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Digital platform skills requirements for SMMEs and start-ups: a South African perspective

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Digital platform skills requirements for SMMEs and start-ups: A South African perspective

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A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business

Johannesburg, 2020

(Version 2020-2021)

ABSTRACT

The Fourth Industrial Revolution has enabled new business models, automated processes, and streamlined operations. Digital platforms form part of the technological solutions that disrupt existing business models; they have made alternative streams for companies that exist online. However, with these disruptions of business models, there is a need for new skills too. This study investigated the skills needed by digital entrepreneurs to effectively lead, operate, and manage digital platform SMMEs in the South African context.

A qualitative research study using semi-structured interviews was conducted with a sample group of 12 participants. The group was made up of CEOs, CIOs, Solution Managers and Business Managers of digital platform SMMEs in South Africa. A thematic analysis technique was used to identify themes in the data analysis.

The study's findings were that the digital platforms are complex and lack consistent definition and conceptualisation between their IT and commercial functionality. This affects the skills identified as essential in literature as it forms a bias based on whether the focus is IT or commerce. Secondly, the study found that a mix of lower-order and higher-order skills were essential for digital entrepreneurs. These ranged from technical, human, and conceptual skills to leadership and business skills. Lastly, the study found that digital entrepreneurs have several roles in their ecosystem and are multi-skilled. They are faced with challenges that stretch their capacity and adaptability, and they use their skill to control and influence the future.

This study provided an adapted skills model framework for digital platform skills. This model can be used to informing resourcing, upskilling, bridging managerial gaps, business development decisions that enable SMMEs to participate competitively in the emerging digital economy.

KEYWORDS

4IR, Skills, Digital Platforms, Digital Entrepreneurs, 21st Century, SMMEs

DECLARATION

I, _____Aluzuko Noqayi_____, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Name: Aluzuko Noqayi Signature: A. Noqayi

Signed at ……Midrand……

On the ……30 …….. day of … ……April…… 2021…..

DEDICATION

“Whatever you do, work heartily, as for the Lord and not for men”- Colossians 3:23

To God!

ACKNOWLEDGEMENTS

I would like to thank God for the gift of life and the ability to acquire knowledge. It has been a challenging yet fulfilling experience to live in this part of His dream for me.

To my parents whom I dearly love, I have endless thank you's. Lindela Lennox Noqayi (Dad) and Nobulali Millicent Noqayi (Mom), you have been supportive and prayerful throughout my studies. EsonaSipho and Nolusindiso, you witnessed the ups and downs of this journey. Our laughs, words of encouragement and most importantly, your delicious meals pulled me through. Likhona and Bonganjalo, when you two say "sisi", I remember my 'why'.

To my late brother Bonakele (and all those I have lost in the past years), I miss you, and I wish you were here for this moment.

I want to acknowledge Vuyelwa Masangwana; you have been a fantastic accountability partner, encourager, and much more. You said, "girl, we must finish", and so we did! To my amazing classmates, who made this experience so worthwhile. I will forever cherish you and our after-exam chill sessions across the road. To my dear friends and extended family, whom we have had to spare a lot of our 1:1 time, thank you for your support, prayers, patience, and encouragement.

To my supervisors, Dr Tebogo Sethibe and Ayanda Magida, your wisdom, advice and guidance have been invaluable. Shado Mkhize, Jabu Gwebu, and the leadership team, thank you for investing in this dream to my managers. You have been patient with my endless leave days and made the juggle between work and school bearable.

And lastly, thank you to all the participants for your generosity with time and your insightful contributions to the study.

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LIST OF ACRONYMS

4IR	Fourth Industrial Revolution
AI	Artificial Intelligence
CPS	Cyber-Physical Systems
DCDT	Department of Communication and Digital Technology
EQ	Emotional Quotient
GDP	Gross Domestic Product
ICT	Information and Communication Technology
IOT	Internet of Things
IS	Information Systems
IT	Information Technology
NDP	National Development Plan
SMMEs	Small, Medium and Micro Enterprises

CHAPTER 1. INTRODUCTION

Digital platforms are two-sided networks that enable and commercialise the connection between suppliers and customers (Tan & Wu, 2017). They are formed through connecting multiple digital technologies, such as artificial intelligence (AI) and big data, to create an online marketplace interface (De Reuver, Sørensen & Basole, 2018). They have disrupted several traditional industries. Examples of well-known industry disruption cases are the transportation industry with Uber, the hospitality industry with Airbnb, and the software development industry with Apple iOS (Asadullah, Faik & Kankanhalli, 2018). The disruption of these traditional businesses has inevitably required the transformation of distribution, costing, transaction, and fulfilment models to enable large scale transactions through digital platforms (Tan & Wu, 2017).

According to Peters (2017, p.2), "digital technologies are doing for human brainpower what the steam engine and related technologies did for human muscle power during the first Industrial Revolution." The "doing" emphasised the disruption and revolution that came through innovative technology advances that increased production, efficiency, and economies of scale (Peters, 2017). The first industrial revolution optimised steam power and mechanised production to increase productivity. Over the centuries, three more revolutions were fuelled by electric power, mass production, digital and internet technology (Williams, Dodd, Steele, & Randall, 2016). These revolutions have not only resulted from inefficient production processes, but they have also resulted in skills disruption (Tan & Wu, 2017).

The 4th industrial revolution (4IR), also known as industry 4.0, has been defined by extreme automation and hyper-connectivity using data, computer speed, and capacity (Schwab, 2017). Digital platforms emerged in the third industrial revolution but have advanced in the 4IR due

to big data and artificial intelligence, amongst other technologies (Tan & Wu, 2017). Thus, the sophisticated technology that supports digital platforms challenges human intelligence and requires specialised skill sets to sustain productivity and efficiency (Fathiyah, Kamaruzaman, Hamid, Mutalib & Rasul, 2019). Therefore, this study was premised on the shift to platform businesses and the emerging need for specialised skills.

Lastly, digital ecosystems provide significant benefits to new enterprises, such as access to existing markets, better reputation, and higher chances for IPOs (Nambisan and Baron, 2019). Furthermore, digital ecosystems provide infrastructure for value creation and value appropriation for entrepreneurs and their businesses, therefore minimizing the risks associated with newness. While the "benefits" of entrepreneurship in digital ecosystems are visible, very less emphasis has been paid to the possible "drawbacks" or costs for entrepreneurs and their companies. In this study, we attempt to close this gap by considering a significant potential cost of digital ecosystem participation for entrepreneurs, role conflict, and its detrimental influence on business success (Nambisan and Baron, 2019).

1.1 Purpose of the study

The purpose of this study was to investigate the skills needed by digital entrepreneurs in order to lead effectively, operate and manage digital platform Small, Medium and Micro Enterprises (SMMEs) in the South African context.

1.2 Context of the study

4IR introduced interconnectivity of technology that creates a world where there is seamless integration between the physical, digital, and biological domains (Schwab, 2017). Some of the fundamental technologies used are cyber-physical systems (CPSs), Artificial Intelligence (AI), the Internet of Things (IoT). Amongst others, these technologies are also used to develop digital platforms (Pfeiffer, 2017). Therefore, they need specialised skill sets to develop digital

platform businesses. Digital platforms are virtual interfaces between companies and customers. Benefits result from the interactions of the users through network effects, which a result of more active users on the platform (Asadullah et al., 2018). They are an emerging business stream in the South African ICT industry. However, there is a gap in the skills in the industry as a whole and for digital platform businesses (Mutula & Van Brakel, 2007).

Regardless, for technology to be developed and adopted for digital platforms, there are security implications and significant costs associated with designing and implementing these technologies for commercial purposes. Thus, local SMMEs also need access to funding their growth. This capital investment needed also becomes a barrier to entry for local SMMEs. Therefore, digital entrepreneurs have challenges that require future-fit extraordinary skills to conduct business in the digital era (Bose, 2019).

Furthermore, digital SMMEs have been described as crucial for developing and innovating growing industries as they help diversify economies (Mutula & Van Brakel, 2007). However, Peters argues that 4IR creates a gap for exploitation of markets through global digital giants having easy access to countries (Peters, 2017). Google, Amazon, Alibaba, and other technology-based market leaders dominate most of the market in their respective countries and industries. They have a whitespace plan to expand into developing countries as well. This enables them to capitalise on and control a lot of those markets as well. This "winner takes it all" dynamic benefits them monopolistically and acts as a barrier to entry for local SMMEs (Peters, 2017).

SMMEs play a crucial role in the growth of the South African economy, as they make up 34% of the Gross Domestic Product (GDP), which was valued at $358 billion in 2019, growing at 0.8% (StatsSA, 2019; World Bank, 2019). The South African government recognised and emphasised through the National Development Plan (NDP) the importance of SMMEs for job

creation, innovation, and sustainability of the country. One of the goals outlined in the NDP was for 90% of new jobs to be created through SMMEs by 2030 (Bhorat, Asmal, Lilenstein & Van der Zee, 2018).

The landscape of SMMEs in South Africa is mainly made up of wholesale and retail, community and social care, financial services, and built environment industries (Bhorat et al., 2018). According to the South African Standard Classification of Occupations (2003), the predominant skills within SMMEs are low-level skills that can be used for entry-level jobs. The majority of SMMEs are registered as farmworkers, street food vendors, office assistants, and cleaners. The Information and Communication Technology (ICT) SMMEs are among the more minor contributors, accounting for less than 1%t of the overall SMME industries (Bhorat et al., 2018). Thus, digital platform SMMEs in South Africa are few and are a niche segment of the ICT industry that require high-level skills (Bhorat et al., 2018).

The nature of the ICT industry requires advanced skills such as the ability to break down complex issues through communication, analytical and problem-solving skills, and technical skills, namely designing applications, troubleshooting software, and supporting programmes (Mutula & Van Brakel, 2007). The Engineering Council South Africa (2018, p.1) lists "problem-solving, information technology, written and oral communication, teamwork, independent learning, professionalism, and management" as critical ICT skills in South Africa. These skills also bring an added dimension of people skills. Furthermore, AI and other technologies require high skill levels, experience, and qualifications to maintain or adopt digital platforms for local use (Bose, 2019).

Moreover, benchmark with the other SMMEs, the skills needed for digital platforms are more advanced; however, they align with the future skills. In an opinion piece, the South African Minister of Communications shared that more than 33% of essential skills in the current

economy will have changed fundamentally in the following five years. New capabilities will be required in science, innovation, and development, which are more complex than the current skills (Ndabeni-Abrahams, 2019). The World Economic Forum released a report listing the essential skills that businesses need by 2022, referred to as 4IR skills (Fathiyah et al., 2019). These were contrasted with the most favourable engineering skills identified across global training bodies and academia. Table 1 contrasts the current engineering skills and future skills:

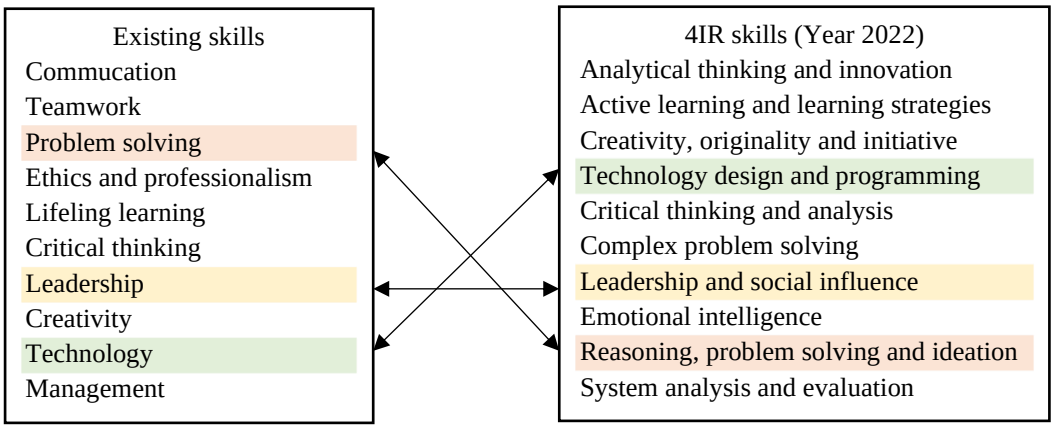

Figure 1.1: Comparison of existing engineering skills with 4IR skills

Source: Fathiyah, Kamaruzaman, Hamid, Mutalib and Rasul (2019)

It can be deduced from Table 1 that three skills appear in both the existing and future skills. These are technology design and programming, leadership and social influence, and problem-solving (Fathiyah et al., 2019). According to Fathiyah et al. (2019, p.56), seven skills will emerge by 2022, namely "analytical thinking and innovation; active learning and learning strategies; creativity, originality and initiative; critical thinking and analysis; complex problem solving; emotional intelligence; and system analysis and evaluation". Thus, the owners of digital platform SMMEs need to show proficiency in managing their start-ups and navigating the ICT industry through having the right future skills.

1.3 Research Problem

Scholars, such as Fathiyah et al. (2019), have contributed significantly to the body of knowledge on 4IR skills by providing a conceptual framework for engineering skills development. León-Pérez, Bas & Escudero-Nahón (2020), Van Laar, Van Deursen, Van Dijk and Haan (2019; 2017), Zatsarinnyy & Shabanov (2019), and Sutherland & Jarrahi (2018) furthered the discussion through conducting qualitative research investigating the skills necessary for digital skills, 21st-century skills and digital platforms skills. However, there is a gap in literature on which skills are pivotal for SMMEs and start-ups operating within digital platforms.

Moreover, scholars examined how digital platforms are conceptualised and formulated (Zhao, Von Delft, Morgan-Thomas & Buck, 2019; De Reuver, Sørensen & Basole, 2018; Asadullah et al. 2018; Spagnoletti, Resca & Lee, 2015). However, most scholars performed the research on the established digital platforms (such as Uber, Amazon, and Airbnb) rather than SMMEs. Therefore this study explores the perspectives of digital platform SMMEs.

Lastly, scholars such as Cenamor, Parida and Wincent (2019), Corno, Lal and Colombo (2014), and Mutula and Van Brakel (2007) have contributed to this discussion on the challenges faced by digital entrepreneurs. However, limited studies focused on SMMEs, though in contrast, most digital platform businesses started as SMMEs and also exploring the challenges faced by these businesses as a result of the skills gaps (Asadullah et al., 2018).

1.3.1 The Main Problem

This paper's main research problem explores the skill gap and challenges contended by digital entrepreneurs leading digital platform SMMEs. Therefore, this study critically assesses the skills needed by digital platform SMMEs and the external factors that inhibit or enable them.

1.4 Research questions

- **Question 1:** Which skills are essential for digital platform SMMEs in the digital era?

- **Question 2:** What are the enabling and hindering factors for digital platform SMMEs in South Africa?

1.5 Significance of the study

This study contributed to the academic pool of research on skills for digital platforms. The researcher identified a gap in the methodologies used and contributed to this topic using a qualitative study, as existing research was primarily quantitative literature review methodologies. Some scholars have explored the topic further using the qualitative interview approach. The researcher aimed to have the study give richer insight into the skills required for digital platform SMMEs. The findings had implementable insights for future literature and adoption for SMMEs digital entrepreneurs. Ultimately, the goal was to add to the body of knowledge on the following research areas: digital platforms skills and South African SMMEs.

1.6 Delimitations of the study

This research report was limited to South African based digital platforms SMMEs. It excluded the established platforms because they are not recognised as part of the SMMEs within the literature (Visagie & Posel, 2013). More delimitations to this study were as follows:

1. This research primarily focused on leading, operating, and managing digital platform SMMEs, rather than exploring the technicalities of building a digital platform. Thus, this study does not include perspectives from software developers.
2. The study investigated the skills requirements, but it does not postulate on in-depth skills formulation and different qualification or routes to build these skills. It is a high-level account of the critical skills required when running a digital platform.

3. The digital platform SMMEs have been limited to those with applications or web pages to conduct their business. Businesses that only use social media pages for their sales, such as social media boutiques, were not included in the scope of this study.
4. The study did not include other digital platforms that operate in other countries. It focused solely on those operating within South Africa.
5. This study did not include assessments from non-executive employees from the digital platform SMMEs, such as the trainees, employees or contractors.

1.7 Definition of terms

Below are definitions that are used within the research without explanation in the definition:

The Researcher - This term refers to the student conducting the research.

Skills – Specific learned ability that is required to perform a given job successfully. Example are handing accounts, coding, welding, writing tenders, computer programming (Andrews & Higson, 2008). In the literature, the term skills and competencies have been used interchangeably. Therefore, for consistency in the study, the researcher used the term "skills".

Competencies – Knowledge and behaviours that lead to success in a job. Example of these are analytical ability, problem-solving, initiative, negotiation, improving business processes, strategic planning, data-based decisions (Andrews & Higson, 2008)

Digital Entrepreneurs – Technology founders that have developed digital platform businesses online (Van Welsum, 2016).

SMME – According to The National Small Business Act (102 of 1996), small to medium businesses had been characterised by their size. They are further defined by five categories:

standard industrial and subsector classifications, class size, pay equal, revenue, and asset value – excluding Fixed Property (Banking Association of South Africa 2019).

1.8 Assumptions

It was assumed that the participants would share accurate insights on their experience as digital entrepreneurs in digital platform SMMEs. However, the researcher anticipated that they would show bias based on the industries they have been exposed to and the number of years the SMMEs have been in operation. The other anticipated bias was that the digital entrepreneurs would reflect on their leadership and entrepreneurial skills based on their fundamental beliefs and personality traits. There was a possibility that some participants could view them as skills that came naturally to them. The participants could also view leadership and entrepreneurship skills as intertwined with their personality traits and attribute it to their reason for archiving success (Corno, Lal & Colombo, 2014).

1.9 Proposed Study Outline

Chapter 1 outlines the study's purpose, the context of the study, research problem, research objectives, research questions and significance of the study. Chapter 2 is the literature review of the study; this chapter provides comprehensive definitions of digital platforms and digital platform skills based on available literature. This chapter also provides summaries of prior studies in digital platforms and future skills.

Chapter 3 outlines the methodology used in the study; it covers the research design, research method, population and sampling, validity and reliability, data collection, limitations and ethical considerations. Chapter 4 presents the results obtained from the data analysis of the interviews. Chapter 5 discusses the results and findings of the study and contrasts them against existing literature. Chapter 6 provides a discussion of the results and findings, draws conclusions, and provides recommendations.

CHAPTER 2. LITERATURE REVIEW

The purpose of this chapter is to unpack the existing literature on the skills required for digital platform businesses and the enabling and hindering factors that impact digital platform SMMEs. Thus, this chapter unpacks the definitions of each of the concepts – namely, skills and digital platforms, and explores the existing literature on them. The discussion includes the challenges with the conceptualisation of digital platforms and the impact of platforms on SMMEs.

