Article

Future Managerial Competencies Required for the Manufacturing Sector in South Africa

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Abstract

The impact of the Fourth Industrial Revolution (4IR) and resulting technological advancements on the manufacturing environment requires new competencies from managers. The purpose of this study was to explore the perceptions of managers concerning essential managerial competencies for future success in the manufacturing sector in South Africa. Studies on future managerial competencies are currently under-represented and served as motivation for this study. An exploratory qualitative research approach was followed and an interpretivist paradigm was employed. A qualitative descriptive empirical research design was used. The research sample comprised 20 managers from a variety of manufacturing organisations. Purposive sampling was used, and online semi-structured interviews were conducted to collect the data. Conventional qualitative content analysis was employed to analyse the data. The participants indicated that cognitive, general managerial, intrapersonal, macroeconomic, mesi-economic, organisational-focused and social skills will be critical managerial competencies for future success in the manufacturing sector. Limitations of the current study were reported and recommendations for future research were made. The findings of this study can inform talent acquisition, development and retention in the manufacturing sector of South Africa. In this study, we highlight the importance of social skills for managers such as people management, employee empowerment and interpersonal skills. Our study adds to the body of literature by highlighting the essential managerial competency of adaptability in the manufacturing sector. Managers should have the ability to adapt to change if they wish to be successful in the South African manufacturing sector. Another significant contribution was to qualitatively explore critical managerial competencies for the 4IR in this sector, from the perspective of those managers who already function in these roles.

Keywords: managerial competencies; managerial skills; manufacturing sector; Fourth Industrial Revolution; industry 4.0

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Introduction

South Africa's (SA) economy is in trouble. The economic activity in the first quarter of 2024 decreased as the country's gross domestic product (GDP) decreased by 0.1% (South African Reserve Bank, 2024). Relatedly, the influence of COVID-19 on the South African economy was devastating because of intermittent breaks in social and economic forms of contact due to lockdown restrictions (Arndt et al., 2020). In addition, the Fourth Industrial Revolution (4IR) is associated with rapid advancement and adoption of disruptive technologies, especially in the manufacturing sector (Mustaffa, 2024; Serumaga-Zake & Van der Poll, 2021; Žilka et al., 2024). However, the manufacturing sector contributes significantly to the South African gross GDP and is a major source of employment in the country (Stats SA, 2023).

Problem Statement

A manufacturing sector that focuses on the increased production of goods for the local and export markets is vital to SA's economic recovery (PwC, 2024). Relatedly, an increase in the demand for manufacturing professionals have been recorded in KwaZulu-Natal and Gauteng in recent times (Career Junction, 2022). In addition, having managers with the relevant competencies to navigate the technological environment of manufacturing in the future is essential to the success of a company (Žilka et al., 2024). It is therefore important that managers in the manufacturing sector possess the requisite managerial knowledge, skills and abilities to revive the economy of SA. However, limited research regarding such critical managerial competencies, especially from the perspective of managers, is available. In the light of the above, the problem statement, to guide the study of the identified phenomenon, is as follows: It is not clear what the perceptions of managers are regarding critical managerial competencies for future success in the manufacturing sector in SA.

Research Objective

The purpose of this study was to explore the perceptions of managers regarding critical managerial competencies for future success in the manufacturing sector in SA.

The layout of this article consists of a literature review on managerial competencies, the research methodology that was employed in this study, the findings of the study, the implications for management, conclusions, the limitations and the authors' suggestions for future research.

Literature Review

Managerial Competencies

Managerial competencies are defined as knowledge, skills and abilities that are required for effective task performance in managerial positions (Veliu & Manxhari, 2017).

Managerial competencies are regarded as forward-looking aptitudes that donate to a manager's higher performance (Kabii & Kinyua, 2023). A clear understanding of their managerial competencies will enable managers to effectively execute their organisational managerial tasks that include responsibilities towards people (clients), superiors, staff, stakeholders, government and society (Khare & Varma, 2017). The above-mentioned subcomponents of competencies will be discussed below.

