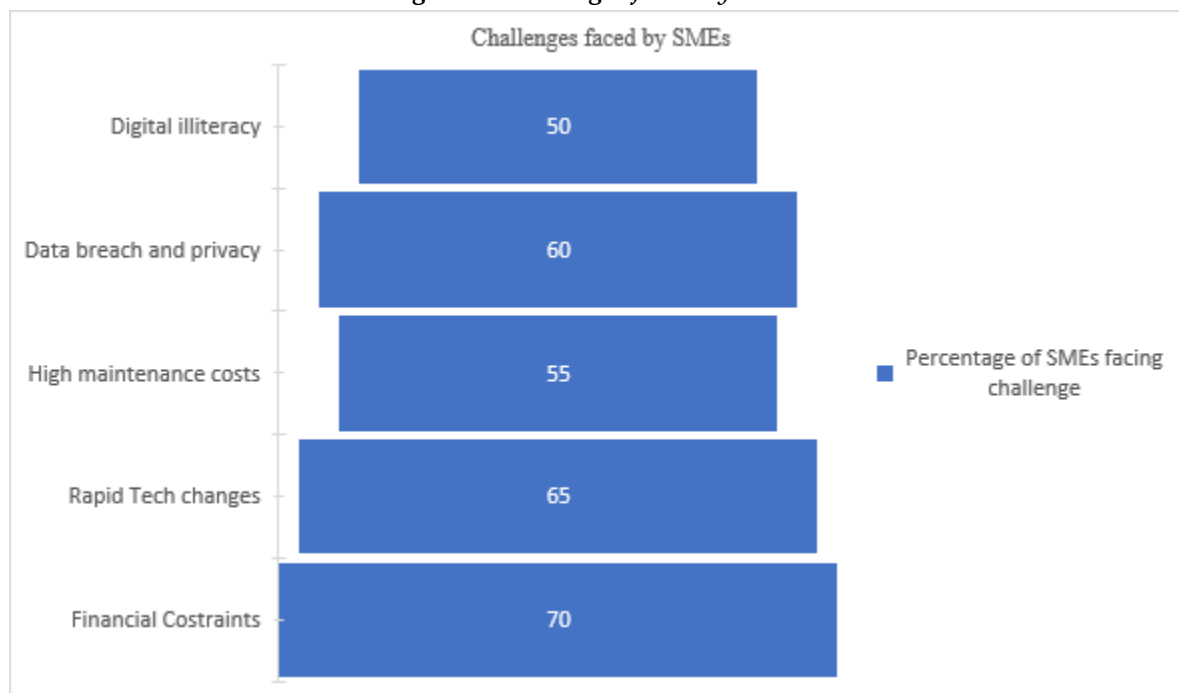
reveal that the high cost of maintenance and upgrading tools poses significant challenges for technology adoption by SMEs.

Rapid evolution of new technologies: This was another challenge highlighted by the participants. Fast-paced technologies make it difficult for business owners to keep tabs on. According to BE9, “There is something to learn each day technology-wise. These technologies are expected to provide regular updates. Hence, one must be able to keep up with new applications and be flexible enough to embrace these applications and techniques”.

5.6.2 Financial Constraints: Limited financial resources were highlighted by participants as a reason for not adopting advanced digital tools.

Other problems highlighted by participants include the interruption of the power supply (load shedding), as it affects network connectivity. The interruption of the electricity supply in South Africa has been regarded as having an impact on network coverage and devices. This affects the reliability of digital services, as people tend to seek alternative approaches.

Figure 2: Challenges faced by SMEs.



Source: Author's findings

6. DISCUSSION

This section discusses the findings of the study, exploring how digital technologies impact SME performance and the challenges faced.

6.1. Technology adoption and Integration: The findings of the study indicate that many SME owners embraced basic digital tools, particularly social media platforms for marketing, while more advanced tools, such as ERP, Data Analytics, and

machine learning, remain underutilised. These findings align with Achieng and Malatji's (2022) findings that South African SMEs are primarily focused on utilising basic technological tools, such as email, SMS, and social media platforms, for communication and marketing.