2.1 The Evolution of Skills

The debate on skills has been around for as long as the industrial revolutions have been around. The different industrial revolutions have required different manufacturing processes and skills to adapt to the changing means of production (Tan & Wu, 2017). Thus, skills development has been evolving since the first industrial revolution, when people shifted from human power to steam power (Williams et al., 2016). Literature shows that skills are acquired through the consistent application of knowledge repeatedly in different scenarios to harness a skillset (Iordache, Mariën & Baelden, 2017).

2.1.1 Disciplinary and Non-disciplinary Skills

Andrews and Higson (2008) identified two skill sets: disciplinary and non-disciplinary work skills, also known as soft and hard skills. Prior to the 1990s, scholars primarily focused on hard skills. However, in the 1990s, there was an increased focus on soft skills where personal development and the individual's attributes were considered valuable and skills that people can contribute to the workplace (Hora, Benbow & Smolarek, 2018). Hard skills are characterised as specific technical skills relevant to the job description to perform and complete the work. However, soft skills are defined as intra- and inter-personal skills necessary for personal growth, social interaction, and professional success (Gibb, 2014). They include emotional

intelligence, interpersonal and project management skills which extend to programme leadership, conflict resolution, negotiation, technical and information technology skills (Andrews & Higson, 2008). Therefore, nowadays, a portion of the skills frameworks is also fixated on an individual's psychological and intrapersonal capabilities, concentrating on combining their intellectual abilities, critical skills, and personal attributes (Hora et al., 2018).

Scholars found that the possession of soft skills is significantly correlated to life and career success (Gibb, 2014; Andrews & Higson, 2008). This prompted the focus on soft skills as essential to lifelong learning, as individuals continually focus on ensuring personal and professional growth (Gibb, 2014). However, the concept of promoting lifelong learning and informal education is prominent in the developed countries as there is higher access to resources and self-learning. There is still a strong focus on formal learning in developing countries, focusing on developing hard skills (Lupoua et al., 2011).

Furthermore, Robles (2012) argued that many businesses do not want to invest in soft skills development. It is challenging to calculate the return on investment (ROI) of this training and develop appropriate frameworks for measuring soft skills. Gibb (2014), on the other hand, took a different stance on how involved employers should be in measuring workers' soft skills. Gibb asserted that employers and educational institutions should develop the assessment and evaluation of soft skills to determine whether an individual possesses the necessary soft skills (Gibb, 2014). Therefore, measurements for both soft and hard skills are equally prioritised to ensure conformity and social regulation.

2.1.2 21st-Century Digital Skills

The digital era has expanded the demand on the skillsets to incorporate digital skills. Over the years, scholars have proven the importance of life-long learning as key to skills development, integrating both soft and hard skills (Gibb, 2014; Lupoua et al., 2011). Scholars have different

view on what constitutes the digital skills. Iordache, Mariën and Baelden (2017) defined digital skills by the individual's ability to independently and strategically use digital media within their social context. The ability stems from their knowledge and competence in digital and technological innovations. However, Van Laar, Van Deursen, Van Dijk, and Haan (2017) added that the technical use of digital skills within companies included mastering ICT applications to overcome cognitive tasks. Also, they added skills that are not technologically oriented since they do not require any specific technological application and skills that promote higher-order thinking. Lastly, they enlisted skills relating to cognitive processes that help the continued learning and development of workers. Consequently, digital skills are more practical and measurable outcomes of media, information, or digital literacy.

Digital skills cannot be tackled without addressing the issue of digital literacy. Iordache et al. (2017) conducted a qualitative research study that identified the concepts advocated in 13 models of digital literacy and examined the concepts that inform and control the discourse on digital literacy between academia and the public. The frameworks were divided into five categories: organisational, technological and formal information, cognition, digital communication, development of digital content and policy. The findings point to an unbalanced emphasis on specific abilities and skills for digital literacy, focusing on a variety of organisational, knowledge and communication skills.

Furthermore, a survey was used to perform quantitative research by Tai-küi Yu et al. (2017). This study aimed to detect psychological factors influencing ICT behaviour and confirm whether the research model has moderating impacts on "information literacy" and "digital skills." The study suggested a theoretical model that shows how information literacy and digital skills regulate ICT adoption behaviour. Therefore, digital skills also correlate with information literacy.

Lastly, scholars also added that digital skills are dependent on digitalisation. Vasilescu et al. (2020) carried out a quantitative analysis. The study was to understand people's attitudes towards digitalisation in the European Union. Study findings showed that digitalisation and automation were commonly considered often, suppose people have the requisite technical information (at work or in daily life) and are more familiar with these technologies. The study also showed that people who were sure that they have the required digital skills for daily life or work had a favourable view of the technology's economic, cultural, life quality, and robotic perception. However, some social groups were "digitally more insecure" than others. Some countries feared that robots will take jobs (Vasilescu et al., 2020). The most disadvantaged groups in digitalisation were people over 55 years, with low education and living standards (Vasilescu et al., 2020). Finally, the study highlighted the need for public and private stakeholders to take measures to reduce people's fears in using new ICTs. They must take country-driven interventions to reduce other social and economic inequalities through better regulation and investment in high-quality education and lifelong learning.

Finally, based on the literature there were noticeable gaps as the discussion on skills seemed to be evolving with the times as advancements in production processes, work requirements, technology (Gibb, 2014; Lupoua et al., 2011). However, it is essential to note that the discussion has been evolving to include different focus areas rather than a complete revolution of skills required from one period to another. For example, even though the emphasis on hard skills predates the 1990s, they are still considered important even in the digital era where soft and digital skills are also emphasised. Furthermore, there is argument that socio-political factors enable or limit the acquisition of digital skills, ultimately impacting the levels of digital literacy.

2.2 Theoretical Framework

This section of the literature review addressed the founding theories for skills acquisitions and development. It looked at the theories that define the relationship between skills, individuals, qualifications, and work context. It also explored the skills models that enable growth in individuals. Thus, this section provided the theoretical premise of this study.

2.2.1 Existing Skills Acquisition & Development Theories

There are several founding theories on skills acquisitions and development (Clarke & Winch, 2006). The majority of the theories available assessed different variants, such as motivators for skills acquisition (Kanfer & Ackerman, 1989). The motivators range from the individual's needs, such as self-actualisation needs based on the Maslow hierarchy of needs, which have been argued to have individual regress in their growth if they are not met (Wahba & Bridwell, 1976). Other theories suggest that humans have an inherent fear of failure and being perceived as unable to do something. This fear motivates them to keep learning, advancing and closing their skill gaps (Cofer & Appley, 1964). In addition, Skinner (1971) developed the Behaviourism Theory that provided insights into how skills are developed through learning. The theory argued that humans learn through observing their environment, through a process of reward and punishments.

The significance of these theories is that they provide the foundation for the reason individuals acquire or enhance their skills, thus informing the underlying assumptions that can be made on why digital entrepreneurs acquire their skills. In addition, this study explored theories that dealt with skills development and revealed the relationship between skills, individuals, qualifications, and work context. The theories that were found useful were the human capital theory (Schultz, 1963), qualification and employment theory (Clarke & Winch, 2006) and

control, goal-setting, and attribution theory **(**Gibb, 2014). These theories will be unpacked in the next section, including their implications on the study:

a. *Human Capital*

Schultz (1963) founded the Human Capital Theory, who argued that investing in people provides economic benefits to both individuals and communities. According to the theory, countries with a lack of human resources cannot efficiently handle physical capital. Second, economic development will only occur if both physical and human resources increase at the same time. Finally, human capital is the most likely constraint to development (Schultz, 1963). This theory allows for the exploration of critical skills on individual, organisational and community levels. Due to the emerging need to learn new skills in response to technological disruption through 4IR, a connection was formed between investment in economic growth, human capital, and physical capital. Therefore, as the human capital improves (i.e., digital entrepreneurs), an assumption can be made that physical capital (i.e., the digital platform business) will improve as well. As a result, the digital entrepreneurs' skill investments are critical, as they can stifle the growth of the business. Thus, the relationships between institutions, industries and individuals must be prioritised in ensuring that skills development.

b. *Qualification and Employment Theory*

Clarke and Winch (2006) investigated the relationship between education and jobs. They built on Anglo-Saxon capitalism theories, which argue that skills are linked to tasks and can be used across industries, professions, and occupations. As a result, the skill can be connected to a job-related qualification, but it is often presumed that a person with skill has the certifying qualification (Clarke & Winch, 2006). This theory influences the study to concentrate on the work context and the roles that must be fulfilled, and the relationship between the skills and

qualifications that individuals possess. It also aligns with organisations and employers' perception of the mismatch skills phenomenon.

c. *Control, Goal-setting, and Attribution theory*

Control theory, goal-setting theory, and attribution theory are three skills theories introduced by Gibb (2014) to explain how skills are developed in the workspace. Feedback is used in control theory to explain the gaps between the known and unknown. The goal-setting theory discusses and defines the cognitive, emotional, and social aspects of behaviour. Individuals are evaluated based on their goals and the challenges they faced in achieving these. Finally, in terms of internal and external attributions, the attribution theory defines and interprets the cognitive, emotional, and social dimensions. The terms "internal" and "external" attributions apply to the self and others, respectively. As a result, there is a learning comparison between the self and the community (Gibb, 2014). These theories apply to this study because they focus on skill growth by mastering new skills based on external input, goals, and social impact.

2.2.1 The Existing Skills Models

Katz (1955) developed a Skills Model, with suggested that different leaders at differing managerial levels must utilise three different skills. These skills focus on using technology, interacting with people, and understanding concepts. The model emphasised a distinction between skills and traits; skills are what leaders can accomplish; traits are what leaders are. The model also looked at the relationship between seniority in an organisation and required skills, respectively, or seniority, skills regarding the other company qualities. This was an important view to set as the basis of the skill required for digital entrepreneurs as they hold managerial position in their SMMEs. This study used this model as the core foundation for further research and applied it to the framework development of concepts. Below is the Katz

Model for skills required, detailing that the top management must possess technical, human and conceptual skills:

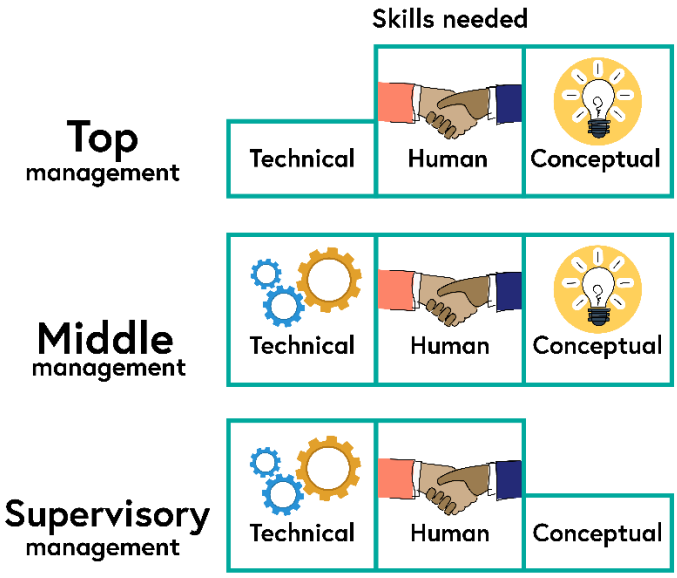

Figure 2.1: The Three-Skills Model

Source: Katz (1955)

Therefore, the skills required for top management were applied to the top management of the digital SMMEs as well. Other scholars had not approached the discussion of digital skills for platforms with the consideration of the multiple roles fulfilled by digital entrepreneurs (e.g., managerial and leadership roles). The gaps in the digital platform skills literature were unpacked in the next section. The skill-based model views organisational development and skill acquisition as intrinsically related concepts. There is a relationship between the required skills and seniority levels (Katz, 1955). As the scope and complexity of work increase, the individual's skills requirements shift from technical to conceptual. Additionally, as a personal advance from one managerial level to the following, proficiency in technical skills is assumed. Conversely, interpersonal skills remain a requirement at all managerial levels (Katz, 1955).

Mumford, Marks, Connelly, Zaccaro, and Reiter-Palmon (2000) provided support for the Katz model by developing a skills model that incorporates five critical components: individual attributes, competencies, leadership outcomes, career experience, and environmental influences. To ensure effective leadership, the model examined the relationship between a leader's knowledge and skills and their performance. According to the model, these are acquired over time due to a combination of education and experience (Mumford, et al., 2000). Below is the Mumford model:

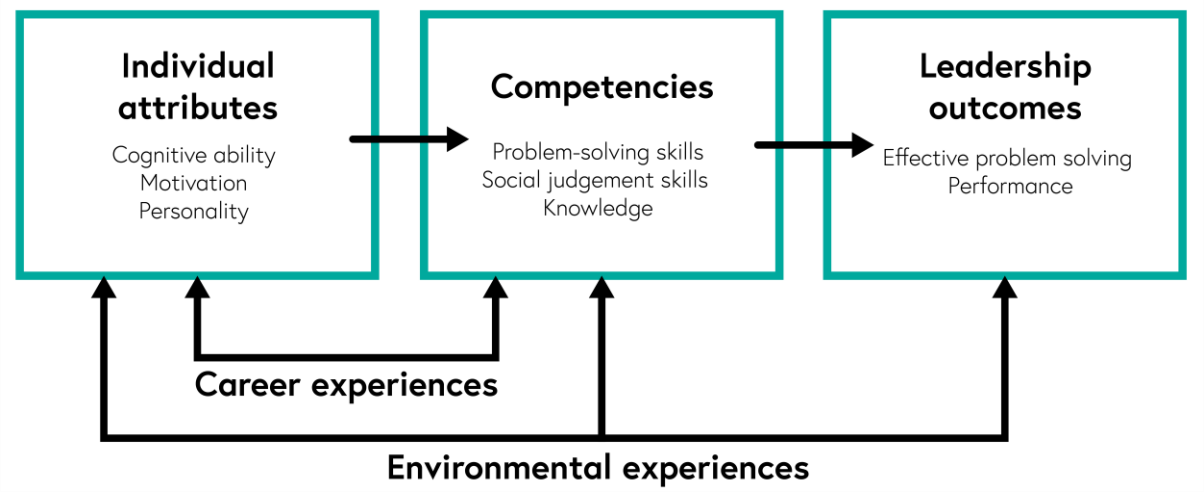

Figure 3.2: The Skills-Based Model

Source: Mumford, Marks, Connelly, Zaccaro, and Reiter-Palmon (2000)

The discussion on digital skills also includes the impact of external and internal factors that impact skills development. Unfortunately, Katz model does not include these, whereas Mumford has also explored the contribution of environmental factors. Therefore, this model was used as a supporting model for this study to avoid constricting the study's significance. This allowed for examining factors such as personal characteristics, career experience, and competences to comprehend the effect of skills on the digital entrepreneur's performance.

2.3 Background on Digital Platforms

Digital platforms are a crucial focus for this study, ranging across multi-sided platforms, on-demand service platforms, and technology platforms (Venture Burn, 2020). Therefore, this section is dedicated to exploring and understanding the critical literature on platforms and the contribution other scholars have made. It also considers the definitions given within the literature to help establish a common understanding of platforms.

2.3.1 Definitions of Concepts

Koh and Fichman (2014) defined digital platforms as two-sided networks, enabling connections between separate yet interdependent consumer groups, including consumers and service providers. Asadullah et al. (2018) supplemented this definition with the argument that platforms are known to be online marketplaces that match customers' groups to service providers. They use the built-in technology network architecture to support consumers by reducing transaction, search, and fulfilment costs.

Furthermore, Spagnoletti, Resca and Lee (2015) identify digital platforms as building blocks that give technological architecture a vital role and provide the foundations for creating complementary goods, technologies, or services. Digital platforms were also defined as a combination of core services and interfaces that enable complements to support a mix of information sharing, collaboration, and collective action. The three distinct types of social, digital platforms interaction structures are information sharing (e.g. Twitter), collaboration (e.g. Wikipedia) and collective action (e.g. Skype). Xu, Venkatesh, Tam and Hong (2010) added to this definition and expanded on these building blocks as interfaces and sub-systems that collectively create and deliver applications. Therefore, it can be concluded that their technical functionality and commercial functionality define digital platforms. This parity created two worlds in literature with scholars who address the literature on digital platforms

from a technical IT perspective and those that addressed them from their commercial perspective (De Reuver et al., 2018; Asadullah et al., 2018).

2.3.2 Review of Prior Studies

De Reuver et al. (2018) observed that digital platforms are a complicated subject of study, as they are diverse and interconnected with organisations, markets, and technologies. Furthermore, the parity in defining platforms also led to conceptualisation issues, further discussed in this section.

Asadullah et al. (2018) performed a qualitative survey, evaluating existing literature and collated all available digital platform research. They aimed to reflect what was discussed in the literature accurately and predict future studies on digital platforms. The study findings indicated that while digital platform studies have increased in number over the years, digital platforms' conceptualisation within information systems and management literature remains unclear. This is due to a lack of consensus on well-defined conceptualisation on digital platforms (Asadullah et al., 2018).

The distinction between these studies is that IS studies follow a more realistic approach, based on technological creativity and functionality, to design complementary products and services. Management studies, however, follow a non-technical, ecosystem-based conceptualisation identifying platforms as a commercial network or market facilitating business-to-customer, business-to-business, or even customer-to-customer (Asadullah et al., 2018). Therefore, it can be concluded that the convergence of digital platforms' definitions and conceptualisation is a new gap within the literature. It will combine the platform's core architecture and the participatory environment from the IT and commercial perspectives.

In addition, De Reuver et al. (2018) performed a qualitative analysis using a systematic literature review. The study aimed to contribute to conceptual clarity and encourage further studies with meaning, accuracy, and scope to expand the digital platform description. The study findings aligned with Asadullah et al. (2018) on the conceptualisation complexities and the need for a combined definition. However, De Reuver et al. (2018) also argued that the diverse digital platforms' definitions led to contradictions in the unit of measurement in framing the technological and socio-technical impact of digital platforms. Thus, it is not easy to consistently compare digital platforms due to their variety (De Reuver et al., 2018). Therefore, there is an inherent bias in platform conceptualisation literature as they were characterised by case studies that only considered the popular established digital platforms.

Zhao, Von Delft, Morgan-Thomas and Buck (2019) explored competitive battles within digital platforms by performing a comprehensive, comparative analysis of twelve multi-sided networks to understand the evolution of digital platform models. The study sought to explain how digital platform models have become an essential avenue for value generation and capture. It filled the void and offered new insights into how platform market models develop in a framework of aggressive competition. The study findings were that success in platform battles could plausibly be explained by a combination of complexity in the business model design and the simultaneous use of innovation and imitation to create highly intricate systems of activities.