Managerial Knowledge

Knowledge is defined as wisdom that is acquired from a person's perspective (Bolisani & Bratianu, 2018). According to Battisutti and Bork (2017), knowledge acquisition is a cognitive process that may include problem-solving, decision-making, knowledge modelling, understanding languages, learning reasoning and knowledge conversations. Similar to skills, knowledge can be learnt over time in the working environment or through education. Three types of organisational knowledge are distinguished, namely, explicit knowledge, tacit knowledge and embedded knowledge (Huie et al., 2020; Omotayo & Babalola, 2016; Vössing et al., 2018).

Explicit knowledge has predictable content that is recorded, structured, condensed and sensible, and may be collected and distributed using signs, speech and technology (Park et al., 2022). The competitive advantage of an organisation depends on the management of explicit knowledge (Gamble, 2020). Weekly production quantities achieved, issues encountered and solutions implemented by a manager are examples of explicit knowledge. Organisations should have capabilities to transfer explicit knowledge successfully (Park et al., 2022).

Tacit knowledge, also known as emotions, perceptions and discoveries, forms part of an individual's subjective experiences and behaviour which is often absorbed privately, unrecorded and serves as a frame of reference (Huie et al., 2020; Omotayo & Babalola, 2016). Tacit knowledge includes technology knowledge such as practice skills, and cognitive implicit knowledge such as personal experiences, perceptions and technical tips (Jin-Feng et al., 2017). The sharing of tacit knowledge is facilitated by the interaction of individuals which results in the development of skills and competencies (Pian et al., 2019). A managers' tacit knowledge can therefore only be gained through personal experience while working in an organisation or industry. An organisational culture of trust where employees feel valued, heard and supported, which is largely influenced by managers, are, however, antecedents to sharing tacit knowledge (Huie et al., 2020). Managers can transfer tacit knowledge to team members through encouraging the development of social capital (Boamah et al., 2023).

Embedded knowledge is rooted in processes, products and the organisational culture and it is not attained by people but routines (Vössing et al., 2018). Embedded knowledge is how things are done in an organisation. A manager can, for example, impart embedded knowledge by creating a team culture that encourages the sharing of innovative ideas,

listening to each other, continuous upskilling and applying new learning to current and future objectives and challenges.

Managerial Skills

Skill is a disposition to know (Stanley & Williamson, 2017). In addition, skills relate to what a person can do – it is developed and learnt (Muja et al., 2019). Relatedly, a skill is the ability to perform a job to a prerequisite standard (Blanchard & Thacker, 2012). Unsurprisingly then, skills are one of the requirements of future employability (Coetzee et al., 2022). Managerial skills that might lead to future success and employment are briefly discussed below.

Interpersonal skills are goal-orientated behaviours used in face-to-face interactions with other individuals to reach a desired goal (Hayes, 1994). Managers work closely with various stakeholders such as teams and clients and, therefore, effective interpersonal skills are important (Bakhsi et al., 2017; Kabii & Kinyua, 2023). However, there seems to be a long standing disconnect between the large-scale uptake of interpersonal skills among managers, despite the inclusion of such content in business school curricula (Fulmore et al., 2023).

Organisation skills relate to having the ability to stay focused on a variety of tasks while effectively making use of time, energy, physical space, mental capacity and strength (Vysotskaya, 2018). Managers' activities in integrating knowledge leads to organisational skills (Van den Bosch & Van Wijk, 2001). A successful manager will be required to multitask different responsibilities. Acquiring effective organisation skills is therefore an important managerial skill.

Delegation skills refer to the transfer of task responsibilities from one person to another person who accepts the responsibility to complete the task to an appropriate standard (Crevacore et al, 2023). Delegating work has a dual benefit. It can empower employees to develop confidence and skills while freeing up managers' time to address more urgent matters.

Communication skills include active and empathetic listening, appropriate non-verbal communication, clear verbal communication, the ability to clarify and summarise and providing feedback (Arnold & Boggs, 2019; Brown, 2012). Forms of communication include verbal, non-verbal and written communication (Deivasigamani, 2019; Kowalewski & Halasz, 2019; Milewsky, 2019). Professional communication skills are needed to foster positive work relationships (Jonker, 2021). A successful manager should be able to communicate effectively (Cervantes et al., 2023; Kabii & Kinyua, 2023).