This study also underscores the role of the COVID-19 pandemic as a catalyst for digital adoption in most SMEs. Over 60% of participants reported that reliance on digital tools stemmed from the pandemic period. This aligns with GetApp's findings, in which many respondents cited COVID as a reason for going online (engineerIT, 2021). The pandemic enabled many businesses to go online, demonstrating the critical role that external pressure could play in accelerating digital transformation. However, the underutilization of advanced digital tools suggests a lack of awareness and technical knowledge. This implies the need for a campaign on digital awareness as well as interventions to promote digital integration.

6.2. Operational Efficiency:

Digital tools have improved the daily operations and overall efficiency of SMEs. Participants revealed the ease of automating tasks which not only saves time but also reduces labour costs which not only save time but also reduces labour costs. These findings corroborate the study by Brynjolfsson et al. (2024) that digital technologies enable businesses to optimise resources and improve their business efficiency.

In addition, the participants revealed how digital tools have expanded their organisational reach by granting them exposure to potential customers outside Gauteng.

6.3 Revenue Growth

This study highlights the role of digital marketing in saving financial costs, thereby boosting SMEs' financial growth of SMEs. Participants noted the affordability and effectiveness of digital tools in bringing awareness to their businesses and generating a wide clientele base. In turn, this provides a higher return on finances than traditional advertising methods. They can save money through advertising and generate more income from new clients. For instance, BE3 reported acquiring four new clients from outside Gauteng in 2023 because of her business's online visibility. This reinforces existing research, particularly Chordia's (2021), which highlights the cost-effectiveness of digital marketing for SMEs.

6.4 Business Growth and Productivity

The study suggests that the adoption of digital technologies has contributed significantly to business growth and productivity. Participants highlighted more efficient end-to-end processes, stronger customer acquisition, and increased ability to scale operations using tools such as Google My Business.

Additionally, a few respondents using more advanced technologies reported additional benefits, particularly data-driven decision making. This includes providing more customer-centric products through analytics. This ability underscores the strategic advantage of embracing advanced digital technology. However, the limited adoption of such tools suggests that many SMEs are yet to utilise their full potential.

These findings mirror Makoe et al.'s (2020) observation that digital platforms enable SMEs to streamline operations and improve service delivery.

6.5 Market Reach and Customer Engagement

Several participants attested to the growth in the clientele as a result of digital technologies. Their businesses have been able to attract customers both within and outside of Gauteng. This revelation is in alignment with Jahan and Martin's (2019) position when they asserted in their study that is more important nowadays to have an online presence than a physical store to be able to attract a wide clientele base. This also supports Chordia's (2021) claim that digital technologies enable businesses to expand beyond geographical boundaries and provide support for better supply chain solutions.

Likewise, tools such as chatbots and data analytics have helped to encourage and promote customer engagement, thereby improving business satisfaction and loyalty. For instance, one of the participants stated that their business makes use of chatbots to engage customers in tailoring their offerings and addressing their concerns and inquiries.

6.6 Challenges and Barriers.

Despite the numerous benefits of digital transformation to SMEs, this study revealed that many SME owners are only aware of social media tools for digital marketing and are unfamiliar with other advanced tools. These findings corroborate those of Ismail et al. (2017) that many SME owners in South Africa lack digital technology knowledge. There are diverse digital tools that are beneficial to SMEs apart from social media applications, such as customer relationship management (CRM) to improve sales and customer service and Quickbooks, which can be used to facilitate smooth financial transactions. In addition, there is the second side of

dealing with customers or clients who are not digitally literate, as reflected by one of the participants. This can be attributed to why some SMEs resort to traditional ways of conducting business.

Apart from digital literacy, there are also financial constraints. The rapid evolution of technology requires SMEs to continuously reskill or recruit specialized personnel, which many SMEs cannot afford. This finding supports Modimogale and Kroeze (2016), who in their study attested that the high cost of connectivity and technological tools hinders why many SMEs in South Africa cannot embrace digital technologies.

