Unlocking a Sustainable Green Growth Frontier of Manufacturing Small to Medium Enterprises in the Fourth Industrial Revolution in Chinhoyi Urban, Zimbabwe

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Received: 11 January 2025| Accepted: 31 March 2025| Published: 31 May 2025

Abstract

Small to Medium Enterprises (SMEs) contribute significantly to economic growth and sustainable development globally. However, their contribution to sustainable green growth in the fourth industrial revolution has been largely not addressed by literature in Zimbabwe, which this qualitative study sought to unveil. The mantra of green growth strategies is ensuring a practical and flexible approach for achieving concrete, measurable progress across its economic and environmental pillars. Green growth strategies are not limited to the provision of critical support services, clean water, air and food production but to deliver full economic potential on a sustainable basis. This lacuna has not been addressed by literature on SMEs in Chinhoyi which this study sought to fill. The study purposively selected 15 registered manufacturing SMEs where an interview guide was used to solicit data from SMEs owners, which then was analysed and presented thematically. Study results showed that the availability of certain types of natural capital (sun, water, wind, among others) offer new opportunities for greening growth for SMEs in the manufacturing sector. The results confirm that technological change has been the main driver of green growth and efficiency for manufacturing SMEs. The results also pointed out that vital parts of the SMEs' green growth journey is developing business plans for new, sustainable products and services, implementing greener production or operational processes, or integrating selected standards that can enable some companies to get access to new markets. Based on the results, SMEs require capital to realise their green growth business plans. SMEs are encouraged to redefine their mission, vision and values and incorporate green concepts to enhance sustainability. A longitudinal study needs to be done on all types of SMEs going green in their business strategic orientation in Zimbabwe.

Key words: Small to Medium Enterprises, Green Growth, Sustainability, 4th Industrial Revolution, Zimbabwe

Introduction

The world over, several "green" initiatives have been introduced as a response to the global economic and financial crisis. "Green Economy", "Green Growth", and "Green Industry" are the most prominent of these new development concepts, which aim at improving human wellbeing and social equity and at increasing resource productivity to ensure more sustainable patterns of growth and industrial development. The world and its population is not just about its economies, it is an intricate web of communities, citizens, and families. The human dimension needs to have equal standing with the economic and environmental pillars of the

green discourse. We need effective and new strategies and policies a change in paradigm, which at its core, focuses on switching from efforts to increase labour productivity to substantially improve resource productivity. However, the adoption green growth strategies in Zimbabwe SMEs is still in its infant stage owing to high costs and ignorance of some SME owners or managers. Personal innovativeness, education, information and communication technology (ICT) literacy, security and ICT ease of use were the main drivers for the adoption of 4IR technology by SMEs globally.

The socio-economic role of Small and Medium Enterprises (SMEs), through employment creation, poverty alleviation and gross domestic product growth across economies, is well established (Mishal, Rimsha & Chaudhry 2019). Often their growth is hampered, and their resilience to supply chain disruptions weakened (Dhochak & Sharma 2015; Mason & Harrison 2015; Saturwa, Suharno & Ahmad 2021). Adegbite & Govender (2021) stress that resilient SMEs are especially needed on the African continent as they adopt 4IR. Studies indicate that SMEs are going green to patch up with global standards (Mavilia & Pisani 2021; Nasution et al. 2020; United Nations Industrial Development Organisation (UNIDO), 2020). Therefore, it is vital to support, grow, and preserve SMEs even as the world is progressing from the third industrial revolution to the fourth industrial revolution with regards to knowledge, power, and wealth of people and industries.

The terms green growth and green innovation are spreading wide in the modern world (UNIDO, 2020). With origins in the concept of sustainable development (meeting the needs of the present generation without compromising the ability of future generations to meet their own needs), green growth has a relatively narrow meaning (Dhochak & Sharma 2015; Mason & Harrison 2015; Saturwa, Suharno & Ahmad 2021). OECD sees it as fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies (OECD, 2020). Green growth is practically unattainable without green innovation, which is the development and commercialisation of new ways to solve environmental problems through improvements in technology (encompassing product, process, organisational, and marketing improvements) (World Bank, 2019).