Decision-making relates to making realistic choices between various possibilities or courses of action (Kurian, 2013). Decision-making by managers can lead to solving problems.

Problem-solving is defined as the act of using a methodical approach to overcome challenges when managing an endeavour (Kurian, 2013). The 4IR work environment, characterised by digital transformation and technological disruption, requires managers to have effective decision-making skills (Shet & Perreira, 2021). Managers should be able to solve problems.

Mentoring is when mentees build a relationship with mentors who are experts in their careers, professional skills and personal lives (Vikaraman, 2017). A mentor is an experienced person who provides advice and helps less experienced individuals over a period (Kurian, 2013). Managers need to be supportive and develop knowledge and skills in the teams that they manage.

Managerial Abilities

Managers who demonstrate effective managerial abilities will ensure that an organisation is healthy and reaches its objectives (Martinkienė & Bakanauskienė, 2011). In addition, managers who have the required quality of managerial abilities may have a positive impact on the organisation's operational routine and its profitability by increasing value and acting in the best interest for stakeholders (Nawaz et al., 2020). Managerial ability increases an organisation's learning and innovation ability and, accordingly, its performance (Guang-Lin & Tao, 2023). Acquiring effective managerial abilities might therefore lead the organisation to financial growth and stability.

From the above exposition, it is clear that managers need effective managerial competencies to be successful in the manufacturing industry in SA. The purpose of this study therefore was to explore the perceptions of critical managerial competencies needed for future success in selected South African manufacturing organisations.

Research Methodology

Research Approach and Design

We used an exploratory qualitative research approach in the current study. We chose this approach because it allowed us to explore and describe the perceptions (Levitt et al., 2018) of managers in the South African manufacturing sector, regarding future managerial capabilities that will drive success. We used an interpretivist paradigm because it allowed for numerous perspectives (Kivunja & Kuyini, 2017) of managers to describe the reality of required managerial competencies for success in the South African manufacturing sector. In addition, we followed a qualitative descriptive empirical research design in the study, because it allowed us to gain a deep understanding of current managers' perspectives and first-hand experiences (Nassaji, 2015) pertaining to future managerial competencies that will be needed in the South African manufacturing environment.

Research Setting

Various manufacturing organisations in SA participated in the present study. The data were collected from managers who consented and voluntarily participated in the study. These managers shared their perceptions on the future managerial competencies that will be required in the mentioned sector. Online interviews were conducted during working hours via video conferencing platforms such as Zoom and Microsoft Teams.

Entrée and Establishing Researcher Roles

Following ethics clearance, we approached manufacturing organisations with an invitation to participate in the study. Three organisations accepted the invitation. A coordinator from each organisation disseminated information concerning the research to managers and assisted in arranging appointments for the interviews with the researchers. Subsequently, we gathered and analysed the data.

Research Participants and Sampling Methods

The participants of this study were managers in various manufacturing organisations in SA. Purposive sampling was used to identify participants who will be best positioned to provide insight into the future competencies of managers in the manufacturing sector. The inclusion criteria were (a) participants in a managerial position employed in the manufacturing sector in SA; and (b) participants with a good command of the English language (Grade 12 English level). The exclusion criterion for this study included managers who had been in their managerial position for less than one year. The characteristics of the sample are reported in Table 1. A sample size of 20 managers was obtained for this study. Sampling continued until data saturation was reached.

Table 1: Characteristics of the participants ($N = 20$)

Item	Category	Frequency (F)	Percentage (%)
Age	30–34	4	20.00
	35–39	6	30.00
	40–44	4	20.00
	45–49	4	20.00
	50–54	2	10.00
Gender	Male	3	15.00
	Female	17	85.00
Ethnicity	African	5	25.00
	White	14	70.00
	Indian	1	5.00
Number of years of managerial experience	1–5	5	25.00
	6–10	5	25.00
	11–15	5	25.00
	16–20	3	15.00
	21–25	2	10.00

Item	Category	Frequency (F)	Percentage (%)
Area of responsibility	Maintenance	8	40.00
	Production	9	45.00
	Human Resource Management	1	5.00
	Occupational Health and Safety	2	10.00
Organisational type	Food Production	3	15.00
	Chemical	17	85.00

Source: Authors' own compilation

Data-Collection Method

Online semi-structured interviews were used as a method to gather the data owing to the social distancing protocol during the COVID-19 pandemic. The following open-ended interview question was posed to the managers:

> In your opinion, what critical managerial skills, knowledge and abilities are required in your organisation for future success?

Data Recording

The online interviews were recorded with the permission of the participants, and safely stored on a laptop with an encrypted password.

Strategies Employed to Ensure Data Quality and Integrity

Establishing Trustworthiness

Dependability was enhanced by providing a clear description of the sampling, data collection, data analysis and reporting procedures of the present study. Direct descriptions of the participants and research process aimed to increase transferability. Co-coding was done to enhance credibility. Confirmability was ensured by staying objective and ensuring that interpretations emanated from the data and not the prejudices of the researchers.

Reflexivity

We made use of self-checking and memo writing to reflect on the data and personal opinions. This practice made us aware of our own possible effects on the data.

Data Analysis

Inductive qualitative content analysis was used to analyse the data. In the inductive data analysis technique, open coding, creating categories and abstraction were used (Elo &

Kyngas, 2008). We employed ATLAS.ti 9 to organise the data. The following steps were taken to analyse the data as prescribed by Bengtsson (2016):

- Step 1: Rereading the data: We read and reread the interview transcriptions to obtain a deep understanding of the participants' perceptions of managerial competencies required in the South African manufacturing sector to ensure future success.
- Step 2: Highlighting relevant words: We highlighted important words in the transcriptions that described the perceptions of the participants regarding critical managerial competencies that will be needed for success in the future.
- Step 3: Coding the data: During this step, open coding was applied to code the data. Each code was assigned an operational definition to differentiate it from other codes. The codes formed the initial coding scheme of the study. ATLAS.ti (version 9.0.24.0.4) was used to organise the textual data. We independently coded the data to enhance the credibility and dependability thereof.
- Step 4: Generating categories: We grouped the codes that related to one another into overarching categories. In cases where codes were analogous, we merged such codes and updated the operational definitions.
- Step 5: Defining categories: We provided definitions for each category thereby creating meaning from the data. This aligned with the inductive nature of the data analysis technique by allowing the findings to be presented in a narrative from which interpretations can be drawn.

Reporting Style

The findings are reported in a qualitative narrative and supported by a table which summarise the themes and subthemes. Direct quotations are provided from the participants' perspective to substantiate the themes and subthemes.

Ethics

We obtained approval from the research ethics committee of the higher education institution before starting with the data collection. The ethics clearance number allocated to this study is NWU-00832-20-A4. In addition, we obtained permission from the manufacturing organisations before collecting the data. A formal letter was sent to the organisations that included the objectives of the study, the criteria for the participants (managers), how privacy and confidentiality will be approached, how and where the data will be collected, how long the data collection will take place, and whom to contact in the event of any inquiries. The information letter also included the ethics clearance number of the study and stated that the identity of the organisations and the participants would be treated confidentially.

The information that was sent to the organisation and disseminated to the participants included that the participation in this study will be voluntary. The participants were invited to contact us if there were any concerns of questions regarding the study. The participants could withdraw from the study at any time without repercussions.

The following information was sent via email to the participants by the organisational representative beforehand: the participant letter, biographical questionnaire and informed consent form. We made sure to treat all the participants with respect and dignity (Barrow et al., 2020). To maintain confidentiality and privacy towards the participants and the information given, we did not record any names and did not make use of data that could easily identify the participants or their organisation. We assigned numbers to further deidentify the participants, for example, P1 when referring to Participant 1. The data that were collected were stored in a password-protected document and only the researchers have access thereto. This document will be stored and password protected for five years after the data collection. We received permission from the participants to use the data for research outputs such as peer-reviewed publications and conference presentations.

Findings

Table 2 provides a summary of the seven main themes that emerged from the data, namely, cognitive skills, general managerial skills, intrapersonal skills, macroeconomic competencies, mesi-economic competencies, organisational-focused skills and social skills. Each theme incorporates several subthemes of which some will be discussed below.

Table 2: Critical managerial competencies for future success in the manufacturing sector

Themes	Subthemes	Groundedness (G)
Cognitive skills	Analytical skills	31
	Complex problem-solving	29
	Continuous learning	11
	Creativity/Innovation	11
	Multitasking	4
	Organising	6
	Strategic thinking	36
	Technical skills	28
General managerial skills	Delegation of duties	11
	Leadership skills	18
	Performance management	6
Intrapersonal skills	Adaptability	25
	Emotional intelligence	14
	Self-awareness	6
	Self-development	8
	Self-management	14
Macroeconomic competencies	Regulatory/Legal Knowledge	6
	World developments	4

Themes	Subthemes	Groundedness (G)
Mesi-economic competencies	Local developments	2
	Understand industry	2
Organisational-focused skills	Add value	4
	Change management	3
	Customer-focused	3
	Execute strategy successfully	8
	Financial management	14
	Interpret organisational goals	9
	Process management	16
	Situational awareness	5
	Stakeholder management	8
	Understand the business	25
Social skills	Empowering others	25
	Influencing others	17
	Interpersonal skills	25
	People management	41
	Resourcefulness	18
	Strategic communication	26

Source: Authors' own compilation

Cognitive Skills

Analytical Skills

The participants (managers in the manufacturing sector) mentioned that a manager needs to have the ability to interpret data and information and be able to make the connection and manipulate the data with which they are working. These data include interpreting results and figures.

Complex Problem-Solving

The participants indicated that managers need to have the ability to take the information that they are flooded with continuously and make decisions with that information. The participants also mentioned that problem-solving is an important skill to have as a manager, because it helps with getting the team out of difficult situations.

Continuous Learning

The participants reported that, as managers, they need to remain relevant within their subject matter and the industry. A participant also mentioned that organisations should invest in continuous learning.

Creativity/Innovation

Creativity was stated as an important cognitive skill for future success in the manufacturing environment. The participants added that it is important that managers are innovative in the modern workspace and that they should be creative in the solutions they come up with.

Multitasking

The participants mentioned that multitasking is a competency that a manager should have, and that it should be used daily, weekly or monthly. The participants mentioned that this includes having the ability to deal with unforeseen problems and challenges, which means that managers would have the ability to handle these challenges by making use of a short frame of mind and medium focus points.

Organising

The participants mentioned that, as managers, they should be good at organising and that it is important to revert to organising and planning short-term and long-term tasks for people who work with them.

Strategic Thinking

The participants indicated that having the ability to think strategically is important as it helps with envisioning the future, and that having a good creative visionary is important for a good strategy.

Technical Skills

Some participants stated that having technical skills is critical for leading the team and that they can be used in an effective way to evaluate situations.

General Managerial Skills

Delegation of Duties

The delegating of work to subordinates was one of the skills that the participants indicated as important for future success.

Leadership Skills

The participants mentioned that being able to lead from the position that they are in is a skill that managers should have. Leadership skills are not just having the ability to lead, but it is also having the leadership knowledge that a leader should have.

Performance Management

The timing of performance management appeared to be a skill that the manufacturing sector managers deemed important. The participants indicated that a manager should be working with employees who are performing effectively.

Intrapersonal Skills

Adaptability

The participants stated that adaptability is having the ability to adapt to change. In addition, the participants mentioned that managers should be able to absorb change.

Emotional Intelligence

Some participants stressed the importance of a balance between emotional intelligence and cognitive intelligence.

Self-Awareness

Some participants emphasised the ability to understand their own strengths and weaknesses.

Self-Development

The participants stated that managers should be able to notice their own weaknesses and then should work at developing them into strengths.

Self-Management

The participants indicated that managers should be self-driven and have the ability to self-manage. Time management was offered as an example.

Macroeconomic Competencies

Regulatory and Legal

The participants stressed the importance of knowing all the applicable regulatory frameworks and legislation which are specific to the manufacturing environment.

World Developments

The participants mentioned the importance of having knowledge regarding macro-environmental factors, including macroeconomic and geopolitical developments.

Mesi-Economic Competencies

Local Developments

The participants stated that managers should have knowledge of what is happening in their immediate community's technical, economic and political landscape.

Understand Industry

The participants pointed out that managers should be aware of what is happening in their immediate industry.

Organisational-Focused Skills

Add Value

The participants mentioned that adding value to an organisation is imperative. Manufacturing managers can do so by applying their own past experiences to the workspace.

Change Management

The participants stressed the importance of the ability to effectively handle and manage big changes in the manufacturing environment.

Customer-Focused

The participants mentioned that knowing customers' needs, by understanding market demands and patterns, is important.

Execute Strategy Successfully

The participants observed that managers are usually good at strategy formulation, but less successful in strategy implementation. In addition, they emphasised the importance of understanding the company strategy and how to translate it into realistic team goals.

Financial Management

The participants highlighted the importance of effective financial management since they are responsible for the budget in their departments.

Interpret Organisational Goals

Some participants mentioned that managers should be able to interpret organisational goals and objectives.

Process Management

The participants mentioned the importance of understanding business procedures and processes in the organisation.

Situational Awareness

The participants stated that managers need to pay attention to their surroundings and they need to be aware of where they are and what they are dealing with regarding their level in the organisation.

Stakeholder Management

The participants stressed that managing the relationship with organisation's stakeholders is important and is often neglected by managers.

Understand the Business

The participants mentioned that organisational knowledge and understanding the business environment in which they function are important for managers.

Social Skills

Empowering Others

The participants indicated that a successful manager would have to empower and motivate employees to deliver quality outputs.

Influencing Others

The participants mentioned that managers should have the ability to influence other people.

Interpersonal Skills

The participants stressed the importance of having effective interpersonal skills, for example, building trust with a team.

People Management

The participants identified the importance of having the ability to manage people based on their strengths and weaknesses.

Resourcefulness

The participants highlighted resourcefulness as a critical competence for future success. Resourcefulness, for them, relates to the ability to know where to look and whom to include in their problem-solving process, or in finishing a specific task.

Strategic Communication

The participants mentioned that strategic communication has to do with properly and effectively articulating information to fellow employees and how they can communicate the strategy to their peers and senior managers.

Discussion

The objective of the study was to explore the perceptions of managers regarding required managerial competencies for future success in the manufacturing sector in SA.

As part of cognitive skills, most participants (G = 31) mentioned that analytical skills are needed for future success in the manufacturing sector of SA. A participant summarised the importance of analytical skills by clarifying that:

> You need to interpret information, critical information and make your decision on that. (P5, four years of managerial experience, Occupational Health and Safety)

This explanation is supported by Burley (2017), who mentioned that managers with analytical skills have the ability to plan well and lead successful projects. Analytical skills can be defined as having the ability to effectively deal with challenges by identifying the relationships and interdependency in those challenges (Burley, 2017).

Relatedly, many participants (G = 29) observed that complex problem-solving will be a critical managerial competency in the manufacturing sector. This observation is in line with the findings of Ke (2015) and Shet and Pereira (2021).

In addition, most participants (G = 36) stressed that strategic thinking will be an important skill for managers. The following excerpt supports this sentiment:

> As a manager you, you're sitting in the crossfires from both directions. So, you're getting it from the top, you're getting it from the bottom, you're getting it from everywhere. So, you need to be able to let go of emotion and then think of things logically and objectively. (P9, 14 years and nine months of managerial experience, Operations)

This finding is supported by Guang-Lin and Tau (2023) who argue that flexible and adaptable strategic thinking skills will be crucial to rapidly capture market opportunities, frame long-term digital transformation strategies, obtain a competitive advantage through product and service invention and consequently increase the performance of manufacturing enterprises.

General managerial skills remain relevant. The participants indicated that delegation of duties to other employees, leadership skills and performance management skills are essential for future success. Delegation, which is the assignment of tasks to other individuals, is an effective leadership behaviour that will assist a manager to develop an employee (Akinola et al., 2018).

Most participants (G = 18) indicated that leadership skills will be crucial. One of the participants described leadership skills as follows:

> . . . leadership skills, being able to work with people to, lead people to function in an organisation with other people, with peers, senior people with management and other stakeholders' unions etc. (P17, 16 years and six months of managerial experience, Operations)

Correspondingly, Algahtani (2014) proposes that the utility of leadership skills is to direct, align, inspire and motivate employees.

In addition, managers should have effective performance management skills. This estimation is supported by Graybill (2019), who found that effective managers will provide regular feedback and build relationships with employees.

Surprisingly, intrapersonal skills were identified as important for the future success of managers in the manufacturing sector. Most participants (G = 25) were of the opinion that adaptability will be essential. The ability to adapt to change was stressed by the participants. The following excerpt represents the sentiment:

> Other thing that is changing. So that, to be successful in the future you can adapt early. (P9, 12 years and five months of managerial experience, Maintenance)

This finding correlates with the work of Kabii and Kinyua (2023). Likewise, Smith and Webster (2018) report that adaptability is an essential attribute to possess in a workplace. Adaptability refers to how individuals can use their thoughts, emotions and behaviour to adapt and respond to change and uncertainty (Martin et al., 2012).

In addition, the participants highlighted the importance of emotional intelligence (EQ). This finding is supported by Flores et al. (2020) who hypothesise that EQ will enable managers to motivate and support employees who struggle with workplace stress, fatigue and work–life imbalance in the future world of work. Relatedly, EQ is defined as having the ability to analyse one's own emotions and having the ability to manage those emotions to effectively defuse conflict and overcome challenges (Veluchamy et al., 2021). According to Nivetha and Sudhamathi (2017), there has been a realisation in organisations that a balance between EQ and cognitive intelligence is equally important for individuals' success in the workplace and their personal lives.

Macroeconomic competencies, such as knowledge of regulatory frameworks, were indicated as important by the participants. According to Teece (2017), regulatory and legal frameworks' reliance on economic research, agency theory in particular, has pushed corporate governance away from a focus on the organisation's long-term health and towards more immediate concerns.

From an organisational-focused perspective, the participants indicated that adding value in the organisation and workspace is essential. This notion is supported by Mendoza (2021), who states that value add in organisations and teams is vital.

Relatedly, process management that includes possessing knowledge of organisational processes and procedures was earmarked as an important competency for the future success of managers in the manufacturing sector of SA. This finding is confirmed by Martins (2021), who explain that process management relates to the ability to improve a sequence of activities and tasks to realise organisational goals. The benefits of process

management, for a manager, are listed by Lutkevich (2021) as: (1) understanding the organisational process; (2) analysing the process from start to finish; (3) continuously improving business strategy and processes resulting in a positive impact on the business outcomes; and (4) capitalising on emerging technologies by being adaptable.

Most participants (G = 25) were of the opinion that understanding the business will be essential for managers. The following quotation serves as evidence for the finding:

> You just need to at least be able to interpret and understand the objectives of the organisation to be able to look at a specific organisation. (P17, 16 years and six months of managerial experience, Operations)

This opinion is supported by Kirchmer (2017) who posit that when managers have a good understanding of how the business runs and what the business process and systems consists of then organisations can grow and achieve customer satisfaction. Relatedly, Mokbel Al Koliby et al. (2024) report that entrepreneurial competencies such as opportunity competencies to increase enterprise agility in the manufacturing sector will be critical in the 4IR.

The ability to use social skills was another prominent finding of this study. Empowering others, interpersonal skills and people management skills were regarded as important competencies for managers. Employee empowerment denotes providing employees with autonomy, support and resources to function independently and taking responsibility for their decisions (Hirsch, 2020). Cervantes et al. (2023) support the finding of empowering others by reporting that the development of people is an important managerial competency in the textile sector.

Interpersonal skills are defined as the capacity to work well in collaboration with other people (Zindiye et al., 2021). Successfully leading teams require effective interpersonal skills (Pichler & Beenen, 2013).

Most participants (G = 41) indicated that people management will be crucial. One of the participants described people management as follows:

> . . . obviously as a manager one would be managing people so the skills one would require to be able to manage people, you know, in terms of like managing not leadership sort of attributes but all management, kind of things you know, organising people, organising resources back to the people being used, skills to be able to develop the people you know so almost like coaching skills, those kind of things. (P13, 15 years and five months of managerial experience, Maintenance)

This finding is supported by Kukhnavets (2020) who define people management as effectively managing employees' training and development and continuously motivating them. In addition, Shet and Pereira (2021) report that managers should focus on the reskilling and redistribution of the existing talent in the organisation owing to

4IR requirements. Likewise, Mustaffa (2024) recommends that managers in the manufacturing sector encourage employees to attain 4IR skills to remain employable.

Managerial Implications

Senior management should take note of the findings of this study and how it can inform the talent acquisition, talent development and talent retention strategies of the manufacturing organisation. These practices will assist organisations to attract, develop and retain talented managers during the 4IR. We recommend that manufacturing organisations pay close attention to the importance of social skills for managers. Such skills may include people management, employee empowerment and interpersonal skills.

Conclusions, Limitations and Future Research

In this study, we investigated the critical managerial competencies needed for success in the manufacturing industry in SA. The main finding was that managers will require cognitive skills, for example, analytical thinking and complex problem-solving. This finding is supported in the literature as evidenced by the work of Burley (2017) and Ke (2015). General managerial skills, such as delegation of duties and performance management, will remain relevant and are supported by Akinola et al., (2018) and Tidey (2021). Unexpectedly for the manufacturing environment, intrapersonal skills, specifically adaptability and EQ were stressed by the participants as critical competencies for future success. These findings are principally echoed by the contributions of O'Brien (2020) and Nivetha and Sudhamathi (2017). The importance regarding knowledge of specific regulatory and legislative frameworks emerged as macroeconomic competencies that delineate the manufacturing industry in SA. These findings are supported by the work of Teece (2017). In addition, organisation-focused competencies, such as adding value and process management, were identified as vital managerial competencies and correspond to the findings of Mendoza (2021), Martins (2021) and Lutkevich (2021). Social skills in general, and interpersonal skills and people management in particular, were identified as essential managerial competencies needed for future success in the manufacturing sector. The work of Pichler and Beenen (2018) correspond to the findings of this study.

This study contributes to the growing body of knowledge regarding competencies that will be required of managers in the post-COVID-19 and 4IR era characterised by accelerated digitisation and technological advancements. A practical contribution of the current study can be found in the descriptions of critical managerial competencies for future success in the manufacturing sector in SA.

The limitations of the study are first the lack of generalisability of the findings owing to the choice of a qualitative research method. However, the aim of the study was to investigate managers' perceptions regarding critical managerial competencies that will

be needed for future success in the manufacturing sector of SA. A deeper understanding of this phenomenon was therefore required, which made the choice of a qualitative research design ideal. The researcher did, however, provide rich descriptions of the participant characteristics, research setting and the research findings to aid transferability to similar environments.

The second limitation relates to the diversity of the sample. Most participants were white men. The manufacturing sector in SA is, however, overrepresented by men, and in the managerial echelons white men are still in the majority.

The third limitation relates to the data collection procedure that was used. Some managers would have preferred a qualitative survey instead of a semi-structured interview. Workload and time limitations were indicated as reasons for the preference. The researcher could, however, not reciprocate owing to the limitations on asking probing and clarifying questions when using qualitative surveys.

The last limitation involves data collection during the COVID-19 lockdown period in SA. Manufacturing organisations could resume their functions, albeit in an altered manner. This trying period did, however, place managers in unusual circumstances. The COVID-19 pandemic, characterised by uncertainty and fear, might have influenced the responses of some participants.

Future research can validate the findings by applying a quantitative research method. In addition, further research can be more representative of gender and race by employing a stratified sampling technique. Future studies could also replicate this research post-COVID-19 when normalised functions of managers such as face-to-face meetings and working at the office have resumed.

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