Another challenge is data privacy and breaches. A concern raised by participants was the fear of not being able to protect their clients' information, as well as a lack of security and privacy issues. These concerns highlight the importance of addressing security concerns in digital technologies to build trust among users.

7. RECOMMENDATIONS- Future Outlook and the Adaptation of Digital Technologies within SMEs in South Africa.

Based on the findings from the study and the literature reviewed, the following recommendations are suggested:

1. Digital Inclusivity: The findings revealed that many of the digital tools used by SMEs are mostly for online social media marketing and banking services. However, other powerful digital tools can be adopted to facilitate the smooth and efficient operation of SMEs in the province. This includes, but is not limited to,

a. **Internet of Things:** Examples include Smart Sensors and RFID technology. The potential application of IOT in SMEs within Gauteng will aid automation and logistics optimisation and enhance customer engagement.

b. **Data Analytics and Machine Learning:** Analytics tools enable SMEs to analyse customer behaviour, optimise supply chain management, and enhance overall business efficiency. The integration of data-driven decision-making processes can contribute significantly to the sustainable growth of SMEs (Davenport, Harris, & Shapiro, 2010). Examples include Google Analytics and Data Robots.

c. **Payment and Invoicing Solutions:** These tools enable SMEs to streamline and automate billing processes (sending invoices), track transactions, and manage cash flow. By reducing manual inputs, this enhances operational efficiency, minimises errors,

and improves financial oversight. Common examples include Zoho Invoice and QuickBooks.

d. **Project Management Software:** This software assists SMEs in coordinating tasks, schedules, and collaboration. Examples are Trello, Asana, and Jira.

e. **Customer Relationship Management [CRM] Software:** CRM tools help manage customer interactions, track sales pipelines and support service delivery, including conversion rates. Examples include Zoho CRM and HubSpot.

f. **Enterprise Resource Planning [ERP] systems:** This technology integrates core business functions such as finance, operations, and supply chain management, which helps streamline business processes, centralise data, and improve collaboration. An example of this is the SAP business.

g. **Cloud Computing:** This offers SMEs scalable and flexible access to computing resources, while reducing the need for significant upfront investments in the IT infrastructure. These platforms accommodate data storage, remote access, and real-time collaboration, thereby fostering operational efficiency and flexibility. SMEs can leverage cloud services to streamline processes, facilitate remote work, and enhance their overall productivity (Mell et al., 2011). Examples include Google Cloud and Amazon Web Services [AWS].

These technologies have a significant effect, offering SMEs multiple pathways to improve efficiency, grow and strengthen financial performance at both the provincial and global levels. However, the extent of these benefits depends on how well the chosen tools align with the firm's operations, its objectives, and its resources. Nonetheless, the integration of these technologies is expected to yield higher productivity and revenue growth.

2. Hands-on Knowledge: SMEs should learn from similar businesses outside South Africa on how they run their businesses to fit into the digital age. This will assist SMEs in selecting digital tools that benefit their businesses. It will also help in understanding how these tools operate and how they have been utilised to obtain the best results.

3. Digital Literacy: Another crucial factor that can assist SMEs in fully benefiting from the use of technologies for their growth and efficient operations is digital literacy. Many people are only familiar with social media marketing tools and techniques, overlooking other important technological tools that can be beneficial for SMEs in various industries. To address this issue, SMEs should invest in training programs for their employees, collaborate with

educational institutions, and consider outsourcing specific tasks. Professionals such as business analysts, digital marketers, and social media managers specialise in helping businesses leverage available and relevant technologies for growth.

4. Flexibility: Flexibility is a crucial skill that SMEs must demonstrate. Technology is evolving quickly, and SMEs must recognise that the market environment is likely to change. Consequently, SMEs should be flexible and adapt to technological changes.