Lastly, to understand the contributors' adoption of platform businesses and repeat purchases of the products offered to users, Chiu, Wang, Fang & Huang (2014) conducted a qualitative study. The study was performed on 20 graduate students with an online shopping experience to assess the reason for adoption and repeat purchase. The study found that the intention for repeat purchase on digital platforms is affected by both utilitarian and hedonic value positively. Perceived risk negatively affected intention and moderated the effects of utilitarian and hedonic

values on repeat purchase intention. Multiple determinants stimulate behavioural intention and usage; these are performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit, security/risk/trust. Additionally, the model presumes the role of four moderators in gender, age, experience and voluntariness of use.

2.4 Discussion on Digital Platform Skills

This section considers the definitions given within the literature for digital platforms skills for SMMEs. These definitions are outlined to help establish an informed understanding of the concepts, as discussed in this chapter.

2.4.1 Definitions of Concepts

Ashton and Green (1996) define skill as a synthesis of social characteristics, education, training, credentials, and technical ability (Ashton & Green, 1996). Becker's (2009) concept of skills as human capital and socially developed skills. Burd and Buchanan (2004) define know-how as having three components: 'technical' concerning workforce utilisation; 'competing' concerning job characteristics; and 'cognitive' concerning education and training.

2.4.2 Review of Prior Studies

Several studies have been conducted over the years, contributing to the literature on platform skills essential for digital entrepreneurs. In this section, studies by Fathiyah et al., (2019), Van Laar et al. (2019), Nambisan and Baron (2019), Van Welsum (2016) and Papulová and Mokroš (2007) are explored to understand the concepts underpinning the digital entrepreneurs' skills.

Fathiyah et al. (2019) defined the skills needed in the ICT industry by engineering students conducted a qualitative study using a systematic review method considering previous studies on the skills development for engineering graduates. This study aimed to review the theories and models of skills development, especially for engineering graduates in Malaysia. The result

of the research was a conceptual framework for the development of 4IR skills in the engineering field.

Among 1,222 practitioners, Van Laar et al. (2019) performed quantitative research. The research study aimed to examine the degree of digital skills of the 21st century among information workers and the determinants contributing to these skills. The study studied the following digital skills: technological skills, knowledge management, communication, teamwork, critical thinking, innovation, problem-solving. Potential determinants that stakeholders may influence, such as social support and planning, are also mentioned. The results suggest that 21st-century technological abilities vary considerably. In addition, each 21st-century digital skill is defined by a diverse collection of determinants, requiring new approaches to each skill formation.

Nambisan and Baron (2019) conducted a study on the costs of digital entrepreneurship. The study findings were that digital ecosystems require entrepreneurs to simultaneously fill two roles: ecosystem member and new venture leader. Often, these roles are incompatible, thus generating role conflict and high levels of stress. The stress generated by the role conflict reduces venture performance by interfering with entrepreneurs' performance on critical tasks in digital ecosystems. Thus, the entrepreneurs' self-control moderates the negative relationship between stress and venture performance and raises the need for potential mitigating skills.

Van Laar et al. (2017) also performed a qualitative literature review analysis. This study's main aim is to explore the relationship between 21st-century skills and emerging skills. Provide a 21st-century digital skills system with conceptual dimensions and the main organisational elements for the information worker. Results show that 21st-century skills are broader than digital skills; even more comprehensive is the list of skills listed. Against emerging skills, ICT does not generally support 21st-century skills. Seven core skills were also identified:

technological, knowledge management, communication, teamwork, innovation, critical thinking, and problem-solving. Five contextual skills were identified: ethical awareness, cultural awareness, resilience, self-management, and lifelong learning.

Van Welsum (2016) conducted a background paper for the World Development Report 2016 Digital Dividends. The paper aimed to explore digital entrepreneurship challenges, including skills, infrastructure, and various aspects of the business environment. The findings were that enabling digital entrepreneurs in developing countries is especially important. This allows for creating new markets, the exploitation of existing markets and integration into global value chains. Infrastructure, skills, financial inclusion, and market access are enabling factors. At the same time, it is vital to avoid the temptation to 'pick winners' or take an early position on who will or will not be successful. Instead, it focuses on creating an enabling environment that maximises opportunities for digital entrepreneurs.

Papulová and Mokroš (2007) conducted an exploratory study to understand the importance of managerial skills and knowledge in management for small entrepreneurs. The findings were that small enterprises are generally considered to be more operative, can respond quickly and are more flexible than big companies, which form their strategies for years ahead. Limited focus on operations can have its advantages and prevent an enterprise from exploiting new unseen opportunities. Problems with the existence and development of small enterprises could be solved with closer attention to vital managerial skills and management knowledge for the small entrepreneurs. Support and provision of further education in these areas could help small entrepreneurs overcome initial development difficulties.

2.4.3 Proposition 1

Technical, human, and conceptual skills are essential for digital platform SMME.

2.5 Discussion on enabling & hindering factors for Digital Platform SMMEs

This section considers the definitions for SMMEs and explores within the literature for enablers or hindrances for digital platform SMMEs. These definitions are outlined to help establish an informed understanding of the concepts, as discussed in this chapter.

2.5.1 Definitions of Concepts

There is no acknowledged universal definition of SMMEs. For example, the OECD (2002) defines an SMME as an enterprise with fewer than 500 employees (Mutula & Van Brakel, 2007). On the other hand, the South African SMMEs are seen as "Own-account," "Micro," "Small," and "Medium" businesses and include all businesses with between 0 and 49 employees (Bhorat et al., 2018). Enterprises that have no employees except the entrepreneur are referred to as "Own-account". Those with one to four employees are "micro" businesses, and those with five and nine employees are "Small". Enterprises with 10 to 49 employees are "Medium"; all others are considered "Large" (Bhorat et al., 2018). On the other hand, the South African SME Act defines SMEs as an enterprise having up to 100-200 employees or 5 million Rand turnover per annum (Mutula & Van Brakel, 2007).

Furthermore, the SMMEs are also primarily individual-based or founded by a group of friends and family members to solve business needs within their local communities. This aggregates the entrepreneurs' values, skills, and thinking styles to be similar to that of their communities, families, or friendship groups (Andriani, Putro, Sari, Putri, Aini, & Anwar, 2020). Such companies generally face similar challenges: limited access to capital, poor timing, and biased management decisions (Andriani et al., 2020).

2.5.2 Review of Prior Studies

Several studies have been conducted over the years, contributing to the literature on external factors impacting South African (SA) SMMEs. In this section, studies by Cenamor, Parida and Wincent (2019), Corno, Lal and Colombo (2014) and Mutula and Van Brakel (2007) are explored to understand the concepts underpinning the external conditions.

Cenamor et al. (2019) carried out a quantitative study using a survey approach. The survey was conducted, and 230 entrepreneurial SMMEs responded to the survey. The study aimed to investigate how entrepreneurial SMMEs can improve their performance through digital platforms. The study results show that digital platforms' capacity has a positive indirect impact on the entrepreneurial performance of small and medium-sized enterprises through network capability. The study also shows that this effect is negatively and positively moderated by exploitation and exploration orientations. The results suggest that entrepreneurial SMMEs can improve their performance through digital platforms' capability by aligning this capability with their orientation.

Corno et al. (2014) conducted an exploratory study using a mixed-methods approach. They used in-depth interviews and surveys, followed by interviews with the Control Group. The study examined the perceptions of Italian entrepreneurs about their experiences with their new venture creations. The study findings suggest entrepreneurial spirit in Italy is high, and the socio-cultural environment is perceived as encouraging entrepreneurship. The business environment challenges confronting ICT entrepreneurs are related to government policies and programmes, access to finance, the perceived need for support towards knowledge and skill-building and, finally, exploring international markets.

Mutula and Van Brakel (2007) conducted a qualitative study using focus group discussions to collect data from key stakeholders in the ICT sector. The purpose of the study was to

characterise the ICT sector in terms of, among other things, the skills needs in the sector to power up the emerging digital economy. The findings suggested an acute global shortage of highly skilled and hands-on personnel necessary for steering the emerging digital economy in developed and developing countries, including Botswana. In addition, there is a severe skills gap for certified specialists to help develop the sophisticated applications necessary to power the digital economy and the applications that depend on it.

2.5.3 Proposition 2

Internal (technology, infrastructure, and connectivity) and external (economic, political, and social) environmental factors affect platform based SMMEs.

2.6 Concluding Remarks

There is a clear trend in literature that has been explored in this chapter that there is an opportunity to consolidate into one view the definition of digital platforms. The digital platforms skills are also affected by this consolidation to include both technical and socio-technical components. These research challenges are becoming increasingly crucial as ongoing market developments lead to new unanswered research questions on digital platform resilience. Given this view, there is an opportunity for understanding the skills needed for digital platforms, with emphasis on start-ups and SMMEs. Furthermore, the skills required have further evolved due to the shift in capabilities that 4IR technologies demand. Therefore, the skills listed for the 21st century and digital skills vary in importance and priority, and thus this research report brings clarity on these.

CHAPTER 3. RESEARCH METHODOLOGY

This chapter looks at the methodology used to obtain, analyse, and interpret the data. It reflects the steps taken to solve the particular research problem (Leedy & Ormrod, 2001). Thus, the chapter detailed the process, looking at the different research tools used to collect data adequately.

This chapter entails the method in which the research questions identified in Chapter 1 and the propositions formulated in Chapter 2 would be resolved in the data collection. It also covered the importance of research design, the methodology used, the population, sample size and sampling methods. Lastly, it stipulated the data collection methods for the research and the data analysis techniques. Ethical considerations were also included.

3.1 Research Approach

The researcher had a choice between approaching the research problem using either a qualitative or quantitative approach. The literature review attempted to create a frame of reference for the concept of digital platform skills. However, there was a need to understand better the concept of digital platform models and the skills. Thus, an empirical qualitative study was conducted to seek new insights on the skills required (Saunders & Lewis, 2009). The qualitative approach was chosen as it was appropriate to studies to understand the research problem outlined (Kolb, 2012).

The qualitative method was the chosen research approach because it encompassed several advantages (Leech & Onwuegbuzie, 2007). It allowed for insights that helped the researcher better understand the phenomena through the depth and richness of data. It also exposed the researcher to the complexities participants expressed in the topics. These were gathered in close vicinity through observation or through a face-to-face interview, which allowed the researcher to observe the non-verbal cues and nuances applicable to the topic being studied. Ultimately,

it enabled the researchers to understand and preserve the context in which the findings were obtained (Leech & Onwuegbuzie, 2007).

3.2 Research Design

The research design dealt with the 'how' of the analysis methodology (Saunders, Lewis & Thornhill, 2009). The topology of the research design can be split into two classes: inductive and deductive studies (Mouton, 2013). Inductive studies draw up information from data, while deductive studies use literature review, modelling, methodological and conceptual reviews to build new findings. This study was inductive as this design helped the researcher extract in-depth insights based on the data. There study focused on a deductive approach from the digital platform skills literature review and models. Some of the skills listed by scholars, such as Van Laar et al. (2019), were used to form the foundation for developing the study questions (Saunders & Lewis, 2009).

Lastly, a semi-structured interview method of data collection was used. It is a method in which predetermined questions cover a set of themes in varied chronological order (Saunders & Lewis, 2009). This technique was appropriate because it complemented the qualitative exploratory nature of the study and enabled purposeful theory building.

3.3 Population and Sample

3.3.1 Population

The population of the study was primarily digital entrepreneurs leading digital platform SMMEs in South Africa. They formed the parent group, and it was used to draw a sample for research purposes (Singh, 2006). The observations gathered from the sample group provide an associated estimation of the characteristics of the population (Singh, 2006). The population is described as an aggregate or entirety of all items, subjects or members conforming to a collection of requirements (Poliit & Hungler, 1999). Digital entrepreneurs for digital platform

SMMEs presented a small population for the research as they account for less than 1% of all the SMMEs in South Africa (Bhorat et al., 2018).

Moreover, as a developing economy, South Africa is ideal for studying digital platforms to generate economic development. Even though South Africa faces tremendous social and economic challenges (Ndabeni-Abrahams, 2019), these challenges are not specific to the country. They apply to other countries of similar economic backgrounds. This research study should develop a skills framework for digital platform SMMEs that is transferable to other contexts.

3.3.2 Sample and Sampling Method

Sampling was performed by identifying a selection of individuals or items from a broader population so that each person is eligible to join the sample population on an equal basis (Scott & Morrison, 2007). In this study, the researcher began the data collection process with participants within their research class and colleagues at their workplace who have complementary SMME businesses that are digital platforms. The researcher also reached out to their immediate circles for individuals who have these digital platform SMMEs.

Due to time constraints and the availability of participants, the researcher collected data from Chief Executive Officers (CEOs), Chief Information Officers (CIO's), Solution Managers, and Business Development Managers of digital platform businesses. The researcher had also intended to gather insights from Platform Experts and Human Resource Executives of digital platform businesses. However, digital entrepreneurs for SMMEs play multiple roles within their companies. Thus, they covered the perspective of Human Resource Executives as they mostly do the 'hiring and firing' of their employees or contractors. The perspectives incorporated for future studies are platform experts, as most of the digital entrepreneurs outsourced these.

The researcher used purposive sampling and snowball sampling. The researcher asked for recommendations from initial participants in cases where they had limitations in securing participants. Though 15 participants were purposefully selected as participants, data saturation was reached after 12 participants were conducted. The 12 participants were selected to add rich insights into the conversation about skills. The study also benefited from the fact that most of them held positions in traditional and platforms businesses and had higher education qualifications.

The different sample groups that were used for the participants are as per below:

Table 3.1: Profile of participants

Description of participants type	Number to be sampled
Chief Executive Officer (SMME)	9
Chief Information Officer / Chief Technology Officer	1
Business Development Managers	1
Solution Manager	1
TOTAL number of participants	12

3.4 Data Collection Methods and Procedure

The primary data collection method adopted in this study was interviews with identified participants to yield data for the research (Singh, 2006). The research study deliberately chose and arranged online interviews for all participants in the sample group, and an interview guide

supported it The sample group and sampling methodology were developed by the researcher using their professional network. The data collected is classified as primary data (Saunders & Lewis, 2009), backed up with audio recordings. Due to COVID-19 restrictions enforcing social distancing, the researcher scheduled the interviews virtually. This served as a backup tool for data collection as virtual calls were recorded using the platform.

The majority of interviews were expected to last 60 minutes. However, to ensure the transparency and validity of the data collection process, participants' flexibility and trustworthiness were maintained by being versatile and attentive to the participants during interviews (Patton, 2002). As a result, the interviews ranged in length from 32 to 95 minutes, with the majority remaining within the 60-minute limit.

The data collection process was as follows:

i. The researcher called all participants to introduce the topic and the purpose of the research. The purpose of this call was also to get the participants to agree on proceeding with the research.

ii. In the case the participants agreed, the researcher ascertained the best possible time to conduct the interview. They asked the participant for their email addresses and alternative contact details.

iii. They sent an email outlining the purpose of the research and thanking them for agreeing to participate in the research, followed by a meeting request with the Zoom / MS Teams link.

iv. Three days before the interview, the researcher sent the participants' questions to answer as part of their preparation.

v. The researcher called or texted a day before the interview to remind participants of the interview.

vi. On the day of the interview, the researcher declared that the interviews are recorded. The researcher conducted all interviews within two hours. At the end of the session, the researcher thanked the participants for joining the session and asked for recommendations and the participant consent forms.

3.5 The Research Instruments

As mentioned before, a semi-structured interview method was used in the research study. These interviews were rooted in a topic that was informed by the literature review. Therefore, the selected measurement instrument employed an interview guide approach and ensured that the guide covered specific topics and the researcher stuck to the script as far as possible. Therefore, the application of such an approach ensured comprehensive data by anticipating any logical gaps in the data that should be closed (Patton, 2002).

The researcher used structured questions to cover set themes on 21st-century skills, digital platform skills, SMME skills, COVID-19, skills gap, and macro-challenges. The researcher started the data collection process with a pilot to observe any issues with the instrument and identify opportunities for amending it. See **Appendix 2** for the comprehensive research instrument.

3.6 Data Analysis and Interpretation

Data collection was an ongoing phase in which all knowledge gathered from transcripts, recordings, and other observations were checked and organised (Creswell, 2003). Qualitative research should clarify the assumptions of the researchers, their bias, and their subjectivity (Webb & Auriacombe, 2006) because the analytical and integrative abilities of the researchers,

as well as their observations of the cultural background in which the data are collected, depend significantly on their qualitative analytical analysis. In comparison, the description requires the review of data in greater coherence.

This research is based on Braun and Clarke's thematic analysis technique (2006) and aims to define trends and subjects in the qualitative data analysis (Braun & Clarke, 2006), as shown in Figure 3.1.

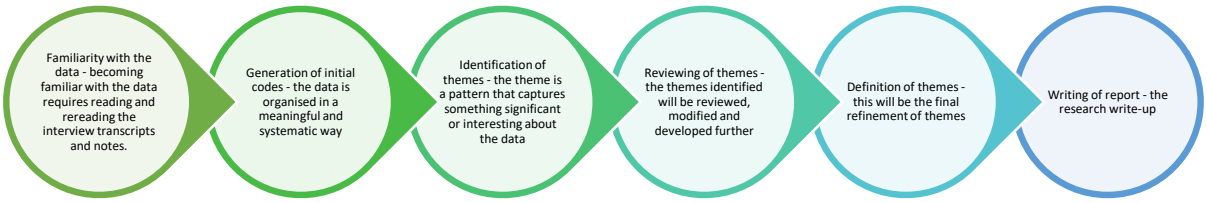

Figure 3.1: The Thematic Analysis Process

The process has six steps, as outlined below:

i. Step 1 - Familiarity with the data - becoming familiar with the data requires reading and rereading the interview transcripts and notes.

ii. Step 2 - Generation of initial codes - the data is organised in a meaningful and systematic way.

iii. Step 3 - Identification of themes - the theme is a pattern that captures something significant or interesting about the data.

iv. Step 4 - Reviewing of themes - the themes identified are reviewed, modified and developed further.

v. Step 5 - Definition of themes - this is the final refinement of themes.

vi. Step 6 - Writing of report - the research write-up.

3.7 Transferability, Credibility and Dependability

3.7.1 Transferability

The researcher kept records of all interactions between them and the participants. This was for capturing, storing, and presenting the complete process of the research in case of an audit or third party requests. This stored data includes the original data, transcribed data, analysis, outcomes, and conclusions of the study. The data was stored in the cloud and on an external hard drive for safety. Thus, the transferability of the study was ensured by having transparent and comprehensive processes (Creswell, 2003).