Green policies stimulate innovation, for example the recent surveys in the European Union (EU) (2022) showed that environmental regulation (existing or envisaged) is the main driver for the adoption of incremental innovations by SMEs in the 4IR and, the international sustainability standards (ISO and others) showed their effectiveness in upgrading environmental practices by SME, mostly in absorbing foreign innovations and technologies, but to some extent promoting domestic innovations (WTO 2020; Gurría 2020; Segal & Gerstel 2020; Thaha 2020). Green policies also bring non-growth gains to welfare for SMEs, for example reduction of inequality in employment, poverty alleviation, increasing resilience to environmental and economic shocks (WTO 2020; Gurría 2020; Segal & Gerstel 2020; Thaha 2020). Through the use of 4IR technologies, enterprises across the globe, including SMEs can transition seamlessly from the traditional, static, linear supply chain designs towards smart, connected, intelligent, scalable, customisable and nimble supply networks, which, in turn, allow uninterrupted movement of products, services, information, and big data analytics for decision-making (Bouey 2020; Lu et al. 2020; Saturwa et al. 2021; Soetjipto 2020; Tairas 2020). Only if changing patterns of consumption are aligned with corresponding transformations in governance systems and SMEs, can a real green growth transition occur (Bouey 2020; Lu et al. 2020; Saturwa et al. 2021; Soetjipto 2020; Tairas 2020). Therefore green growth needs to combine business and household strategies towards a better life for all.

Nevertheless, the fear of diminished competitiveness and job losses remains one of the barriers to following a green development for SMEs.

However, a fair and sustainable shift to a green economy is, therefore, essential and addresses problems like potential skills shortages, income security and social exclusion is therefore essential (Hejazi 2021; Chowdhury & Quaddus 2015; 2017; Abeysekura et al. 2019; McKinsey 2020; Ambulkar et al. 2015; Güner & Gündoğan 2017). Overall, the right policy mix has the potential to directly and indirectly stimulate economic growth, competitiveness, employment and environmental improvements (Sivaraks, 2020). To bring us onto the path towards real "Green Growth", effective and completely new strategies and policies are needed a change in paradigm, which in its core focuses on switching from efforts to increase labour productivity to substantially improved resource efficiency to support a global development model that allows for a high quality of life for everybody now and in the future (BDO 2020; Indriastuti & Fuad 2020; Papadopoulos, Baltas & Balta 2020). Moreover, green growth strategies should generate visible and immediate local benefits such as increased efficiency and productivity, safety and resilience, job creation, and poverty alleviation (Hejazi 2021; Chowdhury & Quaddus 2015; 2017; Abeysekura et al. 2019; McKinsey 2020; Ambulkar et al. 2015; Güner & Gündoğan 2017).

A study conducted on SMEs going green in twenty seven 27 countries of CEECCA region, including Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Macedonia FYR, Moldova, Montenegro, Poland, Romania, the Russian Federation, Serbia, Slovak Republic, Slovenia, Tajikistan, Ukraine, and Uzbekistan demonstrated that SMEs who implemented green policies have achieved in being innovative leading to substantial growth measured by high revenue growth, Return On Investment and Return On Asset (Lee 2020; Alqam & Saqib 2020; Lee 2021; Ivanov & Dolgui 2021). In addition, patenting activities worldwide have been increasing in recent decades, and over 10 percent of recent patents among SMEs were related to green innovation (Ivanov & Dolgui 2021; Matt et al., 2016; Patsavellas, Kaur & Salonitis; 2021). Recent studies show that spurring green technologies has mostly the positive impacts on economic growth and diversification, the creation of new jobs, and improving environmental and human health (Abualrob & Kang; 2016; Saif-Ur-Rehman & Alam 2016; Mwai 2016). Rahayu & Day; 2015, Walker et al; 2016) and Nugroho et al.; 2017). Hence, 4IR speaks to the essence of unexplored business opportunities through creative disruption (Munters & Marx 2017; Müller & Voigt 2018; WIPO Magazine 2019; Xu et al. 2018). A firm's adoption of 4IR technology can facilitate effective implementation of cyber-physical integration into its supply chain (Lee 2020; Alqam & Saqib 2020; Lee 2021; Ivanov & Dolgui 2021). Africa's Pulse (2021) and BDO (2020) explains that enterprises can leverage cloud-based global positioning system (GPS) and Bluetooth Low Energy (BLE) asset tracking technologies for improving a business understanding of variable customer demand, visibility, responsiveness and resiliency throughout the supply chain.

Achieving greener growth requires both green innovation policies, supported sometimes by more targeted industrial policies, and environmental policies to create demand where the traditional environmental externalities are not fully reflected in market prices (APEC 2021; Adam & Alarifi 2021; Hendijani & Saei 2020). The challenge is to combine innovation and environmental policies to ensure that they are well-balanced combinations of policies that support frontier innovation, policies that promote catch-up innovation, the policies regarding the adoption and spread of suitably adapted technologies, and policies that improve domestic

absorptive capacity and strengthen local skills (APEC 2021; Adam & Alarifi 2021; Hendijani & Saei 2020).

The dissemination of green technologies can be accelerated through policies that increase adaptation and adoption capacity (such as policies promoting education in sciences and engineering) and through trade and industrial policies (such as local content requirements and technology transfers (Alfarsi et al. 2019; Sadghiani, Torabi & Sahebjamnia 2015). "Green Growth" should be understood as a goal for national, regional and global policies (Lee 2020; Alqam & Saqib 2020; Lee 2021; Ivanov & Dolgui 2021). This goes beyond sheer technical progress and involves structural change and a transition towards less capital and resource intensive activities, particularly in the early industrialised and therefore highly resource consuming parts of the world. It will involve action from all levels: from international organisations to governments and businesses as well as individuals, it requires dynamic thinking and new forms of public-private interaction (Lee 2020; Alqam & Saqib 2020; Lee 2021; Ivanov & Dolgui 2021). Moreover, if growth is understood as a means to enhance our well-being, it should not only be environmentally sustainable ("green") but also socially and economically viable (colourful). (Africa's Pulse, 2021; BDO, 2020).

However, several studies have confirmed that despite the significant role that SMEs play in a nation's economy, their sustainability and growth is still a major challenge (Leboea, 2017; Tseka, 2018). In developing countries, they are among the lowest when compared with other transitioning economies, having recorded the highest failure rate of 75% in 2016 (Msomi & Olarewaju, 2021). Over the past two decades, managerial competency, efficiency and technical skills, access to finance, technological capabilities and infrastructure, adoption challenges, lack of organisational support and lack of governmental support have been common challenges that result to their failure, as their relationship with performance and sustainability is directly proportional (SEDA Q1, 2018; Tang, Park, Agarwal & Feng Liu, 2020; Shaikh et al. 2021). However, if developing country governments do not support SMEs going green in the 4IR, they risk falling behind in terms of socio-economic development at a time when advanced countries and their enterprises would benefit from simple access to these countries' markets. Owing to the research gap, this study therefore sought to unlock the effect of green growth frontier of manufacturing SMEs in the 4IR in Chinhoyi urban, Zimbabwe.

Statement of the Problem

Contrary to the global socio-economic contribution of SMEs, 20% of these SMEs in Zimbabwe fail with their first year of operation, while 50% survive beyond the fifth year of operation (Ministry of Women Affairs, Community Development and SMEs, 2023). The manufacturing SMEs sector is identified as one the biggest influencers of growth in the Zimbabwe's GDP, having contributed 13% towards the country's GDP. The fourth industrial revolution introduces a change in the way of doing business for SMEs. However, manufacturing SMEs in Zimbabwe face challenges on adoption and implementation of green growth strategies leading to retarded growth, but it is expected to redesign and reshape the general nature of business through disruptive innovation to enhance SMEs sustainability in this domain. Therefore, this study sought to assess the effectiveness of green growth on manufacturing SMEs in the Fourth Industrial Revolution in Chinhoyi urban, Zimbabwe.

Literature Review

Theoretical Framework

The opportunity-based theory of entrepreneurship was used to guide this study. The opportunity-based theory of entrepreneurship is a complement to the theory of reasoned action (TRA), which claims that a person's actions are dependent on their intentions to do those actions. Entrepreneurship starts with opportunity. Opportunities are new means-ends frameworks that allow for the introduction and implementation of a variety of new products, services, raw resources, markets, and organising principles in a market system. Entrepreneurship begins with the identification of opportunities, which is the responsibility of the entrepreneur (Berringer & Greening, 2018). This process is reliant on the entrepreneur's choice. Typically, exploitation occurs within the business that through its capabilities, converts opportunities into market outcomes (Berringer et al. 2018). The theory suggests that the process of entrepreneurial opportunity formation influences both opportunity decision and opportunity exploitation.

Review of related Literature

The Fourth Industrial Revolution has distinguished itself from previous revolutions due to its rapid growth rate, breadth, and depth of convergence as well as its immediate influence on industries, firms, governments, and entire societies (Schwab, 2017). By 2017, it enabled increased capital intensity and more flexible models of work organisation through advancements in machine-to-machine information and communication technologies, as well as annual efficiency gains from resource productivity in manufacturing of between 6% and 8% (Schiuma, 2017). This reflects the size and speed of the impact, through these disruptions that new and promoted technologies has in the manufacturing industry and business in general.

The concept of “green growth” offers real opportunities for more inclusive growth in developing countries while protecting the environment (Lee 2020; Alqam & Saqib 2020; Lee 2021; Ivanov & Dolgui 2021). Green growth reframes the conventional growth model and re-assesses many of the investment decisions in meeting energy, agriculture, water and the resource demands of economic growth (Lee 2020; Alqam & Saqib 2020; Lee 2021; Ivanov & Dolgui 2021). The OECD defines green growth as a means to foster economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies (OECD, 2011a). In this concept, natural capital plays a significant role in ensuring that production and welfare gains are reaped.

However, the green concept is generating a great diversity of political positions, from enthusiastic to cautious, reflecting a lack of clarity and experience, and the different opportunities available to specific countries. National and international efforts have been intensifying to promote green growth as a new approach to increasing sustainable wealth. In 2009 the OECD, which promotes a comprehensive approach to resolving interconnected global problems, launched work on green growth as a way of tackling some of the most serious challenges facing the world. In June 2009, a Ministerial Declaration on Green Growth was signed by all OECD member countries. This acknowledged that “green” and “growth” can go hand-inhand. These countries asked the OECD to develop a green growth strategy (GGS) bringing together economic, environmental, technological, financial and development aspects into a comprehensive framework. The strategy, Towards Green Growth (OECD, 2011a), was endorsed by OECD ministers in May 2011. It suggests that green growth can open up new sources of wealth through encouraging greater efficiency and productivity of natural resources, innovation, and new markets for green technologies, goods and services.

Sustainable development provides an important context for green growth. Green growth has not been conceived as a replacement for sustainable development but rather should be considered as a means to achieve it (OECD, 2011b). It is narrower in scope, entailing an operational policy agenda that can help achieve concrete, measurable progress at the interface of the economy and the environment. It provides a strong focus on fostering the necessary conditions for innovation, investment and competition that can give rise to new sources of economic growth, consistent with resilient ecosystems (APEC 2021; Adam & Alarifi 2021; Hendijani & Saei 2020). Green growth strategies need to pay specific attention to many of the social issues and equity concerns that can arise as a direct result of greening the economy both at the national and international level (APEC 2021; Adam & Alarifi 2021; Hendijani & Saei 2020). To achieve this, they should be implemented in parallel with initiatives centering on the broader social pillar of sustainable development.

A green growth pathway represents a new approach that moves beyond business as usual to overcome some of the challenges (Ivanov & Dolgui 2021; Matt et al., 2016; Patsavellas, Kaur & Salonitis; 2021). SMEs in developing countries have the opportunity to leap-frog the Kuznets curve by introducing greener and more efficient infrastructure, deploying smart grid technologies and a focus on developing off-grid renewable heating technologies and using more environmentally friendly farming techniques, while at the same time bringing to a halt the progression of deforestation and land degradation (Ivanov & Dolgui 2021; Matt et al., 2016; Patsavellas, Kaur & Salonitis; 2021). The majority of green growth potentials in developing countries will often reside in better use of natural resources, frequently the main source of their comparative advantage and also the main livelihood option for a large proportion of the rural population (Lee 2020; Alqam & Saqib 2020; Lee 2021; Ivanov & Dolgui 2021). Such natural capital makes up a high proportion of the wealth of SMEs developing countries on average 26% of national wealth compared to only 2% in industrialised countries (World Bank, 2006), and it contributes substantially to growth if well managed (Lee 2020; Alqam & Saqib 2020; Lee 2021; Ivanov & Dolgui 2021). While primary production also represents a much higher share of production, domestic trade, exports and national income in developing countries than in industrialised countries, better use of natural capital can facilitate the shift to secondary and tertiary production/industrialisation which is usually a major part of the long-term vision of developing countries (Ivanov & Dolgui 2021; Matt et al., 2016; Patsavellas, Kaur & Salonitis; 2021). This facilitation can be through value addition within the natural resource sectors, but crucially also generation of revenues for government to promote diversification to other sectors and address growth constraints, such as lack of infrastructure and reliable energy supply in particular. Green growth opportunities in developing countries thus lie across a number of often overlapping spatial and resource systems, each with its own technical characteristics and policy challenges (Ivanov & Dolgui 2021; Matt et al., 2016; Patsavellas, Kaur & Salonitis; 2021).

SMEs in biodiversity and ecosystem services provide the foundation of green growth (Lee 2020; Alqam & Saqib 2020; Lee 2021; Ivanov & Dolgui 2021). They maintain the productivity, health and resilience of natural and social capital alike. With developing countries and rural poor groups often having rights over significant biodiversity and large ecosystems, there ought to be good potential to draw value from these assets. Many of these assets are economically "invisible", or their value is only captured through marketed products, such as timber, and incentives for management are often weak as a result of low perceived value (Lee 2020; Alqam & Saqib 2020; Lee 2021; Ivanov & Dolgui 2021). The central policy pillar for biodiversity and non-provisioning services remains focused on protected areas such as national parks and reserves. Some direct value can be realised through tourism and water supply regimes, but

attempts to valorise the services, for example through ecosystem service payment schemes, can result in exclusion of poor groups from access to their benefits (Ivanov & Dolgui 2021; Matt et al., 2016; Patsavellas, Kaur & Salonitis; 2021). There is, therefore, a lot to be done to improve governance regimes and markets necessary to ensure that economies work better for and through biodiversity and ecosystem services (Ivanov & Dolgui 2021; Matt et al., 2016; Patsavellas, Kaur & Salonitis; 2021).

SMEs continue to be significant and critical, depending on how they successfully and efficiently use these technologies (Osano, 2019). They have emerged in recent years through continuous technological advancements and have begun to thrive even in this highly competitive industry. The significance of technological development capability, as an intangible asset has been emphasised to overcome a complex and continuously changing environment. Thus, SMEs and the current 4IR age are interdependent. The core competency and competitive edge for small businesses therefore depends on the capability to acquire, choose, and use technology (Bernard et al. 2012).

SMEs in developing countries are the key to achieving global green growth. Although today most developing countries contribute only minor shares to global greenhouse gas (GHG) emissions, their emissions will increase if they follow the same path to economic growth that developed countries followed (Ivanov & Dolgui 2021; Matt et al., 2016; Patsavellas, Kaur & Salonitis; 2021). Increasingly SMEs in developing countries are becoming sources of global economic growth but accompanied by growing emissions and more intensive use of natural resources. The potential economic and social impacts of environmental degradation are particularly serious for developing countries given their dependence on natural resources for economic growth and their vulnerability to energy, food, water security, climate change and extreme weather risks. All these factors are challenging their ability to implement green growth policies to enhance business growth and sustainability (APEC 2021; Adam & Alarifi 2021; Hendijani & Saei 2020). SMEs in developing countries have the greatest opportunities for capitalising on the synergies between environmental and economic sustainability.

A green growth approach is the chance for emerging and developing economies to leapfrog unsustainable and wasteful production and consumption patterns (APEC 2021; Adam & Alarifi 2021; Hendijani & Saei 2020). They can still factor environmental issues into their infrastructure investment decisions and can further develop agriculture and other natural resources in a way that improves livelihoods, creates jobs, and reduces poverty. They are less constrained than developed countries, who are now locked into investment choices and sunk capital from previous decades (Lee 2020; Alqam & Saqib 2020; Lee 2021; Ivanov & Dolgui 2021). Adequate financing and capacity would offer SMEs in developing economies the opportunity to lay down the infrastructure and networks needed to support a sustainable development path (Lee 2020; Alqam & Saqib 2020; Lee 2021; Ivanov & Dolgui 2021).

In fighting exclusivity, 4IR offers, among other provisions, a greater opportunity for growth across industries through globalisation and collaborative partnership in digital economy (Kayembe et al. 2019). Through this, by 2017, businesses in countries such as Romania were able to increase production significantly and reduce costs by 25% (Stancioiu, 2017). According to Carvalho, Chaima, Cazarinia and Gerolamo (2018), 4IR, through its range of network and virtually interconnected manufacturing technologies provide significant aspects of development that respond in real time to the internal and external demands of production processes. Virtualisation, digitisation and integration increases sustainability awareness (Carvalho et al. 2018), a critical component of growth and development in manufacturing.

Integration of systems in 4IR requires the creation of new security and protection strategies for collaborative value networks and smart production systems that are faster and more flexible (Lee et al. 2018).

Research methodology

The study was conducted in Chinhoyi Urban focusing on manufacturing SMEs going green in the 4IR. A qualitative research paradigm was also chosen, and data was gathered using structured interviews with open-ended questions. Open-ended questions were used to accommodate more meaningful answers from the participants during the process and enable the researcher to probe more information. This method was deemed suitable for the research. The study population was all registered manufacturing SMEs in Chinhoyi urban. According to SEDCO (2023) there are 40 registered manufacturing SMEs in Chinhoyi urban areas. However, 14 purposively selected SMEs going green and have been in operation in the same domain for the past five years were chosen to be the sample size. A smaller portion of the population was chosen to generalise the results to the entire population because this study involved a big population that could not be studied in its entirety. A sample of 15-20 is a recommended sample size for qualitative studies to reach saturation point (Dworkin, 2012). This is the point at which there is no longer a possibility of obtaining fresh knowledge or enough data to repeat the analysis (Fusch & Ness, 2015). Even though a sample size of 14 participants from small and medium businesses respectively was deemed sufficient. The non-probability technique used for this study was a snowball sampling technique, due to its ability to accommodate referrals by participants to others who they deem suitable for participation.

Data saturation was reached after interviewing 6 small enterprises and 5 medium enterprises. In total, 11 business owners/managers were interviewed. In the event where owners were not available, managers were interviewed. To this research, data collected through interviews was coded and then analysed using the content analysis technique. Content analysis is a data analysing technique that enables the researcher to collect and analyse factual data and understand it (Cillier et al. 2014). To ensure trustworthiness, accurate methods and standard conditions were maintained throughout the study, consistently with applied analytical procedures when collecting data, coding, analysing and presenting it.

Results and discussion

The study sought to evaluate the effectiveness of green growth on manufacturing SMEs in the Fourth Industrial Revolution in Chinhoyi urban, Zimbabwe. Data saturation was reached at 11 and stopped constituting 78 percent response rate which was good enough to generalise study results in this domain. Several responses were given and themes generated was presented in cloud format. NVivo software facilitated thematic analysis and generated ten themes.

Among the identified themes, it was observed that respondents 1 to 11 emphasised the positive impact of green growth of manufacturing SMEs on promoting organisational innovation.

Figure 1.1: Innovation of SMEs

These responses demonstrated a comprehensive approach to innovation in the manufacturing SMEs sector, covering various dimensions. A firm's adoption of 4IR technology can facilitate effective implementation of cyber-physical integration into its supply chain. The second theme generated from Respondent 1 to 11 identified that manufacturing SMEs were empowering themselves for implementing green strategies in their organisation (See Figure 1.2)

Figure 1.2: Green Growth and SMEs Empowerment

It is observed, however, that in most manufacturing SMEs in this domain were empowering themselves by venturing into green technology for their sustainability and growth. Figure 1.3 presented SMEs products in a thematic cloud format.

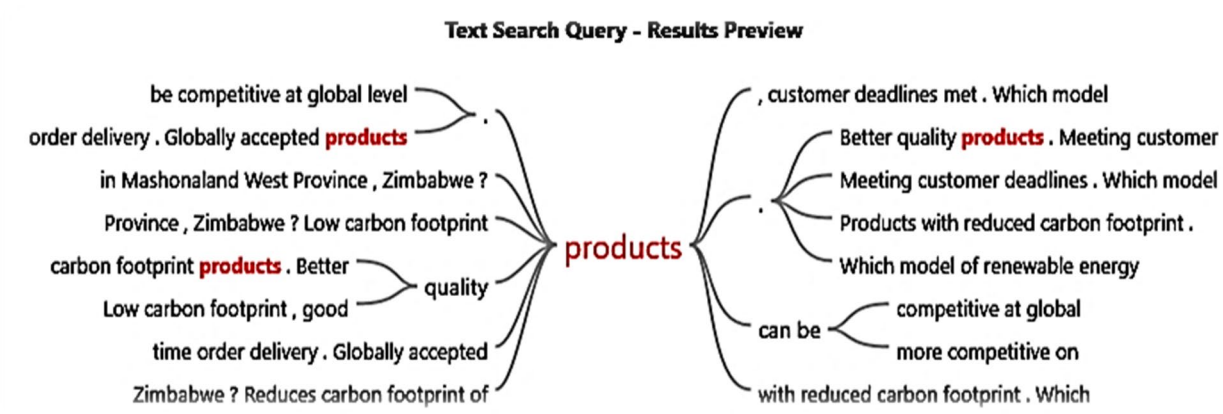

Figure 1.3 SMEs Products

The responses given demonstrated that manufacturing SMEs in Chinhoyi urban were venturing into globally accepted quality products with low carbon footprint meeting customer deadlines and sustain livelihoods. SMEs employ renewable energy products to provide electricity for productive usage, their products have a smaller carbon footprint, making them more competitive on the global market. Figure 1.4 presented a theme of 'improvement' in a cloud format showing that manufacturing SMEs were improving their reliability of manufacturing products in meeting global standards.

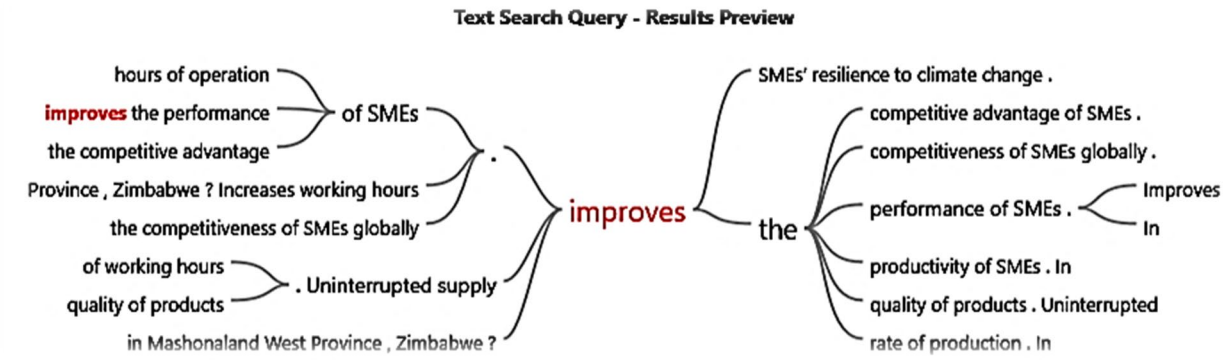

Figure 1.4 SMEs Product Improvement

In their comments, all respondents used the word "improves" on eleven occasions. The study results have shown that manufacturing SMEs going green attained productive growth drivers for them to achieve growth and sustainability. Figure 1.5 presented thematic results on motivation and satisfaction of manufacturing SMEs in venturing into production of goods in line with green technologies.

Figure 1.5 Motivators of SMEs

Themes generated in a cloud format presented from all respondents shows motivational forces instilling manufacturing SMEs into production of goods in line with the Fourth Industrial Revolution. Some of the identified motivators were the new business orientation, market demand, Government policies among others. Adherence to regulations would bring sanity to the SMEs for business continuity and to satisfaction measured against business returns.

However, study results were in line with literature. The majority of green growth potentials in developing countries will often reside in better use of natural resources, frequently the main source of their comparative advantage and also the main livelihood options for a large proportion of the rural population (Lee 2020; Alqam & Saqib 2020; Lee 2021; Ivanov & Dolgui 2021). SMEs in developing countries have the greatest opportunities for capitalising on the synergies between environmental and economic sustainability. A green growth approach is the chance for emerging and developing economies to leapfrog unsustainable and wasteful production and consumption patterns (APEC 2021; Adam & Alarifi 2021; Hendijani & Saei 2020). They can still factor environmental issues into their infrastructure investment decisions and can further develop agriculture and other natural resources in a way that improves livelihoods, creates jobs, and reduces poverty. Green Growth should be understood as a goal for national, regional and global policies (Lee 2020; Alqam & Saqib 2020; Lee 2021; Ivanov & Dolgui 2021).

Conclusion and recommendations

Participants emphasised the importance of relevant skills in adopting 4IR-related technologies to align the organisation's objectives and strategies to the digital age in instant and gradual basis. The analysis gave an insight into the understanding of the extent and benefits of 4IR application and adoption within the SME sector Chinhoyi. The comprehension of the 4IR concept, how it has manifested in the 21sr century, the understanding of digital transformation, the approach towards it and technological usage were cornerstones upon which the level of awareness of 4IR was assessed. According to this evaluation, manufacturing SMEs in Chinhoyi Urban have a solid understanding of 4IR and Green technologies. It is also a Revolution that is associated with growth and transformation. Based on the study results, it is recommended that manufacturing SMEs need to follow guidelines, policies and procedures when implementing Green Technology products in the 4IR so as not to bring harm to societies. Ministry of Women Affairs, Community Development and SME also need to support manufacturing SMEs with funding so as for them to produce more products and increase revenue growth. SMEs are encouraged to redefine their mission, vision and values and incorporate green concepts to enhance sustainability. A longitudinal study needs to be done on all types of SMEs going green in their business strategic orientation in Zimbabwe.

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