5. Government Impact: The National and Provincial governments in South Africa play a key role in the adoption of digital technologies by SMEs in South Africa. From the findings of the study, many participants see the government as not supporting SMEs when it comes to digital transformation. The South African Government has set up incentives and grants to assist SMEs. For instance, the SEDA Technology Programme, the Research and Development Tax Incentive, the Black Industrialists Scheme [BIS], etc. (SME South Africa, 2021). However, many South African citizens are not aware of the policies and systems put in place to support SMEs. On this basis, this study recommends ways in which the government can assist SMEs within Gauteng Province and nationally in adopting and enhancing digital technology implementation among SMEs.

6. Financial Incentives and Grants: Although the South African Government has established financial programs and grants to aid SMEs, this study indicates that none of the participants was aware of such support. Consequently, the Government needs to increase awareness of the initiatives it has implemented for SMEs, particularly concerning financial incentives and grants. Furthermore, the Government can specifically allocate grants for R&D in digital innovation aimed at SMEs. This approach encourages individuals to explore and generate advanced technologies that could prove beneficial to the SME sector.

7. Regulatory Framework and Digital Policies: A clean and supportive regulatory environment is essential for encouraging SME participation in the digital economy. Policies that address issues like e-commerce regulations and data protection can reduce uncertainty, which in turn would make businesses adopt and invest in digital solutions and implementations.

8. Monitoring and Evaluation Mechanism:

Implementing a recurring assessment of digital support initiatives would ensure the effectiveness of the programs. Establishing structured monitoring frameworks would allow policymakers to evaluate outcomes, identify gaps and refine interventions over time. Incorporating direct feedback from SMEs themselves would provide valuable insights into their evolving needs and ensure support measures remain aligned and impactful.

7. CONCLUSION

The purpose of this study is to examine the impact of digital technologies on SME performance, identify challenges hindering their adoption, and propose strategies to enhance digital transformation among SMEs in Gauteng. The findings indicated that digital tools play a significant role in enhancing the efficiency of SMEs' business operations, expanding its market reach and strengthening customer-centric services and engagement. It was also discovered that many SMEs are familiar with the use of digital technologies that help create awareness and visibility for their businesses, rather than the adoption of other advanced tools that could aid the delivery of their products and services. Examples include customer relationship management, business-intelligence tools, and data analytics.

The study asserts that the vague use of many of these digital tools can be attributed to digital illiteracy, financial constraints, data breaches, and privacy concerns.

To address these challenges, the study recommended digital literacy, an avenue where training programmes, workshops, or seminars are organized for SME owners to bring them up to speed on digital tools available for them in their fields and their uses; government support, particularly in terms of grants and financial support as well as skill development; and hands-on knowledge that involves familiarizing with similar enterprises on digital tools available to get the work done.

Although this study provides valuable insights into SMEs and digital transformation, it is important to highlight these limitations. The findings are based on a small sample size of ten SME owners in Gauteng who were purposively chosen based on their relevance and ability to provide insights into the research study. While this method ensures that the participants have the experience to answer the aim of the study, it may not capture the full diversity of SME experience across Gauteng or South Africa.

Future research should consider a broader sampling to validate these findings. This can also be conducted in other provinces in South Africa.

Despite this limitation, the findings of this study will be beneficial to policymakers, business support organisations, and SME owners. Policymakers could use these insights to design interventions that promote digital literacy, provide financial incentives for technology adoption, address infrastructure gaps, and enhance SMEs. Business support organisations may tailor their programs to offer targeted assistance

in digital skill development, foster a culture of innovation, and facilitate collaboration within the SME ecosystem. SME owners and managers, on the other hand, can leverage the study's insights to make informed decisions about technology investments, training programs, and strategic planning. This study also contributes to the literature on SMEs and Digital Transformation.