3.7.2 Dependability

The dependability of the findings relied on the consistency of the results (Denzin & Lincoln, 2011). The dependability of the study was ensured by following a rigorous thematic analysis process. These steps could be applied by subsequent researchers in their attempt to recreate this study. However, it must be noted that the prevailing circumstances and the context of this subject are subject to change, which might influence this study's replication.

3.7.3 Credibility

Credibility applies to how trustworthy and acceptable the study was, especially concerning the degree of consensus between participants and researcher (Creswell, 2003). The data collection process was standardised throughout the study, and the researcher used an interview guide to ensure consistency in the data collection method.

3.8 Demographic Profile of Participants

The sample group of 12 individuals was made up of eleven males and a female. In this sample, it was found that the majority of the participants were male. Interviewing participants concerning skills seems to have no relationship to their gender; no observable effect on their experience. Therefore, the sample reflected the views and perspectives found in the ICT industry or digital platform SMMEs.

3.9 Limitations of the Study

The identified limitations to the research were in line with those identified by Creswell (2003) in discussing qualitative methods limitations. These are:

- Based on the scope of the study, it needed to be a mixed method. However, the researcher only focused on the qualitative part of the study because there was a limitation on time allocated to this study,

- Due to COVID-19 regulations, the data collection of data was primarily virtual and needed flexibility in scheduling the sessions,

3.10 Ethical Considerations

The permission was obtained through all appropriate ethical channels to ensure ethical compliance with academic research standards before starting with data collection. An approved ethics certificate was received, and the research topic was registered with WBS. The following ethics considerations were observed with all participants:

i. Voluntary involvement, anonymity and confidentiality were ensured throughout the study.

ii. Participants who have been excluded from the standards of ethics were not included in the sample.

iii. The researcher explained the purpose of the study to all participants and requested that they sign the participant consent form.

iv. The researcher did not mention any participant by name or any identifiable naming conversion; the participants were designated a number in the research findings.

v. Study Permission Request Process was done in line with the University requirements.

vi. The researcher signed the plagiarism declaration form, stating that the researcher acknowledges other researchers where necessary.

CHAPTER 4. PRESENTATION OF FINDINGS

4.1 Introduction

The preceding chapter focused on the research methodology used in Chapter 3 to obtain findings. The purpose of this chapter is to provide a detailed analysis of the findings of the study. The study starts by outlining the participants' demographic profile, followed by the findings, and then the conclusion. The findings were summarised using thematic analysis. The data was presented through quotes that were interpreted individually or jointly to convey the non-verbal communication found during the interviews, where appropriate.

4.2 Background of Participants

This sub-section presents the participants' demographic profile, which consists of gender, race, age, qualifications, and employment. All the interviews were conducted online due to COVID-19 regulations. Based on the agreed confidentiality with the participants, they were identitied as P1, P2, P3, until P12.

The participant group was dominated by African males between ages 26 – 30 years. The majority of the participant have tertiary education, ranging from Degrees, Post Graduate Diplomas, Honours and Masters degree. They were juggling both corporate jobs and their businesses. This impacts the study positively as the candidates exhibit knowledge from both traditional business models and digital platforms.

All the participants were at director and managing executive level and have been exposed to strategy formulation and implementation in their organisations. The participants were predominantly key decision-makers in their organisations, operating as CEO, CIOs or Executive Directors to represent managerial views.

The platform based SMMEs predominantly operated in the ICT industry; however, they also exist in other industries based on the business' solution. These secondary industries range from ICT, HR, automation, education, fast moving consumer goods (FMCG), and other industries. The majority of the SMMEs were between 0 – 5 years, which are the formative years. The businesses were also small-sized with between 0 -10 employees. Table 3 lists all the participants' information:

Table 4.1: Participant's information

Code	Gender	Race	Job Title in Digital Platform Business	Sector / Industry	No. of Employees	Age of the company
P1	Male	Black	Executive Director	Education Sector	50+	6-10 years
P2	Male	Indian	Chief Executive Officer	Recruitment	120	6-10 years
P3	Male	White	Chief Executive Officer	Automotive Industry	4	0-5 years
P4	Male	Black	Business Development Manager	Financial services	200	0-5 years
P5	Male	Black	Executive Director	Design & Engineering	3	0-5 years
P6	Female	Black	Executive Director	Consulting, E-commerce, FMCG	3	0-5 years

P7	Male	Black	Executive Director	Automotive Technology	4	0-5 years
P8	Male	Black	Chief Executive Officer	ICT, Financial Services	7	6-10 years
P9	Male	Black	Chief Technology Officer	ICT, IT	5	0-5 years
P10	Male	Black	Head of Technology	E-commerce, Private Equity, ICT	4	6-10 years
P11	Male	Black	Executive Director	ICT, Tech	5	10+ years
P12	Male	Coloured	Solution Manager	E-commerce, Fintech, ICT	100+	10+ years

4.3 Themes for Findings

The research findings were captured as codes and then grouped into themes and categories. Thematic analysis was used to identify these codes, themes, and categories (Braun & Clarke, 2006). The emerging themes from the research are 21st-century skills, digital platform skills, SMME skills, COVID-19, skills gap and macro-challenges. These were synthesised from the participants' insights. In the next section, this study explores the results pertaining to each proposition. Table 4.1 below represent the summary of themes per proposition.

Table 4.2: Summary of propositions and final themes

Propositions	Themes
Proposition 1: Technical, human, and conceptual skills are essential for digital platform SMME.	• Technical Skills • Business Skills, • Human Skills, • Conceptual Skills • Leadership Skills
Proposition 2: Internal (technology, infrastructure, and connectivity) and external (economic, political, and social) environmental factors affect platform based SMMEs.	• Digital Era • Skills Gaps • Macro-Challenges • COVID-19

4.4 Results pertaining to Proposition 1

This sub-section presents the findings on the fundamental digital platform skills, as identified by the participants. The categories and themes are presented in this section, as well as the views expressed on the proposition below:

Proposition 1: *Technical, human, and conceptual skills are essential for platform based SMME.*

4.4.1 Essential 21st Century Skills

The first category that came from the participant were the 21st century skills which also infers that these are skills critical for the digital era. There were 17 codes that participants identified in the range of skills they considered essential for 21st-century skills. The dominant skills that came through were problem-solving, business acumen, emotional intelligence and being

digitally ‘savvy’. Three themes came from these codes, namely technical, human, and conceptual skills. According to the participants, these skills can be ranked from higher-order skills to lower-order skills. The foundational skills were consider to be the technical skills and the higher order skills to be conceptual skills.

a. ***Technical Skills***

Two skills were dominant within this theme: digital-‘savvy’ skills and innovation. These were discussed as imperative and foundational by the participants. Digital skills had substantial weighting for being enlisted as a must-have within this digital era. Participants believed that digital skills and digital’savvy’ skills were synonymous, since both terms apply to the ability to use digital technologies in advanced settings. The participants were adamant that without digital skills, individuals would become obsolete and unprepared for the future in this digital age.

Additionally, the participants identified innovation as a crucial fundamental ability. They contended that this was connected to the capacity to consider consumer or company needs and fit-for-purpose solutions. One participant argued that innovation is not exclusive to the twenty-first century, as humans have innovated since the dawn of civilisation. Innovation is the ability that enabled the industrial and technological revolutions. However, another participant commented on how originality is achieved in the digital platform environment, despite the fact that the technology is identical. They emphasised the importance of resolving issues simply by the implementing of available technology in order to achieve originality.

> “*So that is another one like innovation; it is another skill set that has been there for ages. You cannot really, for me defined as a 21st-century skill because people have*

been innovating like the stone age, like up until now that things are continuously changing"- **P1**.

Another dissenting opinion expressed by participants was that innovation is not a skill. Participants added that this idea of having innovation as a skill increased the burden on individuals to create ourt of the box solutions that are not relevant for sutomers. Whereas, innvovation should be about purpose-built, straightforward, and responsive solutions that meet consumer needs. Thus, I nnovation does not always need bells and whistles; it can be straightforward, rational, and simple.

"*I think it is a result and not a goal. You should be focusing on how best to solve a problem and how logically to do so. If that is then considered innovative, that is just a result, but your goal is not to be innovative. Your goal is to solve problems in the best way possible"*- **P7**.

b. ***Conceptual skills***

Conceptual skills came out strongly as a theme in the research, whether through critical thinking, analytical thinking, or problem-solving skills. A participants expressed, "*without those two (critical thinking and problem-solving), you are dead in the water"*- **P2.** This demonstrates the participants' degree of commitment to these conceptual skills. As owners of digital platforms, they compete mainly on the basis of how well they can address consumer needs using the data and insights provided by customers. Conceptual abilities are one of the skills that give them a competitive edge. A participant shared that they once hired an employee on the basis of how they positioned their thinking skills in their interview, *"I know how to*

think and solve problems, and I have a network that will allow solve your problems further in cases where I cannot" **– P12**.

The researcher observed a logical, step-by-step, rational approach to challenges and reasoning by digital entrepreneurs. This was due to their reliance on critical thinking and tunnel vision perspective in order to perform the task.

> *"I think those are the two skills that are required because from there you will be able to do anything, literally anything. With the critical thinking skills, you will be able to identify that you have got a problem. Then you would be able to say, how do I solve it? And then we will be able to source the answers and then be able to create the solutions and apply"***- P11**.

> *"Getting to that point where you want someone to be able to think about the next steps, you want them to be able to think about it logically, how do they progress? What is required?"* – **P2.**

Problem-solving was a recurring theme and seemed to be a critical skill that provides the impetus to perform tasks. The participants concluded that their roles required them to be perpetually solution-focused. They must devise novel methods for resolving business or consumer issues by interrogating data and determining the source of the problem.

> "*I think I would say problem-solving first. I think that is definitely a top one for me, especially being an entrepreneur like I am always thinking about problems, which create new opportunities. And, I think that it is important to hone in on that skill, especially in the 21st century"* – **P4**.

> "*I think problem solving skills is definitely something that is important. For instance, to start asking questions, you need to be faced with problems, right? So for you to know*

how to solve that problem, you need to already know where to go to get answers. And, they give you the basics of facts so that you can start workshopping those facts and testing out ideas. Yeah, I think problem solving is very important' – **P1.**

One participant stated that conceptual skills are higher-order skills and that they are the most important for 21st century skills.

"*If I were to draw a triangle from these, at the top, I would have the three innovation, critical thinking and problem solving, and to have communication and teamwork in the middle and the bottom, whatever technological skills and knowledge management. I will probably put an arrow pointing upwards, like, at the bottom. I would have like low order and then at the top, or like high order skills for 21st-century skills."*- **P1.**

c. ***Human Skills***

Participants established humans as a necessary component of their ecosystem. As a result, the ability to communicate with and interact effectively with others was important. One of the participants shared, *"I would say emotional intelligence is so much more important these days, especially how companies interact with customers"* – **P5.** As a result, they identified emotional intelligence as a necessary interpersonal skill. Digital platforms essentiate that they provide the best experience possible by being thorough and accurate in their interactions with applications and other social media platforms. Unlike conventional companies, they lack the ability to meet with customers in the event of a negative user experience. Thus, participants suggested that emotional intelligence is essential for relationship management.

The participants established a skill that has been underrepresented in research, namely behavioral science. This refers to the capacity to comprehend a person's psychology when they

take a decision. It is critical to a customer-centric business model and provides user journeys with measurable behavior-based interventions.

> *"So I feel like understanding behavioural science, from a context of how human minds are actually wired and how human minds actually work, is very important. It is a critical skill in the world that we live in. Because if you understand that we exist in a bias world, and you understand those biases from a human mind perspective, you can train all the AI in the world to do certain things, but the human mind will always do things pretty much almost consistently"* **– P10.**

> *"Having emotional intelligence will help you build something that makes sense for these consumer groups that you are building this platform for' –* **P4.**

Additionally, one participant claimed that emotional intelligence facilitates decision-making and is essential for maintaining relationships with consumers, suppliers, and potential investors. It is the sole skill that aids in the navigation and management of interpersonal dynamics.

> "*Emotional intelligence, in a sense, is very key. And, being a good decision maker because you make decisions all the time and we need to also be able to negotiate, some negotiation skills are critical, especially with partners, let us say possible investors and customers"*- **P11.**

Empathy was discovered to be a necessary skill for emotional intelligence and data analytics. The participants' viewpoint on the issues that consumers face dictates how those problems are resolved. Thus, they need empathy to connect better with the customer needs.

> "*I do not know if empathy is a skill, but empathy is emerging more than ever as something that everyone needs to have in order to be able to relate to people and especially in the*

workplace. Emotional intelligence, and data analytics is quite a big one as well, to be able to understand and interpret data and make business decisions, as well as business management." – **P9.**

"This is why it is important for one to have emotional intelligence so that they can use and manage these emotions to navigate, positive and effective communication, empathy, which is really important. Also just, conflict resolution, I think emotional intelligence plays a critical role in terms of that" **– P5.**

4.4.2 Essential Digital Platform Skills

There are 11 codes that participants identified in the range of skills they considered essential digital platform skills. The dominant skills that came through were technological skills, critical thinking, and customer-centricity. These themes are similar to the 21st century skills' theme. However, in the discussion, the participants list differing perspectives on the skills prioritised for the digital platforms.

a. *Technical Skills*

Technical skills, such as programming and software development, were cited as critical because they were more platform-oriented. Additionally, participants suggested that they would outsource resources from other countries for complex solutions. They do, however, build the skills for themselves because the work is expensive and generally of low quality in South Africa.

"*Programming, I come from a software engineering background, so I will not add yeah. Absolutely critical, but this is one of the hardest skills to learn because it takes time. It actually takes a lot of time for you to get to this point*"- **P10.**

As a result, the majority of participants suggested that they learned these skills independently through YouTube videos and blogs. This emphasised the importance of active and continuous learning, which is fueled by curiosity and the ability to predict trends.

> *"I had mentioned the need for you to be analytical, to be able to get the data because the reality is data informs everything we do. I did also allude to programming, but you do not need to be an expert programmer to be in a platform or in a role that is more technical in nature. You need to take a view where you are constantly upskilling yourself."*- **P9**.

i. *Platforms vs Traditional Businesses*

There were divergent views on whether the skills required by traditional businesses and digital platforms are distinct. 46% of participants disagreed that traditional businesses are different from digital platforms. Others contended that although the skills remain the same, the context varies. However, 60% of participants indicated that digital platforms allow substantial economies of scale and faster execution.

The participants emphasised that a portion of the skill gap between conventional and digital businesses is due to the inherent differences in the businesses' background and processes. One of the participants elaborated on this, saying*, "the thinking is very different. In any digital platform, there is very agile thinking. We launch MVPs, go back and reiterate. Traditional businesses are very stuck in their ways. They will spend a lot of money to launch something, and then it fails."* – **P3**.

Even in platform businesses, the business skills needed for traditional businesses remain the same. The company will continue to need robust supply chain management, persuasive

marketing and sales campaigns, and effective human resource management. As a result, similar skills are required; however, economics dictate how different skills are prioritised.

> "*The fundamentals are the same; the economics are not. If I run a butcher, I make money based on how much meat I sell. The economics are different in that I have fixed costs. I have got a roof over my head. I am paying rent. People come into my store, and I am paying staff. If I run an Uber for butcheries, economics are different; I do not need a store. I just need a website. Hence, I am saying that it does not presuppose that the model will be correct, even though it is digitally enabled. I think it is, that is just an important thing to keep in mind*."- **P8**.

> *"Ideally what you want to do is you want to form a team with all these skills, but, as a person you cannot, just focus on a particular skillset. As I say do you need to keep emphasising, you need to be multi-skilled and multi discipline. However, in a team probably you can look to the leader of the team to be multi-skilled and multidisciplined, but you obviously need a team of people that are experts in a particular field to be able to run with an own and do those things that they do well, and for the benefit of the entire team"* – **P9.**

Additionally, participants pointed to a change in mindsets between platforms and traditional businesses. Digital platform environments are complex and do not lend themselves to a straightforward – carefree attitudes. Individuals are pushed to perform above and beyond their call of duty due to the everchanging nature of the business environment.

> "*You need to be multidisciplinary, multi-skilled and have good strategic management of business-minded view to be able to build the vision and craft the vision in such a way that you are always thinking about how you can leverage this technology in order to*

build solutions that appeal to the ever-changing needs of customers, as opposed to just keeping the lights on" – **P9.**

However, one participant was adamant that the skills are the same for all businesses; they only have a different name now. When the output needed for each skill is examined closely, the output is identical.

"*I would say definitely traditional business models are the same. All we are doing is optimisation techniques. A lot of the times, this is all management accounting, six Sigma quality design, psychology. It is all the old things as much as people put new names to them. So all the traditional business practices hold the same. The only thing that has changed is the multiplier effects that digital gives us. In essence, it has made the whole world smaller and your ability to reach it, a lot easier, the ability for people to share information is a lot faster."* – **P7.**

ii. ***Industry know-how to start a digital platform business***

There are divergent views on the value of industry know-how. According to some participants, one should begin and invest in researching the industry through observation and experimentation. Others considered having a baseline of knowledge prior to entering the market. These disparate perspectives seem to be affected by the industry in which the participants operate. However, there is an inherent trust among the participants in their ability to initiate and learn continuously as the company develops.

According to one participant, educational credentials and industry experience should not be a barrier to starting a digital platform company. They emphasised that entrepreneurs gain skills along the way as long as they invest time in the developmental stage of their business, conducting research and actively learning.

"I am an accountant by profession or by qualification. I studied accounting and economics at university. **P7***, I know, he is my business partner and I know from university did a B Comm Degree. My other partner also did a B Comm. None of us has experienced in the automotive industry, rarely. None of us has, I guess, the deep institutional knowledge, other than what we have learned by practically getting into the business, starting it, running it, and then learning"* – **P3**.

One participant emphasised the importance of product knowledge in mitigating failures and meeting specific consumer needs. This also assists in determining which market gaps they are addressing and resolving the issues that customers are facing.

"Well, you need to know your product, right? And you need to have a clear direction of where you want to take the product. You might not necessarily need industry knowledge, but you need also to know where your own gaps exist. Just having that critical thinking and critical thoughts to say, okay, this is where the world is going. How do I then adjust my proposition for me to be able to be online" – **P10.**

One of the opposing views emphasised how uncompromising consumers are on user experience. Entrepreneurs in the digital space must prioritise creating a superior product that deliver excellent online experiences. These experiences can only be developed through extensive industry knowledge and skill.

"I believe we need to have the industry know-how; you cannot run a digital business without understanding how a digital business works because there is no room to explain when a customer lands on your page. There is no room for customer service to explain to them why maybe, especial your offer does not appear any more on the website. The customer concentration span is so short, especially on digital platforms, because there

are so many shops, so many options. If you cannot captivate the customer immediately and you do not know how to do it, you won't be able to survive." – **P6**.