REFERENCES

- Adane, M. (2018). Cloud computing adoption: Strategies for sub-Saharan Africa SMEs for enhancing competitiveness. *African Journal of Science, Technology, Innovation and Development*, 10(2), 197–207. <https://doi.org/10.1080/20421338.2018.1439288>
- Agwa-Ejon, J., & Mbohwa, C. (2015). Financial challenges faced by SMMs in Gauteng, South Africa. *IAMOT 2015 Conference Proceedings*.
- Amankwah-Amoah, J., Khan, Z., Wood, G., & Knight, G. (2021). COVID-19 and digitalization: The great acceleration. *Journal of Business Research*, 136, 602–611. <https://doi.org/10.1016/j.jbusres.2021.08.011>
- Ayandibu, A., & Houghton, J. (2017). The role of small and medium-scale enterprises in local economic development (LED). *Journal of Business and Retail Management Research*, 11(2), 133–139.
- Banga, K., & T-Velde, D. (2018). Digitalization and the future of manufacturing in Africa. Overseas Development Institute (ODI), Supporting Economic Transformation Programme.
- Brynjolfsson, E., & McAfee, A. (2014). The second machine age: Work, progress, and prosperity in a time of brilliant technologies. W. W. Norton & Company.
- Burger, S. (2023). Index shows significant difference in effective tech use between female- and male-led SMEs. *Engineering News*. Retrieved from <https://www.engineeringnews.co.za/article/index-shows-significant-difference-in-effective-tech-use-between-female--and-male-led-smes-2023-08-18#:~:text=The%20inaugural%20South%20African%20SME,making%20effective%20use%20of%20technology>
- Chatterjee, S., Chaudhuri, R., Vrontis, D., & Basile, G. (2021). Digital transformation and entrepreneurship process in SMEs of India: A moderating role of adoption of AI CRM capability and strategic planning. *Journal of Strategy and Management*, 15(3), 416–433. <https://doi.org/10.1108/JSMA-02-2021-0049>
- Chesbrough, H., & Spohrer, J. (2006). A research manifesto for services science. *Communications of the ACM*, 49(7), 35–40.
- Chinomona, R., Surujlal, J., & Dhurup, M. (2018). Barriers to growth in small businesses: A South African perspective. *Problems and Perspectives in Management*, 16(1), 160–169.
- Chordia, A. (2021). The impact of digital transformation on small to medium-sized enterprises. DoodleBlue. Retrieved from <https://www.doodleblue.com/blogs/impact-of-digital-transformation-on-smes/>
- Davenport, T. H., Harris, J., & Shapiro, J. (2010). Competing on talent analytics. *Harvard Business Review*, 88(10), 52–58.
- Department of Communications and Digital Technologies. (2020). National broadband policy for South Africa. Retrieved from <https://www.gov.za/documents/national-broadband-policy-south-africa-2-oct-2020-0000>
- Enaifoghe, A., & Vezi-Magigaba, M. F. (2023). Conceptualizing the role of entrepreneurship and SME in fostering South Africa's local economic development. *International Journal of Research in Business and Social Science*.
- EngineerIT. (2021). South African SMEs embrace digitalisation. Retrieved from <https://www.engineerit.co.za/article/south-african-smes-embrace-digitalisation>
- European Commission. (2021). Internal market, industry, entrepreneurship, and SMEs. Retrieved from https://single-market-economy.ec.europa.eu/smes/sme-fundamentals/sme-definition_en
- Fatoki, O. (2014). The impact of firm and entrepreneurial characteristics on access to debt finance by SMEs in King Williams' Town, South Africa. *International Business Research*, 7(3), 133–147.
- Fitzgerald, M. (2022). The new technology frontier for developing economies: Digital transformation to achieve the sustainable development goals. Retrieved from <https://kpmg.com/xx/en/home/insights/2022/01/digital-transformation-to-achieve-the->

- sdgs.html#:~:text=Digitalization%20will%20likely%20have%20profound.
- Gaglio, C., Kraemer-Mbula, E., & Lorenz, E. (2022). Digitalisation, innovation and productivity in South African micro- and small enterprises. SARChI Industrial Development Working Paper Series WP 2022-09. SARChI Industrial Development, University of Johannesburg.
- Gono, S., Harindranath, G., & Ozcan, B. G. (2015). Challenges of ICT adoption by South African SMEs: A study of manufacturing and logistics firms. *Strategic Change*.
- Hardenberg, F. (2022). Technology is changing the 'face' of small businesses. IOL. Retrieved from <https://www.iol.co.za/business-report/entrepreneurs/technology-is-changing-the-face-of-small-businesses-66eb9efe-b47a-41a7-a935-2b69a8ea3caf>
- Kesk n, H., G nt rk, C., Sungur, O., & K r   , H. M. (2010). The importance of SMEs in developing economies. In 2nd International Symposium on Sustainable Development (pp. 183-192). Sarajevo.
- Khambule, L. (2022). Digital marketing as a survival strategy of small businesses in Gauteng, South Africa (Master's thesis). University of Witwatersrand.
- Lamoureux, S. M., Movassaghi, H., & Kasiri, N. (2019). The role of government support in SMEs' adoption of sustainability. *IEEE Engineering Management Review*, 47(1), 110-114.
- Leopoulos, V. N., Kirytopoulos, K. A., & Malandrakis, C. (2006). Risk management for SMEs: Tools to use and how. *Production Planning & Control*, 17(3), 322-332. <https://doi.org/10.1080/09537280500285136>
- Liezal, B. (2023). Why Gauteng's economy and its CFOs hold the keys to national prosperity. Retrieved from <https://cfclub.co.za/why-gautengs-economy-and-its-cfos-hold-the-keys-to-national-prosperity/>
- Mahembe, E., & Chiumya, C. (2011). Literature review on small and medium enterprises' access to credit and support in South Africa. National Credit Regulator. Retrieved from https://www.smallbusinessinstitute.co.za/wp-content/uploads/2019/12/NCRLiterature-Review-on-SME-Access-to-Credit-in-South-Africa_Final-Report_NCR_Dec-2011.pdf
- Makoe, M., Ntuli, M., & Davids, A. (2020). Digital transformation in small and medium enterprises: A case study of Gauteng, South Africa. *International Journal of Business and Management*, 15(9), 112-126.
- Makhura, D. (2018). State of Provincial Address. Retrieved from <https://www.gpl.gov.za/premiers-speech/>
- Manyika, J., Chui, M., Bughin, J., Dobbs, R., Bisson, P., & Marrs, A. (2016). Where machines could replace humans – and where they can't (yet). *McKinsey Quarterly*.
- Mhlongo, T., & Daya, P. (2023). Challenges faced by small, medium and micro enterprises in Gauteng: A case for entrepreneurial leadership as an essential tool for success. *The Southern African Journal of Entrepreneurship and Small Business Management*, 15(1), 12 pages. <https://doi.org/10.4102/sajesbm.v15i1.591>
- Modimogale, L., & Kroeze, J. H. (2011). The role of ICT within small and medium enterprises in Gauteng. *Communications of the IBIMA*.
- Modimogale, L., & Kroeze, J. H. (2018). Using ICTs to become a competitive SME in South Africa. *Knowledge Management and Innovation in Advancing Economies: Analyses & Solutions* (pp. 504-513). Retrieved from https://www.academia.edu/40577904/Using_ICTs_to_become_a_competitive_SME_in_South_Africa
- Mukorera, M., Mayekiso, T., & Kekana, D. (2017). Understanding the impact of technology on small and medium enterprises in the developing world: A South African perspective. In *Proceedings of the International Conference on Industrial Engineering and Operations Management* (pp. 2546-2557).
- Mutobvu, M. R. (2020). Impact of digital technologies on small and medium enterprises in emerging towns: A case study of Vhembe District Municipality (Master's thesis). University of Venda.
- Mwangi, I. K., Okeyo, G. O., & Kimwele, M. W. (2018). A hybrid framework for cloud computing adoption for small and medium-sized enterprises. *International Journal of Science and Advanced Information Technology*, 7(4), 1-6. <https://doi.org/10.30534/ijisait/2018/01742018>
- National Small Business Amendment Act. (2004). Republic of South Africa. Retrieved from https://www.gov.za/sites/default/files/gcis_document/201409/act-no102004.pdf
- National Development Plan 2030. (2015). South African Government. Retrieved from <https://www.gov.za>
- NEF. (2024). SME support is crucial for the SA economy. *Enterprise Development Handbook*.
- Nkwei, E. S., Rambe, P., & Simba, A. (2023). Entrepreneurial intention: The role of the perceived benefits of digital technology. *South African Journal of Economic and Management Sciences*, 26(1), a4936. <https://doi.org/10.4102/sajems.v26i1.4936>