"The platform itself becomes the influencer, if it is good enough, right? So you build a platform it is solve a specific problem" – **P1.**

b. ***Business Skills***

Business skills were identified as a necessary skill set by participants. Entrepreneurs' strength also stems from their ability to handle themselves professionally and with sound business judgment. The participants frequently classified all business skills, such as marketing, sales, and operations management, as part of their business acumen. According to one participant, these skills are built overtime from various experiences and industry exposure.

"*My experience as a freelancer gave me that business acumen, working in marketing. I already know how to position whatever it is I am working on. So I think it is the insight. Just the knowledge of a lot of different things, Yeah. Just the open-mindedness does help because, we, in a position to create any product, we are not stuck to doing apps"*- **P5**.

One of the participants shared a structure called the 4Cs, which assists participants in developing their business acumen skills. These include skills covered in other themes. It is important, however, to recognise collaboration, communication, and creativity as critical business skills. Collaboration for "own-account" companies may not be with employees but with external suppliers and potential partners.

"I think what is most important, and I know well-known are the four Cs, which, critical thinking, creativity, collaboration, and communication." **– P7**.

According to one participant, individuals can still be successful even though they do not possess all of the skills specified in the research instrument. They must start adopting an "owner's" mentality. They described this "owner's mentality" as the capacity to think like a business owner and to accomplish tasks regardless of the cost. This eventually results in the person being proactive, problem-solving, and possessing grit.

> "*I would probably say you can still be successful without the skills, especially as an employee, like if you are an owner."* **– P3**.

Business skills were described as essential for digital entrepreneurs working at the executive level, primarily because executives directly affect the financial performance of their businesses through their decision-making. Additionally, digital entrepreneurs must consider the small pool of funds available to make the best use of it possible to remain ahead of the competition.

> *"It can be difficult for an SME when they do not have an extensive budget to accommodate a supporting service such as digital marketing. It is critical to know how it would work and be able to do it yourself. As the business grows in size, then you will be able to then acquire the necessary funding and allocate the budget to be able to fill in those gaps."* – **P6.**

c. ***Conceptual skills***

The top three skills that had strong preferences amongst the participants were active learning, creativity, and analytical thinking. The majority of the participants reflected on active learning as being the most crucial skill on digital platforms. They shared that entrepreneurs are continuous learners and they need to possess a level of curiosity or inquiry. Digital entrepreneurs need to be continuously learning due to the nature of digital platforms, coding language and technology constantly change and improve, as stated in Moore's Law.

"Active learning in the world where we have information and data at our fingertips, right. The way we learn has changed; it was no longer only about sitting in a classroom. There is YouTube. There are all these platforms that you can actually do self-learning and self-development." **– P10**.

The participants explained their inclination to creativity and how differently it shows up in digital platforms. They expressed that creativity is a function of innovation, adaptability, and the ability to make data-informed solutions for clients. This is different from the traditional understanding of creativity and its association with the arts.

"I will say creativity is important for digital platforms as well because again, you cannot achieve innovation within the digital space without some creativity put in there and had a scientific inquiry. It is important for digital platforms because I am obligated as an experience designer to back all of my design decisions with data, right?"- **P5.**

"*I think for me, creativity also speaks to the other skills I have mentioned, innovation and adaptability, and there is something about working or being on platforms, which requires a lot of ingenious thinking a lot of the box."* – **P3.**

Finally, all participants agreed on the importance of critical thinking. They argued that the critical thinking process is the process of connecting the dots and mapping out various variables to make an informed decision.

"Well, I can kind of see the buckets some of these would fit in. Like for instance, critical thinking, right. It means that you do not think in one-track, you think very laterally, how to connect dots, how to map" – **P10.**

d. ***Human Skills***

Participants identified critical human skill. These include social influence, communication, emotional intelligence and customer-centricity. Social influence skills were dominant in the study. The participants referred to social influence as the ability to manage relationships in order to source capital and opportunities is essential. However, there were objections to social influence as an essential skill. Two of the participants expressed that the digital platform itself becomes the influencer if it is good enough. The investment should be in building a platform that is superior and solves a specific problem.

> *"There are four key things that entrepreneurs need to be able to do specifically in the context of networks and relationships. You need to be able to identify your friends, your family, your allies, and your adversaries. These are just in the field of life, business and the social capital."*- **P8.**

> *"Social influence, I think that is another interesting one that you have on the list. Is it essential for digital platforms? If you are referring to the business leaders having social influence, I would not necessarily say so. Social influence is not necessarily a skill set that I need to have as a founder if the product is superior"***- P1.**

The participants included the ability to communicate and have high levels of emotional quotient (EQ). Emotional intelligence helps platform businesses by fostering strong communication skills that ultimately contribute to the company's outstanding customer service.

> *"Communication because you need to be able to cut the jargon and then speak to the customer directly. I think for me also, being able to communicate with the customer, I do not know if I can quantify that with customer service skill. I think that is maybe*

customer service skills should be the top of all of that to survive because customers are essentially your lifeline" – **P6.**

*"I think it is important for communication basically. Like you have to have a high level of EQ to effectively communicate on digital platforms as well, as much as social media might seem like. It is very; it is a friendly it is as a serious business, like a tool, but it is basically where we meet our customers and how you present yourself on those platforms does affect your business in some way."***- P5**.

Customer centricity was also a priority for the participants; it entails empathising with both suppliers and customers. According to the participants, this occurs through understanding the customer's pain points, physical and psychological needs, behavioural patterns, and the problem they are attempting to solve.

*"I think one of the critical skills is being able to identify a customer need, as well; people take that for granted."***- P8.**

One individual shared an opposing viewpoint. They believed that emotional intelligence is not as important for SMMEs as they are for large companies. The explanation for this is that they do not deal with the same number of people and are not required to use the expertise regularly.

"*I can tell you from my experience when I built this system for X bank and like, literally it is a multi-million rand system, but I built it alone. I did not need to know how to work with people. I did not need to know how to speak with someone nicely. If someone in corporate had to come up with the same system, they would have needed to know how to lead, how to negotiate, how to work in a team, how to get people on their side; they needed to know all those things and be political. All of those things to get funding, to get it done, to get the right resources and all that."* – **P11.**

4.4.3 Essential Digital Entrepreneur Skills

Participants identified additional skills not included in the previous sections, such as capacity building and building trust. They also included skills of an agile organisation, such as pivoting quickly. Each participant had a different formula and skills sets that they used for success; this can be linked to how they are in different industries and phases in their organisation. One of the participants also added that self-awareness is a critical part of this journey. However, the skills can also be themed into technical, business, human, and conceptual skills.

> "*You need to know yourself, your ability to be able to see yourself at different points, highs, lows broke, hungry, angry, sad, excited, over the moon. Being able to navigate those spaces is critical. Being able to succeed quietly and cry openly is critical*" – **P8**.

a. ***Expert Skills***

The participants identified a list of technical expert skills. These include analytical programming, design, data science, data analytics, technological skills, digital marketing, user experience, knowledge management. These skills are critical for platform businesses because they need to translate that data into revenue.

> "*Technology skills, programming, UX, user experience, data and analytics, things like SEO, understanding the platform because those are the more technical skills, the expert type skills and digital marketing as well."*- **P10.**

> *"It is essential to understand how digital marketing works. I think the basics of just knowing how to do SEO, knowing how to design your graphics, knowing how to operate an e-commerce shop, because currently what is happening is that there are a lot of templates and software that is available to make it easier. You do not need to be an IT specialist"* – **P6.**

"I think, skills such as IT and data science and data analytics are skills that are very important and marketing as well, and then user experience and customer experience are skills that are quite important when establishing a platform business. Because they are important in their own, right. All contribute towards the bigger picture, right? Because what you do is you need somebody to firm up or to gather the necessary knowledge and understanding of the landscape and what the customer view is when building whatever product or service to be able to inform what we built." **– P9.**

One participant suggested that entrepreneurs gain business experience in order to broaden their skill set and influence others. They acknowledged that this is another opportunity to gain exposure to business skills and the proper exposure to key stakeholders and learn about processes and how to manage dynamic environments.

"If you can, and it was counter-intuitive, get the corporate experience, if you can. But, corporate, I think, is a great training ground for entrepreneurs; it gives you a great viewpoint. As an employee, all your managers and your customers are clients when you leave the business. You have learned how to deliver to clients. I think that is differently learning there. I think all the other stories of non-corporate entrepreneurs are also relevant. Like, Jeff Bezos was a VP at a bank. A lot more of these people and their stories are interesting actually because they all had jobs" **– P7.**

b. ***Conceptual skills***

The participants identified a list of conceptual skills. These include problem-solving, analytical thinking, active learning, creativity, initiative, time management, agility, adaptability, identify opportunities, pivot quickly. These are critical in the entrepreneurial journey, and they are developed as the entrepreneurs gains more exposure and years.

"*Entrepreneurial skills, it is probably the ability to coordinate and identify opportunities, right? Your ability to pivot quickly, according to changes either externally or internally. So entrepreneur skills are obviously your agility, ability to pivot and adaptation. So you then layer that with leadership. Leadership becomes the critical lateral thinking long-term strategy"* **– P10.**

"Being able to notice that you are in trouble and think about or think your way out of trouble and have the ability to learn how to learn, because that is a very important skill, learning how to learn" **- P11.**

c. ***Leadership Skills***

The participants identified a list of leadership skills. These include capacity building, building trust, integrity, strategic thinker, communication, emotional intelligence, business acumen, people skills, critical thinking. The other skills have been discussed; however, building trust and integrity were additional skills the participants added.

"*Combined in, under the leadership, basically capacity building, building middle management, entrepreneurial grit, and/or building grit, and risk-taking, and then, expert skills, in those analytical programming, education management skill sets. That is, that is essentially what improved our chances of success as a digital platform playing in the EdTech space*." – **P1.**

'I think the ability to empathise with both sides of your marketplace is important. It is not a skill usually the owner is going to have, but it is something you need to be able to

understand and figure out as a platform business, you need to figure out how you build trust in your platform" - **P3.**

4.5 Results pertaining to Proposition 2

This sub-section presents the findings on the hindering and enabling factors for the digital platform identified by the participants. The categories and themes are presented in this section, as well as the views expressed on the proposition below:

Proposition 2: *Internal (technology, infrastructure, and connectivity) and external (economic, political, and social) environmental factors affect platform based SMMEs.*

4.5.1 Digital Era

There is a strong understanding amongst the participants that increased economic activity has been a definitive factor for the 21st century. Therefore, in order for employees to increase their competitive advantage, they needed strong problem solving, business acumen, emotional intelligence and being digitally skilled.

"*In corporate or the business world, it is not enough just understanding one aspect of the job or having one specialised skill especially in today's time; you need to be multidisciplinary and multi-skilled, You need to understand data and how it relates to different parts of the business, understand even on a high level, the technical aspects and how the different systems talk to each other. Marketing is also quite a big one, user experience and customer experience, as those things, even though you will not do a hundred percent of them every day, but they contribute towards really firming up and understanding and really providing value for the business*" **-P9.**

Additionally, they said that adjusting to changing times enables employees to remain relevant and a good match for the company without being obsolete. These skills are essential due to the

constant change in the market world. Markets are convergent, which means competition is automatically increased, putting market share at risk. The ability to have a team that adapts easily and moves quickly is important.

"*I just think that with the advent of technology, access to the internet, the increased access to information and knowledge; that just generally in itself creates an environment where things move at such a fast pace. If things are moving at a fast pace that people are not able to adapt or have the skill that allows them to adapt, they will then get left behind and be irrelevant in whatever new society is created, or new industries are there and therefore then become redundant*"- **P4.**

4.5.2 Macro-challenges

The participants were passionate about the challenges faced by SMEs leaders within the digital space. The vital themes were the skills gap, digital divide and access to funding. One of the participants argued that these are not limited to South Africa but are relatively common among developing countries facing similar economic and political environments.

The participants did not shy away from expressing the tension in solving business opportunities using digital whilst the vast majority of South Africans do not have access to WiFi and other infrastructures to help bridge the digital divide.

"The problem right now that we are facing, we do not have connectivity and connectivity is expensive. Instead of worrying about other things that are important or worried about, I do not have enough data. But if you had enough data and the speed was fast enough, you would worry about other things, worry about, maybe I can actually do like a VR thing. Because now I have got this amazing bandwidth, and I do not have to worry about data. I can afford it. It is like water. You start becoming creative

on the internet because you are not worried about saving data or not having like a fast connection." – **P11.**

Amongst the group of participants, funding was a sore point. They expressed that all the initiatives and efforts are empowered and propelled by access to funding. Entrepreneurs are forced to look for investments outside the country, and funds are it is misdirected. Private equity and private capital are invested into established companies, but insufficient early-stage organisations are being funded. Capital is needed for SMMEs to genuinely mature.

"Once again comes back to the capital, leads to capital. People have to look outside, let me not say there is not capital in our country, but it is misdirected. There is a lot of private equity, private cap, or more mature businesses, not enough early-stage entities," – **P8.**

"There is a huge funding misalignment in South Africa on all sides of the fence. I will say this even as simple as at the policy level. All of them might be correct in the various policies we have on funding, and the funding policies we have are awesome. How they are implemented in a particular way is an issue. You will have, banks and different funding institution have a policy that says we fund small enterprises, and fund transformed black owners" – **P7.**

Lastly, participants included access to resources as a limitation, which prompted a different approach to developing the business and scale. The access to resources allows for advanced technologies and solutions, which ultimately allows for advanced skillsets.

"The only difference and the biggest difference that should exist should be access to resources. When you have access to resources, obviously, you have access to more advanced skills. You do not have to focus on building scalable products at the

beginning. The scale only matters when you are bigger or reaching for bigger. In the beginning, you do not have to do, go for scalable solutions. You are just optimising. And, you might have to do a lot of funny things, to close a sale, or to build a business." – **P7.**

4.5.3 Skills Gap

The majority of the participants showed confidence in the SME leaders' skills and their ability to solve them. However, all the participants agreed that there is a skills shortage in the ICT industry, which leads to exorbitant prices and below par quality of work or service. This challenge has had them outsource from other countries or learning upskilling themselves in order to be able to offer quality services.

"I think that look there are some phenomenal leaders in South Africa, like SMEs people running very successful companies that like grow from very tiny to very big, very quickly, right. There are phenomenal people. I do think that if you are talking just from a pure SME owners skillset perspective, a hundred percent yes". – **P3.**

One of the participants highlighted that digital entrepreneurs are over-mentored and underfunded. Other participants shared plenty of incubator programmes and facilities; however, these are not effective in helping entrepreneurs form a relationship and explore new opportunities.

"From a skill perspective, et cetera, again, just touching on that, maybe it also comes back to the initiatives that government has tried in the past. As part of trying to support SMEs, the government has gone through numerous initiatives, including incubation programmes, government-supported programmes, digital programmes, et cetera. What

I have also noticed is that in the sector, specifically in the SME sector, what has happened is you have serial incubantees" – **P2.**

4.5.4 COVID-19

Most of the participant expressed how the COVID-19 19 pandemic forced them to pivot and find new solutions for their businesses. Due to the lockdown, they found an increase in the demand for a digital solution, and it forced customers to a greater level of digital adoption.

"*Look what COVID-19 or the pandemic has done is it has effectively accelerated digital transformation within organisations and SMEs and the likes" –* **P9.**

The skills that were used during these times were different, and some of them were even accelerated. These include communication skills, emotional intelligence, empathy, creativity initiative, amongst others.

"Life will not ever be the same, right? Post-COVID-19 will not ever be like pre-COVID-19. I have mentioned soft skills, and I know the skills that I have is technical. I think that is where the world is headed. People are just going to need to have more EQ. We need to be more creative because no one saw COVID-19 coming, right? We need to be more enlightened, more elastic in a sense that if anything comes, our minds are creative enough to think of solutions around that." **– P5**.

Furthermore, participants indicated that the skills they preferred might be influenced by what is on top of their mind due to how they have had to conduct business in the COVID-19 times. The list may change post-COVID-19.

"Anything moving from pre-COVID-19 to post-COVID-19, the categorisation might change on what do I deem as a top-three important skill sets. My answer, my answers

today might be influenced by my experience of COVID-19 and having to navigate, and leading a team during COVID-19 times." – **P1.**

4.6 Conclusions on the findings

The participants' engagement, problem-solving and critical thinking were recuring in all the study's propositions. This seems to be the entrepreneur's mindset or underlying attitude towards business and its challenges. Based on the industry the SMME is servicing, it is noteworthy that they prioritise different skills at different parts of their journey. Thus, this informed the varied and rich differences in opinions on which skills were essential. Lastly, most of the entrepreneurs interviewed have been running their companies for less than five years; therefore, they are more susceptible to experimenting with different models and skills to ensure their businesses succeed.

To summarise the key finding per proposition based on the research questions:

Proposition 1: *Technical, human, and conceptual skills are essential for digital platform SMME.*

- The participants affirmed that technical, human, and conceptual skills are essential for the digital era. These are the foundational skills needed for digital platforms as well. In addition, digital platform entrepreneurs also need business skills in order for them to effectively manage and operate as businesses. Lastly, leadership and expert skills are also essential for digital entrepreneurs, as these enable them to build strong efficient teams and provide solutions to both the technical and organisational issues that may arise.

Proposition 2: *Internal (technology, infrastructure, and connectivity) and external (economic, political, and social) environmental factors affect platform based SMMEs.*

- There are macro challenges such as the skills divide, access to funding, and underdeveloped infrastructure that affect digital entrepreneurs' performance. These are out of the digital entrepreneur's control; however, they affect how they conduct their businesses within the South African context. In addition, the COVID-19 pandemic was an unforeseen environmental factor that had a positive impact on digital platform businesses as it increased the demand for digital services.

CHAPTER 5. DISCUSSION OF THE RESULTS OR FINDINGS

5.1 Introduction

This chapter discusses the findings of the study discussed in Chapter 4. These findings are contrasted against the literature outlined in Chapter 2 to discuss any consistencies or differences between them. This discussion addresses the study's objective, investigating digital platform skills requirements essential for Small, Medium and Micro Enterprises (SMMEs) in South Africa.

Table 5.1 represents the themes developed concerning the study questions and propositions based on the review undertaken.

Table 5.1: Research questions, propositions and final themes

Research Questions	**Propositions**	**Themes**
Question 1: **Which skills are essential for a platform based SMME?**	***Proposition 1:*** *Technical, human, and conceptual skills are essential for digital platform SMME.*	• Technical Skills • Business Skills, • Human Skills, • Conceptual Skills • Leadership Skills
Question 2: **What are the enabling and hindering factors for digital**	***Proposition 2:*** *Internal (technology, infrastructure, and connectivity) and external*	• Digital Era • Skills Gaps

platform SMMEs in South Africa?	*(economic, political, and social) environmental factors affect platform based SMMEs.*	• Macro-Challenges • COVID-19

Therefore, the approach used illustrates the critical conclusions from Chapter 2 and contrasts them with the analytical study's findings. The findings are discussed concerning the propositions, which considers the above-mentioned research questions.