- OECD. (2024). *Financing SMEs and Entrepreneurs 2024: An OECD Scoreboard*. OECD Publishing. <https://doi.org/10.1787/fa521246-en>
- Oloruntade, G. (2023). Technology is improving the performance of African SMEs but less than 7% of them use it. *Punch Newspaper*. Retrieved from <https://technext24.com/2023/04/07/7-percent-african-smes-use-tech/>
- Porter, M. E., & Heppelmann, J. E. (2014). How smart, connected products are transforming competition. *Harvard Business Review*.
- Ray, G., Muhanna, W. A., & Barney, J. B. (2005). Information technology and the performance of the customer service process: A resource-based analysis. *MIS Quarterly*, 29(4), 625–652.
- SEDA [Small Enterprise Development Agency]. (2016). *The small, medium, and microenterprise sector of South Africa. Research Note, 1*. Retrieved from <http://www.seda.org.za/Publications/Publications/The%20Small,%20Medium%20and%20Micro%20Enterprise%20Sector%20of%20South%20Africa%20Commissioned%20by%20Seda.pdf>
- SEDA [Small Enterprise Development Agency]. (2022). *SMME Quarterly Update, 3rd Quarter 2022*. Retrieved from [http://www.seda.org.za/Publications/Publications/SMME%20Quarterly%202022-Q3%20\(005\).pdf](http://www.seda.org.za/Publications/Publications/SMME%20Quarterly%202022-Q3%20(005).pdf)
- SME South Africa. (2021). *A guide to government funding for SMEs [Updated]*. Retrieved from <https://smesouthafrica.co.za/guide-government-funding-small-businesses/>
- SONA. (2023). *Freeing small businesses*. Retrieved from <https://www.stateofthenation.gov.za/priorities/growing-the-economy-and-jobs/freeing-small-businesses>
- Sy, N. A., Maino, R., Massara, A., Prez-Saiz, H., & Sharma, P. (2019). *Fintech in sub-Saharan African countries: A game changer?* International Monetary Fund, African Department.
- Timmis, C. (2023). SMEs in SA need more government investment in digital skills and innovation. *Bizcommunity*. Retrieved from <https://www.bizcommunity.com/Article/196/846/235823.html>
- Urban, B., & Maphathe, T. L. (2021). Social media marketing and customer engagement: A focus on small and medium enterprises (SMEs) in South Africa. *Journal of Contemporary Management*, 18(1), 48–69. <https://doi.org/10.35683/jcm20065.96>
- Venter, B. (2023). *South African SMEs turn to technology for growth and continuity amidst economic challenges*. Retrieved from <https://www.thesmallbusinesssite.co.za/south-african-smes-turn-to-technology-for-growth-and-continuity-amidst-economic-challenges/>
- Yahaya, H. D., & Nadarajah, G. (2023). Determining key factors influencing SMEs' performance: A systematic literature review and experts' verification. *Cogent Business & Management*, 10(3). <https://doi.org/10.1080/23311975.2023.2251195>
- Westerman, G., Bonnet, D., & McAfee, A. (2011). The digital advantage: How digital leaders outperform their peers in every industry. *MIT Sloan Management Review*, 52(2), 63–66.
- World Bank. (2020). *South Africa economic update: Jobs and inequality*. Retrieved from <https://openknowledge.worldbank.org/bitstream/handle/10986/33416/9781464815301.pdf>
- Zakirah, O., Noor, H. A., Shafini, S., Nur, B., Emmy, F. A., & Wan, A. (2022). Challenges of social media marketing in digital technology: A case of small traders of agricultural products in Malaysia. *Journal of Advanced Research in Applied Sciences and Engineering Technology*, 28(3), 312–319. <https://doi.org/10.37934/araset.28.3.312319>