5.2 Discussion Pertaining Demographic Profile of Participants

5.2.1 Age Group

Millennials made up the majority of the participants in this research. Millennials are a generation defined by life events like globalisation, rapid technological growth, and diversity (Ng, Schweitzer & Lyons, 2010). As a result, one of the views expressed in the literature towards millennials is that they emphasise learning new skills and advancing quickly in the workplace. They also want to "make a life" rather than "make a living," to do work that is meaningful, challenging and contributes to society (Ng, Schweitzer, & Lyons, 2010, p. 282). This can be observed in the participant groups, as they showed a strong passion for active learning and advancement. In addition, the majority of the participants are advancing their corporate career concurrently with their enterprises. As a result, there are prominent perspectives influenced by the generations' way of thinking about work that is consistent in the participants as they shared fundamental views about learning and gaining new skills in the 21st century and digital platforms.

5.2.2 Gender

This study is not a gender-specific study. However, the researcher found it is interesting to note the skew toward male dominance within the participant group. The male dominance is

consistent with the industry norms, as ICT is a male-dominated industry (Johnston, Andersen, Davidge-Pitt, & Ostensen-Saunders, 2010). It is argued in the literature that since the ICT industry is male-dominated, it is inevitable that there is male dominance in the ICT entrepreneurship space (Johnston et al., 2010). This seems to be an ongoing challenge in literature and poses an opportunity for diversity within the industry.

5.2.3 Managerial Experience

The study was conducted with participants at the director and executive level and in their platform based SMMEs. The managerial level defines the level of seniority of the participants. According to Katz (1955), executive managers rely more on conceptual skill to drive business growth. In this case, 80% of the participants are CEOs, CIOs, or senior representatives and are responsible for decision making and problem-solving. As a result, there are prominent perspectives on the skills required by the participant's position within their organisation. As assumed by Katz (1955), seniority affects the degree of priority that will also be placed on the skills.

5.3 Discussion Pertaining to Proposition 1

Technical, human, and conceptual skills are essential for digital platform SMMEs.

5.3.1 Essential 21st Century Skills

The study found that the essential skills for the 21st century are technical, human, and conceptual skills. These skills are in line with the Katz skill model. Below is a discussion on the respective themes:

a. *Technical Skills*

Van Laar, et al., (2017) identified technical skills, knowledge management, communication, teamwork, innovation, critical thinking, and problem-solving as essential skills for the 21st

century. These were summed into three categories: learning skills, literacy skills, and life skills (Van Laar, et al., 2017). As discussed, the dominant technical skills amongst the participants were innovation and digital 'savviness.'

According to Van Laar, et al. (2017), innovation is vital for driving competitiveness and disruption in markets. These skills have been amplified in the 21st century as entrepreneurs use innovation to drive digital disruption and scale. Therefore, inherently innovation is defined by the outcome rather than the process. This view is challenged by the participants as innovation needs to be redefined to focus on ideating, problem-solving and providing fit-for-purpose solutions for customers. Innovation skills are limited when their outcome defines them. Therefore, there is an opportunity to have a consistent definition in the literature on innovation skills.

In addition, digital savviness or digital skills were found as a fundamental skill to have in the 21st century. However, this is consistent with the literature (Vasilescu et al., 2020; Fathiyah et al., 2019; Van Laar, et al., 2017). The literature argues that people can be digitally insecure; this is less likely to be the digital entrepreneurs. However, the employees and customers that interact with the platform may be. Therefore, digital entrepreneurs have a role in ensuring specific measures are taken to reduce people's fears about digital technologies (Vasilescu et al., 2020). Part of the skill to be digitally savvy for digital entrepreneurs is to build platforms that are simplistic and enable digitally secure or insecure users to have an understandable user journey.

b. ***Conceptual skills***

Conceptual skills are argued to be essential skills for the top management of any company (Katz, 1955). The priority on these skills echoes in other studies as well. Van Laar, et al. (2019, pp.93) identified the critical conceptual skill for the 21st century to be "problem-solving,

decision making, critical thinking". The participants agreed with these skills, as they found them to be the underpinning skills that enable them to innovate, ideate, pivot, and solve problems systematically and methodically. These skills are mostly recognised as individual attributes. However, they can be harnessed through gained career experience (Mumford, et al., 2000). They give digital entrepreneurs a competitive advantage in digital platforms, as they operate in the ICT industry, which leads to technological innovation and enables digitisation. Thus the conceptual skills become critical (Johnston et al., 2010). However, the participants did not appear to differentiate between these abilities and articulate the primary benefit they derive from each.

Problem-solving skills are used to analyse complex, ambiguous, and diverse problem scenarios and apply knowledge to develop solutions. This skill necessitates flexibility and effectiveness to provide various practical solutions (Van Laar, et al., 2019). The participants expressed the need for a logical, step-by-step, rational method when approaching different problem scenarios. Problem solving also entails the experimentation and testing of the different environment to compile the most efficient process to the solutions (Iordache et al., 2017).

Decision-making skills are necessary for utilising information to achieve individual or business aspirations (Iordache et al., 2017). The participants emphasised having an "owners mindset", and part of the owner's mindset is the ability to make decisions. Decision-makers must identify new opportunities, quantify the associated costs, communicate their reasoning, and secure buy-in from others (Van Welsum, 2016). This aligns with the participant's 4C concept that entails critical thinking, creativity, collaboration, and communication.

Critical thinking skills refer to making sound judgments about information based on an accurate reflection of facts. The individual must consider different viewpoints and determine if the content supports claims or logic defined by empirical evidence (Van Laar, et al., 2019). This is

in line with the description the participants gave on critical thinking to connect the dots and map out various variables to make an informed decision. The participants and the literature did not expand on the role of biases in the outcome of this process.

Furthermore, Fathiyah et al. (2019, p.58) listed "analytical thinking, active learning, creativity, originality, initiative" as the essential conceptual skills for the ICT industry (Fathiyah et al., 2019). These skills were also assessed with the participant group, and the top three skills that had strong preferences were active learning, creativity, and analytical thinking. Analytical thinking skills refer to the capacity to break down data into smaller sections to make inferences (Asadullah et al., 2018). The participants expressed that they use logical, step-by-step, rational methods when approaching different problem scenarios, which is essentially critical thinking. These conceptual skills overlap at time.

Active learning is the key to digital entrepreneurs growth (Van Laar et al., 2019). The participants agreed on the importance of active learning in their business tenure. As mentioned prior, this also aligns with the concept that millennial value learning new skills and advancing quickly (Ng et al., 2010). Fathiyah et al. (2019) noted the demand and supply relationship between employees for skills, using formal learning institutions to gain new skills. The participant group revealed that digital entrepreneurs use social media and blogs to learn and improve their skills through active learning. They are not going through traditional learning institution. In addition, most of the participants do not have degrees in ICT related disciplines. The entrepreneurs have been continuous learners due to the level of curiosity or inquiry they possess in order to continue solving problems (Van Laar et al., 2019)

Finally, creative skills make use of software and other tools to generate new content. They are also used to enhance pre-existing systems and processes. Ultimately, they develop novel concepts, insights, and approaches based on various sources of inspiration (Van Laar et al.,

2019; Fathiyah et al., 2019). The participants used creativity to differentiate the solutions and strategies. Only a few papers provide integration of digital and 21st-century skills. The list of mentioned skills is extensive. There is an opportunity to streamline and consolidate the skills.

c. *Human Skills*

Communication skills entail communicating information to a target audience, comprehending different messages, and modifying and building upon what was previously communicated. It includes improving people's perspectives through influencing interpersonal interactions for a specific purpose (Van Laar et al., 2019). This is consistent with the participants' perspectives on communication and its significance in digital platforms. They did, however, combine interpersonal communication abilities with empathy and emotional intelligence. The ability to understand and empathise with others and convey information tactically and with consideration for the emotional effect of words impacts some.

Additionally, the literature reviewed in this study did not include behavioural science skills that were were highlighted as necessary by the participants. This is a relatively new field of study within the realms of e-commerce and digital marketing. It focuses on the capacity to understand a person's psychology and decision-making process to position appropriate products at the appropriate time. Customer need states and motivators are critical determinants of how they make decisions; thus, behavioural science capitalises on these. Additionally, it examines how words evoke certain behaviours in specific individuals based on their psychometric profiles and personality traits. They use algorithms and behavioural analytics-driven communication to optimise and grow revenue. Lastly, this allows for customer-centric solutions. Customer centricity was highlighted as an essential skill by the participants.

Working in tandem or collaborating refers to the capacity to perform tasks more efficiently than an average person working alone, which translates into the capacity to deliver with greater consistency. The operational structures are becoming more distributed and interdependent, with diverse and multifaceted tasks being done independently by various people. This increases the need for collaboration skills (Van Laar et al., 2019), which is in line with the findings from the study. Digital entrepreneurs provide services to both suppliers and customers, necessitating continuous collaboration. Even though one participant said that colour is not essential for entrepreneurs, their reasoning is inconsistent with the literature and cannot be accepted.

5.3.2 Essential Digital Platform Skills

The study found that digital platforms require business skills not covered in the Katz (1955) skill's model. Therefore, though Chapter 4 explored the technical, human and conceptual skills, the existing literature does not note a difference between digital platform skills and 21st-century skills. Therefore, the implications literature has on these remain the same. Thus, the below section will explore the business skills that have not been included in the Katz model. This theme emerged in the digital platforms' category only.

a. *Business Skills*

The founding model for skills lists technical, human, and conceptual skills essential for leaders (Katz, 1955). However, it does not include business skills. The challenge for digital entrepreneurs is that digital ecosystems require them to fulfil two conflicting roles as ecosystem member and new venture leader (Nambisan and Baron). Therefore, business skills become critical in navigating and managing the opposing demands from these roles. The participants

agree with this duality as they have had to be the jack of all trades in their businesses. They have found that business skills are imperative for platform businesses.

The dominant skills the participants focused on were business acumen and professionalism, based on the skills identified in the literature as critical skill (Fathiyah et al., 2019). Business acumen included business strategy and the ability to engage in business dynamics and leveraging marketing, sales, managing operations as part of their business acumen skills (Van Welsum, 2016). The challenge amongst the participants was that they do not all have a commercial background that allows them to operate in these skills efficiently. Literature endorses incubators to support entrepreneurs with business acumen skills to bridge the gap (Corno et al., 2014). Furthermore, there is an opportunity to have the business acumen skills to be highlighted in future literature.

Professionalism alludes to behaviour that exudes preparedness, emotional intelligence, rational and a professional posture (Fathiyah et al., 2019). The participants agreed with the importance of professionalism, especially the role of emotional intelligence on digital platforms. The key service model of the digital platform allows for mainly online interactions with customers. Thus, etiquettes and professionalism are some of the skills that allow for customer retention. It is a skill that the digital entrepreneur must possess, but it also needs to be integral to the user experience on the platform business.

Lastly, the research found that business skills are imperative and need to be added to essential skills. These determine the aptitude for leaders to make the right decisions to drive financial business results for their organisation. In the end, people have differing opinions about whether the world for established companies is fundamentally different from digital platforms. Digital channels allow for more significant economies of scale and quicker execution (Cenamor et al.,

2019). There are more variations between conventional consumers and those who find and businesses online.

5.3.3 Essential Digital Entrepreneur Skills

The study found that digital entrepreneurs require leadership and expert skills not covered in the Katz (1955) skill's model. Thus, the below section will explore the leadership and expert skills that have not been included in the Katz model. These themes emerged strongly in the digital entrepreneurship skills category.

Below Figure 5.1 shows all the skills identified by the participants under the categories of leadership, business and expert skills:

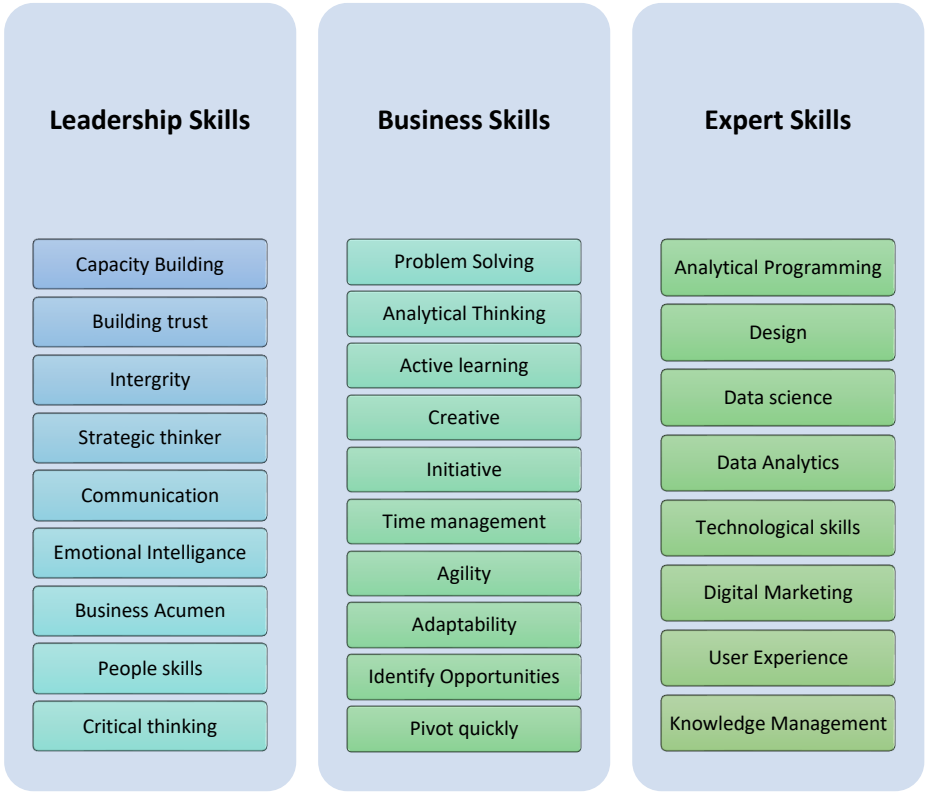

Figure 5.1: Leadership, Business and Expert Skills

a. ***Leadership Skills***

Entrepreneurial capabilities, digital platform capabilities, and network capabilities were identified as essential for digital entrepreneurs in the 21st century. Network's capability refers to relational and leadership skills. It includes creating a framework, coordinating the respective groups, distributing knowledge, managing diverse individuals, and communicating information between its varied external network members (Cenamor et al., 2019). The study found capacity building, building trust, integrity, strategic thinking, communication, emotional intelligence, business acumen, people skills, and critical thinking as essential leadership skills for digital entrepreneurs. Identifiable in the leadership skills is the inward approach to build the business and relationships with employees, clients, and stakeholders.

The literature refers to this as the requirement for 'dual skills' or 'e-leadership skills' individuals who mix an entrepreneurial mindset with business and communication skills and technical skills at different management levels (Van Welsum, 2016). This was prevalent amongst the participant's groups, as they demonstrated dual skills. They are juggling different worlds and tasks as leaders. They must live up to different expectations, ranging from technological competence to strategic direction for their company. Therefore, self-awareness is a vital aspect of the entrepreneurship path. This is so that they build the right leadership skills

b. ***Expert Skills***

The existing literature explored and established technical skills broadly and did not detail the exact skills needed except the studies that focused on platforms from the IT perspective (Fathiyah et al., 2019; Van Laar et al., 2019; De Reuver et al., 2018). The difference between the skills that have been identified in previous literature and the consolidated list in Figure 5.1 is the extensive nature of the list in each category. The study found expert skills as essential for

digital entrepreneurs, looking at the role of design, data science, and building customer-centric user experiences. This has not been highlighted explicitly in the literature on skills.

5.4 Discussion pertaining to Proposition 2

Internal (technology, infrastructure, and connectivity) and external (economic, political, and social) environmental factors affect platform based SMMEs.

5.4.1 Digital Era

Digital platforms have leverage technology capabilities in order for them to thrive in the digital era. Literature states that companies can improve their performance through digital platforms' capability by aligning this capability with their orientation (Cenamor et al., 2019). This is in line with the strong understanding amongst the participants that increased economic activity has been a definitive factor for the 21st century. Digital entrepreneurs expressed that adapting to the changing times allows them to remain relevant and the right fit for business without becoming redundant. Therefore, digital entrepreneurs have a role to play in ensuring specific measures to create country-specific interventions to overcome social and economic inequalities (Vasilescu et al., 2020)

5.4.2 Macro-challenges

Mumford et al. (2000) introduced environmental influences as part of the factors that can hinder or enable leaders growth. The environmental influences considered were internal (technology, infrastructure, and connectivity) and external factors (economic, political, and social issues) environmental factors. It is argued in the literature that Entrepreneurial SMEs face unique challenges in implementing digital platforms because they may lack the necessary resources, skills, and commitment; a better understanding of these issues is necessary (Cenamor et al., 2019). The business environment challenges confronting ICT entrepreneurs are related to government policies and programmes, access to finance, the perceived need for support

towards knowledge and skills building and, finally, to exploring international markets (Corno et al., 2014)

The macro-challenges can be grouped into the Entrepreneurial Ecosystem identified in the literature (Corno, Lal & Colombo, 2014). The research participants discussed the six framework conditions for entrepreneurship that are valid in South Africa.

- **Individual personality traits:** This component refers to an individual's personal qualities inclining them to entrepreneurial activity. It did not come out strongly from the participants as a macro-challenge to consider within the Entrepreneurial Ecosystem. However, some participants highlighted their personality traits such as being eclectic and their thinking styles to the macro-factors that led to positive outcomes in their entrepreneurial endeavours within digital platforms.

- **Socio-cultural context:** This component refers to the social and cultural norms that influence an individual's behaviour. The South African skills gap, digital divide, and racial inequality impact were strongly highlighted as the critical challenge within South Africa. The literature argues this further, stating that innovative changes rebuild how individuals work and live, and South Africa has an ever-growing divide between the 'haves' and the 'have nots' (Ndabeni-Abrahams, 2019). This is a particular challenge given that digital platform businesses pursue commodifying opportunities online, and the majority of the country do not have the skills or access to digital platforms.

- **Government policies and programmes:** This component refers to the extent to which government policies, as reflected in tax or regulations, can facilitate new venture creation and the presence of adequate government programmes in assisting firms in their start-ups, survival and growth. The participants shared that access to resources,

infrastructure and policies is critical and can be made available by the government. The access to resources, infrastructure and appropriate policies allows for advanced technologies and solutions, allowing for advanced skillsets.

- **Access to finance:** This component refers to the availability and affordability of various finance types, such as bank loans, equity, venture capital, angel funding, subsidies and grants. Amongst the group of participants, funding was a key challenge. They expressed that all the initiatives and efforts are empowered and propelled by access to funding.

- **Access to information, opportunities for knowledge, and skill-building:** This component refers to the availability of information on business opportunities and access to data required by entrepreneurs to manage their business. The participants identified that digital entrepreneurs are over-mentored and underfunded. There are plenty of incubator programmes and facilities; however, these are not effective in helping entrepreneurs form relationships and explore new opportunities. The researcher has not found literature that supports this lived experience from the participants.

- **Internationalisation:** This component refers to entry into the international market and meeting the challenges of existing players. All the participants identified a skills shortage in the ICT industry, which leads to exorbitant prices and below par quality of work or service. This challenge has had them outsource from other countries or upskilling themselves in order to be able to offer quality services.

5.4.3 Skills gap

According to the literature, entrepreneurs face particular challenges and barriers to adopting digital platforms since they may lack the requisite resources, skills, and commitment (Cenamor et al., 2019). The skills gap for the entrepreneur is evident in literature; they face unique

challenges in implementing digital platforms because of a lack of skills (Mutula & Van Brakel, 2007). There is an acute global shortage of highly skilled and hands-on personnel necessary for steering the emerging digital economy in developed and developing countries. In addition, there is a severe skills gap for certified specialists to help develop the sophisticated applications necessary to power the digital economy and the applications that depend on it (Mutula & Van Brakel, 2007). Contrary to the literature, most participants expressed trust in the SME leaders' abilities and willingness to overcome challenges. Participants concluded a skills gap in the ICT sector, which leads to exorbitant costs and sub-average quality of job or service.

5.4.4 COVID-19

Mumford et al. (2000) expanded on the relationship between individual attributes, competencies, leadership outcomes, career experience, and environmental influences. Part of the environmental influences considered is natural disasters and acts of God. The influence does not affect the skills of the individual. However, they have to control them to a degree in order to grow. The COVID-19 pandemic is a new area of study; the researcher has not found literature that supports this lived experience from the participants. However, the participants noted a positive impact on how they quickly pivoted and accelerated their skills. Therefore, there is an opportunity for future literature to identify the digital skills requirement post-COVID-19. However,

5.5 Adapted Skills Model

To summarise the research, the participants' perspectives align with Katz's 1955 model of the skill necessary for growth and development (Katz, 1955). In Figure 5.3 below, an adapted skills model is proposed. The two models are comparable on the following assumptions: knowledge and experience develop general skills that serve as a prerequisite for developing more specific skills. Conceptual skills serve as the foundation for business skills. Interpersonal skills serve

as the foundation for leadership skills. Technical skills serve as the foundation for expert skills. Due to the study's focus on the skills required of digital entrepreneurs, the model only includes top management skills; including other levels of seniority would have made the study too broad.

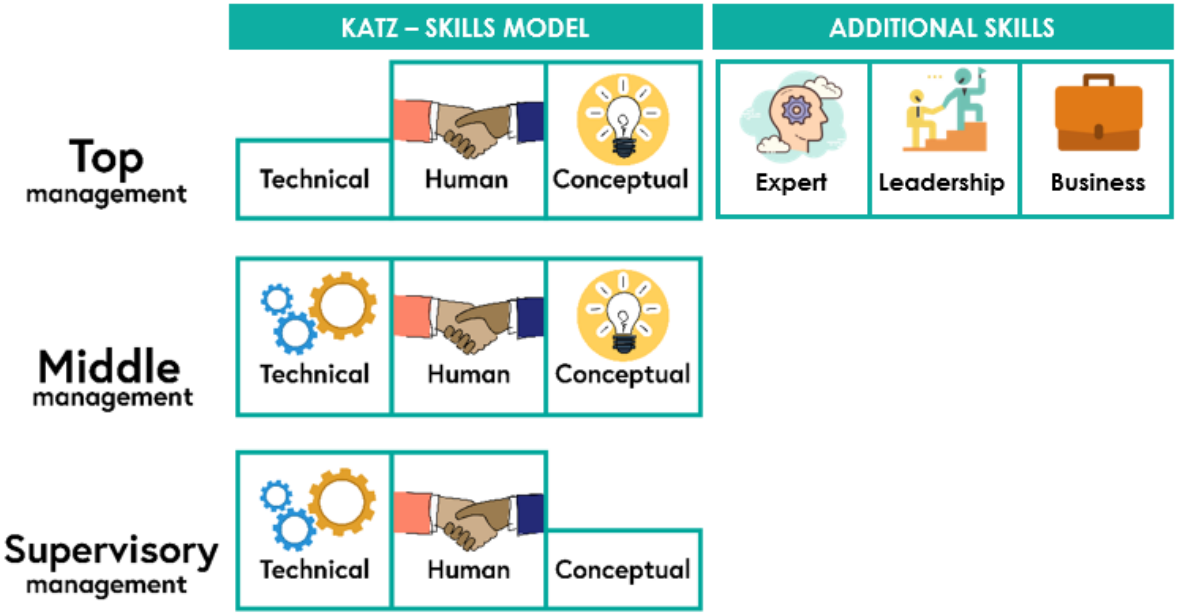

Figure 5.2: Adapted Conceptual Framework

As was the case with Katz's model, participants placed high importance on conceptual skills as they enable them to solve problems and ideate solutions that give them a competitive advantage (Katz, 1955). The participants, however, also emphasised the importance of business skills as a requirement for digital entrepreneurship. Katz argues that a leader's ability to leverage their employees' technical skills is more critical than them having technical proficiency (Katz, 1955). Indeed, participants discussed the possibility of outsourcing technical and expert skills to employees or service providers. Finally, Katz and the participants agreed that interpersonal skills are critical at this managerial level (Katz, 1955). However, the participants emphasised the importance of developing distinct leadership skills. To summarise,

knowledge and experience serve as the foundation for all managerial abilities. However, conceptual capacity enables the leader to accelerate their growth.

5.6 Conclusion

All in all, there is a convergence between the skills listed by participants and those in literature: technical, conceptual, and human skill are the fundamental skill in the digital era (Van Laar et al., 2017; Katz, 1955). The theory that was used to discuss these findings helped establish the key skills needed in managerial position, which can be adopted for entrepreneurs as well. However, expert, leadership and business skills need to be added for digital entrepreneurs leading digital platform SMMEs. An adapted skills model was proposed to incorporate these into the literature.

Based on the literature, environmental factors drive the skills development and acquisitions for entrepreneurs (Mumford, et al., 2000). Mostly, the motivator is for making a difference and being relevant to the changing time. In the South African context for digital platform SMMEs, the internal and external factors impact digital entrepreneurship, such as skills gap, infrastructure, digital divide, and other macro-challenges. Funding is a critical factor as it directly affects the development of the digital platforms. Thus, networking skills and social capital have been included as critical skills to combat the need for sponsors and funders. In addition, there is further opportunity to measure the impact of COVID-19 on the skills requirements now and post the pandemic.

CHAPTER 6. CONCLUSIONS & RECOMMENDATIONS

6.1 Introduction

This chapter presents the conclusions based on the research questions introduced in Chapter 1. It includes some preliminary recommendations for future research. The study's primary objective was to investigate the skills needed by digital entrepreneurs to effectively lead, operate, and manage a platform SMME in the South African context.

The skills unpacked in this study were essential for SMMEs to build and improve their competitive advantage. They range between technical, conceptual, human, expert, leadership and business skills. The primary goal of developing the adapted skills model was to consolidate the list of skills and assist SMME executives with knowledge of the critical skills to focus on when resourcing, upskilling, and exploring other managerial skills for their growth. Furthermore, these skills can also be used to build the teams that digital entrepreneurs lead. However, in this study, employees' skills were not measured or checked. Thus, the list of which skills to examine more closely and to what extent is an opportunity for future research.

6.2 Conclusions regarding which skills are essential for a platform based SMME in the digital era

Digital platforms were challenging to research since they exist in multiple geographic locations and industry sectors. They are coupled with various players, digital technologies, and interconnectedness due to their interconnectivity (Schwab, 2017). The literature on digital platform SMME skills was not readily available. It is a topic that is under-researched. Thus, insights were drawn from multiple papers covering 21st-century skills, ICT skills, digital skills and digital entrepreneurship. Furthermore, digital platform SMMEs are a niche industry in South Africa (Bhorat et al., 2018). Thus, a smaller sample group was used for this study.

Nevertheless, exciting discoveries were made on the essential skills for digital platform SMMEs.

The study found that digital platform SMMEs need a combination of technical, human, and conceptual skills. These skills mirror the skills identified by Katz (1955) in his skills model. Additional skills, namely business, expert, and leadership, were added to the skills model as essential for digital platform SMMEs. The literature demonstration how digital platforms have both a technical and commercial definition (Spagnoletti et al., 2015; Xu et al., 2010). Thus, the skills that need to be outlined for digital platforms need to range across both IT and business skills. The digital entrepreneurs indicated the need for tiered skills from lower-order to higher-order skills, in the absence of which the organisation might become irrelevant and not meet customer needs appropriately. Additionally, as a personal advance from one managerial level to the following, proficiency in technical skills is assumed (Katz, 1955).

The higher-order skills are conceptual and business skills. Middle skills are leadership and human skills. Lower-order skills are expert and expert and technical skills, which are also considered foundational skills. Below are the critical skills that were found in each of these based on the context of the study:

- **Technical skills**

  These entail programming and software development skills. In addition, they also include innovation and digital ‘savviness’.

- **Conceptual Skills**

  These are predominantly thinking skills; they include problem-solving, analytical thinking, active learning, creativity, initiative, decision making, critical thinking.

- **Human Skills**

These are predominantly interpersonal skills; they include social influence, communication, emotional intelligence, customer centricity, behavioural science, collaboration and empathy.

- **Expert Skills**

These include analytical programming, design, data science, data analytics, technological skills, digital marketing, user experience, knowledge management.

- **Leadership Skills**

These include capacity building, building trust, integrity, strategic thinking, communication, emotional intelligence, business acumen, people skills, critical thinking.

- **Business Skills**

These include time management, agility, adaptability, identify opportunities, pivot quickly, business acumen and professionalism.

Furthermore, this list of skills may be subject to the skills that are top of their mind due to how they have had to conduct business in the COVID-19 times. The list may change post-COVID-19. Therefore, there is an opportunity for future research on the skills post-COVID-19.

The challenge identified in the literature of no consistent definition and conceptualisation framework for digital platforms rendered a gap in which skills are prioritised as part of those required for digital platforms (De Reuver et al., 2018; Asadullah et al., 2018). The skills found in this study cover both technical and commercial requirements for digital platform businesses. Digital platform SMMEs build capacity as they progress, expand and test new opportunities, rather than having a set framework that ensures all-round skills. Thus, as the times progress, the list of skills may progress.

Furthermore, in addition to the digital era skills, the research found that digital platforms also need business skills. Digital platforms still require the exact business needs as traditional businesses, though they have transformed operations and increased capacity for scale (Van Welsum, 2016). They do not face the same challenge as traditional businesses, where there is limited agility and speed of execution. As such, digital platforms have the advantage of a lean start-up business model and simplified business processes that a minor team can execute with superior technological capabilities. Therefore, digital platform SMMEs must ensure that their teams have the necessary skills and even outsource skills that are not in their primary service model.

The biggest challenge for SMMEs in digital platforms is other established platforms, direct or indirect competitors. These platforms have efficient business models based on the lean start-up methodology and dominate the market share (Peters, 2017). However, digital platform SMMEs need leadership and expert skills in order to compete against these players. The study found that the ability to build relationships, use social capital for a funding opportunity and network were listed as necessary for the digital platform based SMME. While the SMME digital entrepreneurs were confident that they have these skills, they recognised that the

existing platforms could access better technology and afford better employees with the necessary skills.

6.3 Conclusions regarding what are the enabling and hindering factors for digital platform SMMEs in South Africa

The study used the skills-based model Mumford et al. (2000), which reflect that career experience and environment influence the digital entrepreneur's individual attributes and competencies, ultimately affecting their leadership outcomes. The environmental factors were internal factors, namely, technology, infrastructure, and connectivity; external factors were economic, political, and social factors.

Digital platforms SMMEs are important for South African economic growth. They have access to international markets as they have the advantage of scale (Mutula & Van Brakel, 2007). The markets are changing through technological disruptions, and platforms are spearheading these disruptions. The economic growth opportunities that are possible through digital platforms are endless. The digital era allows for the digital platform SMMEs to have a competitive advantage against traditional businesses. They have scales, speed and lower operating costs which improve revenue, margins and revenue. The times have therefore worked favourably to enhance platform based SMME.

One of the hindrances that need government and investor intervention is their limited access to funding. Funding is needed for the expansion and maturity of digital platforms. However, there needs to be an investment into them as the capital costs for platforms and the technology they require is exorbitant (Bose, 2019). Therefore, the is an opportunity for policy to be drafted between government, financial services and investors to support digital platform SMMEs with funding. This will also give them access to build stronger teams and access superior technology

due to access to funding. This poses an opportunity for a well-versed ecosystem that allows entrepreneurs to access incubators and access to funding.

South African platform business entrepreneurs were stressed the country's physical infrastructure, skill shortages, and a highly unpredictable government as significant issues holding them back from competing effectively in the digital economy. Traditional market models, political and economic instability have led to a win-at-all-costs mentality amongst digital entrepreneurs. The South African government is prioritising this challenge as part of the 4IR plans to close the digital divide and provide a better infrastructure that enhances digitisation (Bhorat, Asmal, Lilenstein & Van der Zee, 2018). However, they could not downplay the tension of exploring business opportunities using digital whilst most South Africans do not have access to WiFi. There are infrastructure issues that limit them from accessing the majority of the market. The SMMEs need to compete in the digital economy to deal with the technology and culture problems and their market and profitability.

There is also a leading issue of skills shortage within the ICT industry. This is a South African problem and a global problem (Mutula & Van Brakel, 2007). This is an important issue, especially for this study. The skills needed are an advanced technical skill that allows developers, engineers and platform owners to develop world-class technology solutions. Therefore, there is a need for specialised skill sets to develop digital platform businesses. Digital technology skills need qualification backgrounds in science, technology, engineering, and mathematics. South Africa does not have a high percentage of science and mathematics graduates (Ndabeni-Abrahams, 2019). There must be an emphasis on the science, technology, engineering, and mathematics (STEM) education curriculum and a nurturing strategy for developing the ICT industry as the future solutions will come from it.

The COVID-19 pandemic has a positive effect on digital platform SMMEs. It forced digital entrepreneurs to leap-frog and pivot their business through diversified solutions that met the customer needs. They were able to this because they do not carry excessive overhead and legacy operating system. They could speedily have route-to-market strategies that were relevant and in demand. Due to the lockdown, there was an increase in the demand for a digital solution, and it forced customers to a greater level of digital adoption. During these times, the skills used were communication skills, emotional intelligence, empathy, creativity initiative, and others.

6.4 Recommendations

a) Defining digital platforms

There is a need for alignment within digital platforms as it related to the understanding of digital platforms. The alignment on the definition of what is regarded as digital is the first point of departure. The skills requirements should be strategically connected to the strategic intention and aligned to the business development, thereby creating a connection between the business model and business operation. Technology remains a key enabler to the digital platform, but the clarity between digitisation, digital-led, and transforming the entire business model needs to be understood well.

b) Defining digital platforms skills

Inherently, addressing the definition and conceptualisation issues for digital platforms will enable a consolidated list of the essential digital platforms' skills. However, the list of skills must be comprehensive and address both the technical and commercial side to digital platforms. These skills should reflect the conditions of the new definition and conceptualisation. Furthermore, consideration should be made on which skills are imperative

at the different developmental phases of the SMMEs. The entrepreneur leverages different skillset as the business grows and as they mature and become more seasoned. Therefore, additional research opportunities on the skills for the different SMME stages can be pursued.

c) Adoption of the amended skills model

The study recommended an adopted skills model that digital entrepreneurs can use. This model can be used for resourcing, upskilling, and exploring other managerial skills for digital platform SMMEs. The model included skillset that have not been explored previously such as expert, leadership and business skills. In addition, there is an opportunity for digital platform SMMEs, and other platforms build capacity as they progress, expand and test new opportunities, rather than having a set framework. There is an opportunity for a skills framework for digital platforms to move through their business developmental phases.

6.5 Limitations

The research sample size was limited to Digital Entrepreneurs of SMMEs and did not include other established platforms because they are not recognised as part of the SMMEs. Thus, the reflective insights on how the established platforms-built skills and capacity in their development phases are not included in this study. The context of this study limits the study to other nuances that would arise from different contexts. Furthermore, the researcher's impression is that digital maturity, skills, leadership, and strategy would all need to be considered when setting the skills requirements for the future in digital platforms.

6.6 Suggestions for further research

The following areas have been identified for further research:

1. When researching this topic, there were no readily available frameworks to support the digital platform skills and develop them at each phase of the SMME life span.

The development of this would guide SMMEs that go through the process of acquiring these skills.

2. This opens the opportunity for future research to determine whether there are any additional skills associated with middle and supervisory management. Furthermore, the studies can examine the degree of relevance of each of the additional skills concerning the individuals' level of seniority.

3. A quantitative study to be conducted to test whether these model holds.

4. The impact of COVID-19 on the skills required for digital platform SMMEs.

REFERENCES

Accenture. (2019). *Winning with Digital Platforms.* Retrieved from: https://www.accenture.com/_acnmedia/PDF-80/Accenture-Winning-Digital-Platforms.pdf [Accessed 19 October 2020].

Andriani, D. P., Putro, W. W., Sari, S. I. K., Putri, A., Aini, N., & Anwar, A. A. (2020). *Decision-making Model for Determinant Factors of Business Digital Platform Adoption by SMEs* (pp 23-31). Indonesia: Malang.

Andrews, J., & Higson, H. (2008). Graduate employability, 'soft skills' versus 'hard' business knowledge: A European study. *Higher education in Europe*, 33(4), 411-422.

Asadullah, A., Faik, I., & Kankanhalli, A. (2018). Digital Platforms: A Review and Future Directions. In *PACIS*, 248.

Ashton, D., & Green, F. (1996). *Education, training and the global economy* (pp. 100-104). Cheltenham: Edward Elgar.

Banking Association of South Africa. (2019). *What we do - SMEs.* Retrieved from: https://www.banking.org.za/what-we-do/sme/#:~:text=Small%20and%20Medium%20Enterprises%20(SMEs,Africa%20and%20around%20the%20world.&text=34%25%20of%20GDP.-,While%20contributing%20significantly%20to%20the%20economy%2C%20SMEs%20foster%20diversification%20through,unsaturated%20sectors%20of%20the%20economy [Accessed 7 September 2020].

Becker, G. S. (2009). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.

Bhorat, H., Asmal, Z., Lilenstein, K., & Van der Zee, K. (2018). *SMMEs in South Africa: Understanding the constraints on growth and performance* (pp 1-70). South Africa: DPRU

Bose, D. (2019). Jumpstarting enterprise AI transformation, *Business Brief*, June/July, 24(3).

Braun, V. & Clarke, V. (2006) *Using thematic analysis in psychology*. *Qualitative Research in Psychology*, 3 (2), 77-101.

Burd, B. A., & Buchanan, L. E. (2004). Teaching the teachers: teaching and learning online. *Reference Services Review*.

Cenamor, J., Parida, V., & Wincent, J. (2019). How entrepreneurial SMEs compete through digital platforms: The roles of digital platform capability, network capability and ambidexterity. *Journal of Business Research*, *100*, 196-206.

Chiu, C. M., Wang, E. T., Fang, Y. H., & Huang, H. Y. (2014). Understanding customers' repeat purchase intentions in B2C e-commerce: the roles of utilitarian value, hedonic value and perceived risk. *Information Systems Journal*, *24*(1), 85-114.

Clarke, L., & Winch, C. (2006). A European skills framework?—but what are skills? Anglo-Saxon versus German concepts. *Journal of Education and Work*, *19*(3), 255–269.

Cofer, C. N., & Appley, M. H. (1964). Motivation: Theory and research.

Corno, F., Lal, R., & Colombo, S. (2014). Entrepreneurship & new venture creation" key elements of the entrepreneurial ecosystem facilitating the growth of ICT entrepreneurs in Italy. *European Scientific Journal 2*, 330-345.

De Reuver, M., Sørensen, C., & Basole, R. C. (2018). The digital platform: a research agenda. *Journal of Information Technology*, *33*(2), 124-135.

Engineering Council South Africa (ECSA). (2018). *Criteria for Accreditation of Engineering Programmes*. Retrieved from: https://www.ecsa.co.za/education/EducationDocs/E-01-P.pd [Accessed 3 April 2021].

Fathiyah, M., Kamaruzaman, F. M., Hamid, R., Mutalib, A. A., & Rasul, M. S. (2019). Conceptual framework for the development of 4IR skills for engineering graduates. *Global Journal of Engineering Education*, *21*(1), 54-61.

Hora, M. T., Benbow, R. J., & Smolarek, B. B. (2018). Re-thinking soft skills and student employability: A new paradigm for undergraduate education. *Change: The Magazine of Higher Learning*, *50*(6), 30-37.

Iordache, C., Mariën, I., & Baelden, D. (2017). Developing digital skills and competences: A quick-scan analysis of 13 digital literacy models. *Italian Journal of Sociology of Education*, *9*(1).

Johnston, Kevin A., Andersen, B. K., Davidge-Pitts, J., & Ostensen-Saunders, M. (2010). *Identifying ICT Entrepreneurship Potential in Students*. Paper presented at the Proceeding of Informing Science & IT Education Conference (InSITE), Italy, pp. 21-24,

Katz, L. (1955). *Skills of an effective administrator*. Havard Business Review, 33, pp. 33-42.

Kolb, S.M. (2012) Grounded Theory and the Constant Comparative Method: Valid Research Strategies for Educators. *Journal of Emerging Trends in Educational Research and Policy Studies*, 3 (1), 83-86.

Leedy, P.D. & Ormrod, J.E. (2014), *Practical Research: Planning and Design.* 10th Edition. London: Pearson International.

León-Pérez, F. L. P., Bas, M. C. B., Escudero-Nahón, A. E. N., León-Pérez, F., Bas, M. C., & Escudero-Nahón, A. (2020). Self-perception about emerging digital skills in Higher Education students. *Comunicar. Media Education Research Journal*, *28*(1).

Mouton, J. (2013). *How to succeed in your Master's and Doctoral studies.* (18th ed). Pretoria: Van Schaik.

Mumford, M. D., Marks, M. A., Connelly, M. S., Zaccaro, S. J., & Reiter-Palmon, R. (2000). Development of leadership skills: Experience and Timing. *The Leadership Quarterly, 11*(1), 87-114.

Mutula, S. M., & Van Brakel, P. (2007). ICT skills readiness for the emerging global digital economy among small businesses in developing countries. *Library Hi Tech*, *25*(2), 231-245.

Nambisan, S., & Baron, R. A. (2019). On the costs of digital entrepreneurship: Role conflict, stress, and venture performance in digital digital platform ecosystems. *Journal of Business Research*, *125*, 520-532

Ndabeni-Abrahams, S. (2019). *Africa 4.0: Preparing for the Fourth Industrial Revolution*, Brand South Africa. Retrieved from: https://www.brandsouthafrica.com/investmentsimmigration/conferences/davos/africa-4-0-preparing-for-the-fourth-industrial-revolution [Accessed 22 June 2020].

Ng, E. S., Schweitzer, L., & Lyons, S. T. (2010). New generation, great expectations: A field study of the millennial generation. *Journal of business and psychology*, *25*(2), 281-292.

Papulová, Z., & Mokroš, M. (2007). Importance of managerial skills and knowledge in management for small entrepreneurs. *E-leader, Prague*, 1-8.

Peters, M. A. (2017). Technological unemployment: Educating for the fourth industrial revolution. *Educational Philosophy and Theory*, 49(1), 1-6.

Robles, M. (2012). Executive perceptions of the top 10 soft skills needed in today's workplace. *Business Communications Quarterly*, 75(4), 453-465.

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students*. Upper Saddle River, NJ.: Pearson education.

Skinner, B. F. (1971). *Beyond Freedom and Dignity*. New York: Vintage Books.

Schultz, T.W., (1963). *The Economic Value of Education*. New York and London: Columbia University Press.

Schwab, K. (2017). *The fourth industrial revolution*. Basle: Currency.

Spagnoletti, P., Resca, A., & Lee, G. (2015). A design theory for digital platforms supporting online communities: a multiple case study. *Journal of Information technology*, *30*(4), 364-380.

StatsSA. (2019). *Mid-year population estimates 2019.* Retrieved from: https://www.statssa.gov.za/publications/P0302/P03022019.pdf [Accessed 2 July 2020].

Singh, Y.K. (2006) *Fundamental of research methodology and statistics*. New Delhi: New Age International.

Sutherland, W., & Jarrahi, M. H. (2018). The sharing economy and digital platforms: A review and research agenda. *International Journal of Information Management*, *43*, 328-341.

Tan, T. B. & Wu, S. S. (2017). *Public policy implications of the fourth industrial revolution for Singapore*. Singapore: S. Rajaratnam School of International Studies.

Van Deursen, A. J., & Van Dijk, J. A. (2009). Improving digital skills for the use of online public information and services. *Government Information Quarterly*, *26*(2), 333-340.

Van Laar, E., Van Deursen, A. J., Van Dijk, J. A., & De Haan, J. (2017). The relation between 21st-century skills and digital skills: A systematic literature review. *Computers in human behavior*, *72*, 577-588.

Van Laar, E., van Deursen, A. J., van Dijk, J. A., & de Haan, J. (2019). Determinants of 21st-century digital skills: A large-scale survey among working professionals. *Computers in human behavior*, *100*, 93-104.

Welsum, D. V. (2016). Enabling digital entrepreneurs. *İnternet Adresi: http://pubdocs. worldbank. org/en/354261452529895321/WDR16-BP-Enabling-digial-entrepreneurs-DWELSUM. pdf*.

Vasilescu, M. D., Serban, A. C., Dimian, G. C., Aceleanu, M. I., & Picatoste, X. (2020). Digital divide, skills and perceptions on digitalisation in the European Union—Towards a smart labour market. *Plos one*, *15*(4), e0232032.

Venture Burn. (2020). *Eight SA start-ups to keep an eye on in 2020*. Retrieved from: https://ventureburn.com/2020/01/eight-sa-startups-to-keep-an-eye-on-in-2020/ [Accessed 27 February 2021].

Visagie, J., & Posel, D. (2013). A reconsideration of what and who is middle class in South Africa. *Development Southern Africa*, *30*(2), 149-167.

Wahba, M. A., & Bridwell, L. G. (1976). Maslow reconsidered: A review of research on the need hierarchy theory. *Organizational behavior and human performance*, *15*(2), 212-240.

Webb, W. & Auriacombe, C.J. (2006) Research design in Public Administration: Critical consideration. *Journal of Public Administration*, 41(3), 588-602.

Williams, S., Dodd, L. J., Steele, C., & Randall, R. (2016). A systematic review of current understandings of employability. *Journal of Education and Work*, *29*(8), 877–901.

Wolman, H. & Spitzley, D. (1996). *Graduate Unemployment in Ghana*. Project Report. Ghana.

World Bank. (2019). *Free and open access to global development data.* Retrieved from: https://www.worldbank.org/en/understanding-poverty [Accessed 22 July 2020].

Xu, X., Venkatesh, V., Tam, K. Y., & Hong, S. J. (2010). Model of migration and use of platforms: Role of hierarchy, current generation, and complementarities in consumer settings. *Management Science*, *56*(8), 1304-1323.

Yu, T. K., Lin, M. L., & Liao, Y. K. (2017). Understanding factors influencing information communication technology adoption behavior: The moderators of information literacy and digital skills. *Computers in Human Behavior*, *71*, 196-208.

Zatsarinnyy, A. A., & Shabanov, A. P. (2019). Model of a prospective digital platform to consolidate the resources of economic activity in the digital economy. *Procedia Computer Science*, *150*, 552-557.

Zhao, Y., Von Delft, S., Morgan-Thomas, A., & Buck, T. (2019). The evolution of platform business models: Exploring competitive battles in the world of platforms. *Long Range Planning*, 53(4), 101892.

APPENDIX (1) The SMME definition

Sector or subsector in accordance with the standard Industrial Classification	Size of class	The total fulltime equivalent of paid employees	Total turnover	Total gross asset value (fixed property excluded)
Agriculture	Medium	100	R5m	R5m
	Small	50	R3m	R3m
	Very Small	10	R0.50m	R0.50m
	Micro	5	R0.20m	R0.10m
Mining and Quarrying	Medium	200	R39m	R23m
	Small	50	R10m	R6m
	Very Small	20	R4m	R2m
	Micro	5	R0.20m	R0.10m
Manufacturing	Medium	200	R51m	R19m
	Small	50	R13m	R5m
	Very Small	20	R5m	R2m
	Micro	5	R0.20m	R0.10m
Electricity, Gas and Water	Medium	200	R51m	R19m
	Small	50	R13m	R5m
	Very Small	20	R5.10m	R1.90m
	Micro	5	R0.20m	R0.10m
Construction	Medium	200	R26m	R5m
	Small	50	R6m	R1m
	Very Small	20	R3m	R0.50m
	Micro	5	R0.20m	R0.10m
Retail and Motor Trade and Repair Services	Medium	200	R39m	R6m
	Small	50	R19m	R3m
	Very Small	20	R4m	R0.60m
	Micro	5	R0.20m	R0.10m

Wholesale Trade, Commercial Agents and Allied Services	Medium	200	R64m	R10m
	Small	50	R32m	R5m
	Very Small	20	R6m	R0.60m
	Micro	5	R0.20m	R0.10m
Catering, Accommodation and other Trade	Medium	200	R13m	R3m
	Small	50	R6m	R1m
	Very Small	20	R5.10m	R1.90m
	Micro	5	R0.20m	R0.10m
Transport, Storage and communications	Medium	200	R26m	R6m
	Small	50	R13m	R3m
	Very Small	20	R3m	R0.60m
	Micro	5	R0.20m	R0.10m
Finance and Business Services	Medium	200	R26m	R5m
	Small	50	R13m	R3m
	Very Small	20	R3m	R0.50m
	Micro	5	R0.20m	R0.10m

Community, Social and Personal Services	Medium	200	R13m	R6m
	Small	50	R6m	R3m
	Very Small	20	R1m	R0.60m
	Micro	5	R0.20m	R0.10m

APPENDIX (2) Qualitative Instrument

Hi [Name],

How are you?

Thank you for taking the time to join me today. As discussed, I am currently conducting interviews for my master's research. We will go through today to contribute to this study on digital platform skills essential for Small, Medium, and Micro Enterprises (SMMEs) in South Africa.

Voluntary participation is required for this interview; therefore, you have the right to stop the interview at any point in which you feel uncomfortable proceeding.

Disclaimer: Your name and surname will not be used in the final research report write up. You will be identified as "Person A" in order to protect your identity and animosity.

The time is now xx on the [date], we will be starting the interview. I will also start recording the session; Fred also joins us from Fireflies, an AI Bot, to transcribe.

Demographic Questions

1. Can I confirm, are you male or female or they / their?
2. Which racial group do you belong to?
3. Which age group do you belong to, namely 20-25, 26-30, 31-35, 35+ years?
4. What is the highest educational qualification you have obtained?
5. Are you fully self-employed, or do you have full-time employment?
6. What does your digital platform company do?
7. Which industry does it operate in?

8. What is the size of the company? Please share the number of employees employed
9. How long have you been running the company? Has it been 0-5, 6-10, 10-15, or 16+ years?
10. What is your role in your company? Please your job title and job description

Fundamental skills for the 21st century

1. In your view, what are the essential skills for one to have in the 21st century as an employee?

2. Why are these skills critical?

3. The literature identified technological skills, knowledge management, communication, teamwork, innovation, critical thinking, and problem-solving as the most critical 21st-century skills. What are your thoughts on these?

4. Please compare these skills (technological skills, knowledge management, communication, teamwork, innovation, critical thinking, and problem-solving) to your previous answer?

5. Which of these skills are your top 3? Please list in order of preference

The 21st-century skills critical for digital platforms

In this study, digital platforms are defined as two-sided networks, enabling connections between separate yet interdependent consumer groups, including consumers and service providers.

1. In your view, what are the skills that are essential that are needed for digital platforms?

2. How are these skills different from the 21st-century skills mentioned prior?

3. In your view, are skills needed for digital platforms different from traditional businesses?

    a. Do you have to have the industry know-how to start the platform?

4. Literature mentioned additional skills that are essential for digital platforms. These skills are analytical thinking, active learning, creativity, originality, initiative, technology design, programming, leadership, social influence, emotional intelligence, system analysis and evaluation. Please share your thoughts on these.

5. What are the top three skills in order of preference?

SMEs and start-ups using digital platforms context

1. Considering the high unemployment rate in South Africa, entrepreneurship is critical in opening new prospects in industries. What are some of the macro-challenges that are unique to South Africans SMEs using digital platforms?
2. Do you think SME leaders in South Africa have the right skills to address and tackle some of these challenges? Explain your view and the skills needed.
3. Are there any noticeable gaps in skills between successful digital platform business and those that are still developing? What are the differences?
4. Please share with me leadership, entrepreneurial, and expert skills that you used to improve the chances of success for SMEs in digital platforms?
5. We are almost done with this recording; I have one more question before we conclude. Do you want to share anything - over and above what we have discussed - that came to mind while having this conversation?

Thank you for participating in this research. Please remember to email me back the signed consent form.

APPENDIX (3) Participant Consent Form

Digital platform skills requirements for SMMEs and start-ups: a South African Perspective

Researcher: Aluzuko Noqayi, Masters in Digital Business student at Wits Business School (WBS)

I am conducting research on **Digital platform skills requirements for SMMEs and start-ups: a South African perspective**. I am trying to find out more about the skills needed in the 21st century and within digital platforms businesses and how applicable they are in the South African context. The focus of my study is on Senior leadership in SMEs.

The interview is expected to last about an hour, your participation is voluntary, and you can withdraw at any time without penalty. The interview will be conducted online, via Zoom and audio recorded to ensure that I do not lose any key points. The recording is also voluntary, and you may choose not to be recorded. All data will be kept confidential, and any references used will be kept anonymous. The name of the institution will not be used.

If you have any concerns, please contact my supervisor or myself. Our details are provided below:

Aluzuko Noqayi	Tebogo Sethibe
393667@students.wits.ac.za.	tebogo.sethibe@wits.ac.za
076 1525 888	076 510 7529

Participant's Name: _____

Signature: _____

Date: _____

Researcher's Name: Aluzuko Noqayi

Signature: *A. Noqayi*

Date: 31 January 2021

APPENDIX (4) Consistency Matrix

Research Title: Digital platform skills requirements for SMMEs and start-ups: a South African perspective							
Research Purpose: To investigate the skills needed by digital entrepreneurs in order to effectively lead, operate and manage a platform based on Small, Medium and Micro Enterprise (SMME) in the South African context							
Research Question: What are the critical digital skills for digital platforms, with a focus on SMMEs within the South African context							
Sub-Objectives	**Literature Review**	**Propositions**	**Research questions**	**Phenomenon/ Keywords**	**Source of data**	**Type of data**	**Analysis**
To investigate the essential skills for digital platform based SMME in the digital era	Katz (1955)	*Technical, human, and conceptual skills are essential for digital platform SMME*	Which skills are essential for a digital platform SMME in the digital era? Which, Why, Compare, Preference	21ST Century skills, Digital Platform Skills, Digital Entrepreneur Skills	Interviews A&B: Q1 to Q5	Nominal	Thematic Analysis
To investigate the enabling and hindering factors for digital platform SMMEs in South Africa	Mumford et al. (2000)	*Internal (technology, infrastructure, and connectivity) and external (economic, political, and social) environmental factors affect digital platform SMMEs*	What are the enabling and hindering factors for digital platform SMMEs in South Africa Which, Why, Compare	Digital Platform Skills	Interviews C: Q1 to Q5	Nominal	Thematic Analysis

APPENDIX (5) Ethics Clearance



SCHOOL OF GRADUATE SCHOOL OF BUSINESS ADMINISTRATION ETHICS COMMITTEE CONSTITUTED UNDER THE UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)

CLEARANCE CERTIFICATE **PROTOCOL NUMBER: WBS/BA393667/546**

PROJECT TITLE Digital platform skills requirements for SMMEs and startups: a South African perspective

INVESTIGATOR Miss Aluzuko Noqayi

SCHOOL/DEPARTMENT OF INVESTIGATOR MM (Digital Business)

DATE CONSIDERED 09 October 2020

DECISION OF THE COMMITTEE Approved unconditionally

RISK LEVEL MINIMAL RISK

EXPIRY DATE 30 JUNE 2021

ISSUE DATE OF CERTIFICATE 23 October 2020 **CHAIRPERSON** _____
(Dr MDJ Matshabaphala)

cc: Supervisor: Dr Sethibe

DECLARATION OF INVESTIGATOR

To be completed in duplicate and **ONE COPY** returned to the Chairperson of the School/Department ethics committee.

I fully understand the conditions under which I am are authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee.

_____ _____/_____/_____
Signature **Date**

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES