MOTIVATIONAL MODEL TO ENHANCE SUSTAINABLE PRODUCTIVITY OF WORKERS IN THE SOUTH AFRICAN CONSTRUCTION INDUSTRY

by

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DECLARATION

I, **Samuel Nnadoziem Ndukuba**, declare that the contents of this dissertation/thesis represent my own unaided work, and that the dissertation/thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

8th Sept 2025

Signed   Date

ABSTRACT

Although a considerable body of research exists to redirect the unmanageable trajectory of labour productivity in South African construction industry (SACI), current figures show that more than three-quarters of construction site personnel become less productive within five years after entering the industry, thus providing sobering implications for sustainability. This study attempts to overcome this challenge by investigating the role of motivation on worker performance using a motivational framework to guide the industry towards sustainable productivity.

A conceptual model was established through an extensive review of relevant literature on significant constructs such as motivational incentives (MI), motivational empowerment (ME), psychological influence (PI), organizational motivational policies (OMP), governmental motivational policies (GMP) and sustainable productivity, which have implications for SACI. A sequential mixed-method approach was used to achieve the aim and objectives of the research study. Firstly, quantitative data were collected using an online questionnaire administered by email to randomly chosen construction professionals in SACI. Hence, the sampling frame for this study was focused on construction professionals and contractors in two different categories, civil building (CB) and general building (GB) registered from Grades 1-9 with CIBD. The data was analysed using descriptive statistics, exploratory factor analysis (EFA), and SEM, conducted via the PLS software. Secondly, a qualitative study was conducted to test the identified research questions and validate the conceptual model's constructs. Information obtained from this quantitative phase was used to frame the interview guide for the qualitative phase. This stage consisted of multiple case study interviews with five construction professionals, where the data collected was transcribed and analysed using content analysis. Finally, SEM was applied to develop and validate the proposed Sustainable Productivity of Workers' Enhancement Model.

Using exploratory factor analysis (EFA) to reduce the factor loadings in the pattern matrix of all the variables in the research objectives, the results showed that a two-factor structure was obtained for motivational incentives and classified as formal employment benefits and welfare-enhancing provisions. The analysis pertaining to motivational empowerment revealed a single-factor structure related to productivity enhancement in the South African construction industry. In addition, psychological factors emerged as a single-factor structure addressing issues pertaining to fairness, shelter, and communication. Furthermore, the EFA pertaining to governmental and organisational motivational policies revealed a single-factor structure highlighting organisational commitment and effective governmental interventions ranging from legal protections to proactive development policies, respectively.

The SEM results revealed that policy-level interventions (GMP) and organisational policies (OMP) are crucial to enhancing sustainable productivity. Furthermore, empowerment (ME) and psychological factors (PI) exert their influence indirectly through policy and organisational structures. On the contrary, motivational incentives (MI), though conceptually important, do not independently drive productivity in this model. These constructs provide SACI stakeholders with useful insight that can be applied to utilise pioneering motivational strategies for better, sustainable worker productivity. In addition, this study demonstrates that worker motivation in SACI directly influences the achievement of sustainable productivity.

Keywords: empowerment, government policies, motivational incentives, psychological influences, organisational policies, SACI, sustainable worker productivity.

ACKNOWLEDGEMENTS

DEDICATION

This thesis is dedicated to my amazing fathers, Elder Calistus Uchenwa Ndukuba and Bishop Justin Nwokeji Jr., who have supported me spiritually and physically throughout my doctoral journey. Thank you so much for your continuous love and support and for your sacrifices.

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DEFINITION OF KEY TERMS

Terms	Definition
Motivation	The enhancement of workers in certain conditions
Motivational drivers	Invisible and visible factors that reduce demands caused by unmet needs of workers
Performance	How construction workers execute a given task/job.
Worker productivity	Amount of output per labour in each project
Achievement	An accomplishment of a task or something done successfully with the application of skills and potential.
Autonomy	Independence or freedom is given to a worker to perform a task within an organization.
Career development	A process used to improve worker's skills for more productivity
Nature of Work	Basic daily tasks carried out as part of a job and description of work.
Sustainable productivity	maintenance of steady, efficient, and high productivity over time while minimizing resource

LIST OF ABBREVIATIONS

CB-SEM	Covariance-Based Structural Equation Model
CE	Civil Engineering
CIDB	Construction Industry Development Board
CWM	Construction Workers' Motivation
FA	Factor analysis
GDP	Gross Domestic Product
GoF	Goodness of Fit
GMP	Governmental motivational Policies
KMO	Kaiser-Meyer-Olkin
MEmp	Motivational Empowerment
MI	Motivational Incentives
MSs	Mean scores
NGO	Non-governmental organisation
OMP	Organisational Motivational Policies
PA	Parallel analysis
PCA	Principal component analysis
PF	Psychological Factors
PLS-SEM	Partial Least Square Structural Equation Model
R-square	Coefficient of determination
SACI	South African Construction Industry
SDGs	Sustainable development goals
SSPSS	Statistical Package for Social Sciences
SEM	Structural equation modelling
UK	United Kingdom
USA	United States of America

CHAPTER 1 THE INTRODUCTION AND BACKGROUND

1.1 Introduction

Productivity in cons (truction projects is crucial for job creation, infrastructural service development, industry growth, and the overall economic advancement of a nation (Alper Ay, 2025; Naoum & Egbu, 2016; Frimpong *et al.,* 2020; Shoar & Banaitis, 2019). Productivity is, therefore, defined as maximising output while optimising input (Naoum & Egubu, 2016; Durdyev *et al.,* 2018). Directly related to productivity are notions of workers' effort and efficiency (Ayele & Fayek, 2019; Jarkas, 2015). The low productivity level of workers' output is considered an extremely challenging problem in construction firms (Jahanger *et al.,* 2025, Hasan *et al.,* 2018; Al-Abbadi & Agyekum-Mensah, 2019); thus, there is a need to identify the factors causing construction workers' low productivity, time and cost overruns reduction, as well as enhancing the sustainability of workers' productivity during project delivery (Seddeeq *et al.,* 2019; Palikhe *et al.* 2019). Identifying these factors is critical because construction workers' productivity (CWP) during project delivery impacts the profitability of construction firms (Kazaz & Acıkara 2015; Tsehayae 2015). In addition, it should be noted that CWP, as a source of project risk, is the highest variability in a project (Kazaz & Acıkara, 2015; Tsehayae, 2015).

Factors such as inadequate worker skills, monetary incentives, change orders, poor communication, recognition, unskilled management, site conditions, number of workers, and late payments are identified as problems affecting CWP (Afolabi *et al.,* 2018; Shoar & Banaitis, 2019; Van Loon, 2017; Palikhe *et al.;* 2019; Weske & Schott, 2018). These factors are determined wherever the expected productivity of the worker is accomplished (Durdyev *et al.,* 2018). However, to ensure that workers perform optimally, it is imperative to ascertain what motivates workers throughout construction projects. Hence, construction worker motivation (CWM) is incentives, worker skills, site conditions, management implementation, adequate communication, and on-time payments (Meyer *et al.,* 2025; Weske & Schott, 2018; Bellé, 2015). These factors enhance CWP (Weske & Schott, 2018; Ezenwere Mercy, 2017; Bellé, 2015) when management meets the needs of the construction workers.

1.2 Research Background

The construction sector is one of the vital industries that highly contributes to the gross domestic product (GDP) of South Africa through goods and services provided by the workers (Jesumoroti & Draai, 2021; Baharin *et al.,* 2020; Oyebola *et* al., 2019). This indicates the importance of workers' motivation in stimulating effective project delivery from the start to the end of the production process in the construction industry (Omer *et al.,* 2025; Papenfuß & Keppeler, 2020). Motivated workers are considered efficient in

performing their assigned tasks and have always been passionate and willing to take on responsibilities during project execution. Similarly, Ofori *et al.* (2022), Coff and Raffiee (2015) and Ibeh *et al.* (2024) claimed that motivation raises morale among workers to accomplish successful project execution. Furthermore, motivated workers are more independent, self-motivated, and focused on tasks than less motivated workers (Coff & Raffiee, 2015). Empirical data by Larsson *et al.* (2021), Adnan *et al.* (2016), and Brag *et al.* (2014) have shown that construction workforce productivity is low due to workers' demotivation, and this causes low productivity.

Nonetheless, Sloot and Scheibehenne (2022) and Winkler-Schor and Brauer (2024) stated that incentives do not create a long-term commitment towards workers' productivity. These incentives merely and temporarily change what construction workers do. It is further stated that workers who expect incentives for completing a job do not perform exceedingly well, like those expecting no reward. Similarly, Taiwo *et al.* (2022), Khan *et al.* (2022), and Johari and Jha (2020) mentioned that motivation is classified into two categories, namely extrinsic and intrinsic motivation. Extrinsic motivation is for temporary compliance, which only fixes the workers' problems for the short term. Due to this, it is suggested that CWP should be driven by intrinsic motivational factors rather than extrinsic inducement.

Despite extensive research regarding construction workers' motivation in both developing and developed countries like Qatar, Indonesia, Nigeria, Ghana, China, Pakistan, Australia, the USA and the UK, limited research in this domain exists in South Africa (Yamamoto *et al.,* 2021; Taylor, 2015). This gap is noteworthy, particularly since this aligns with an indication that geographical location setting plays a significant role in understanding motivation. In South Africa, research relating to workers' motivation indicates that demotivation affects CWP about sustainable project delivery (Luva & Naweed, 2023; Jesumoroti & Draai, 2021; Moswane, 2018). Therefore, adequate enhancement of workers' motivation during project delivery is critical to effective workers' productivity.

Categorically, many motivating factors overcome productivity challenges and the workers' job performance (Van Tam et al., 2021). The key variables that drive workers' productivity in construction firms are not widely recognised, nor is it clear if these factors vary depending on the occupational group within the sector (Manoharan et al., 2023, Smithers & Walker, 2010). As a result, research on using a construction worker motivation (CWM) model to guide South Africa's construction sector towards sustainable productivity is very limited. Therefore, to develop a CWM model that will enhance workers' productivity in the construction sector towards sustainable productivity, the

following issues must be thoroughly investigated: motivational incentives, motivational empowerment, organisational motivational policies, and government policies.

1.3 Problem Formulation

The level of worker productivity has historically been facing innumerable problems in SACI-and with-it time delays, cost creation, and product quality grow. Among the causes mentioned include poor working conditions (Kuso, Nkomo, and Ramabodu, 2023; Windapo *et al.,* 2024; Kubanov *et al.,* 2024; Assaad et al., 2023; Suntari et al., 2025; Aung et al., 2023), underpayment, and inadequate incentive schemes. Furthermore, the transient and labour-intensive nature of construction work, coupled with limited opportunities for career progression, poor working conditions, and inadequate recognition systems, contributes to worker dissatisfaction and disengagement. These factors collectively hinder the achievement of sustainable productivity, which is essential for long-term project success and industry competitiveness. Most of the policies for the enhancement of productivity now choose to work on practical or decision-making and scheduling solutions while looking a psychological or empowerment perspective targeted at the urgent needs of the worker. There are existing several literatures on labour productivity in SACI (Adebowale & Agumba, 2023; Mhini *et al.,* 2020; Alper, 2025; Maqsoom *et al.,* 2023; Al-Abbadi & Agyekum-Mensah, 2022; Bohórquez *et al.,* 2022; Johnson, 2022). These studies examined the effect of payment, skills, communication, supervision, and health and safety practices. However, the evident gap lies that on an ongoing basis, no intensive effort has been put into bringing forward a motivation model interweaving psychological, incentive-and empowerment-related incentives with governmental-, organizational and policy-related incentives to sustainably increase productivity. Thus, previous focused on the incentive-related policies, in SACI conditions, and considered not their possibility of being modelled into an operational strategy. This study aims to address this gap by developing a motivational model that enhances sustainable productivity in the SACI a model that not only identifies key incentive variables but also maps their relationships with worker performance during project delivery.

1.4 Problem Statement

Based on the foregoing problem formulation, the research problem statement states that: Despite various interventions, many construction projects in South Africa suffer from delays, cost overruns, rework, and reduced quality, often linked to declining worker motivation and inconsistent productivity levels. Current motivational strategies adopted within the construction industry are mostly generic and fail to address the unique socio-economic, cultural, and operational dynamics of the South African context

1.5   Research Gap

Although several studies on human behaviour and motivation theories focused on worker productivity as presented in the empirical studies conducted by Jesumoroti and Draai (2021), Al Samman and Mohamed (2020), Shoar and Banaitis (2019), Jesumoroti and Draai (2018), Tam (2018), Hiyassat *et al.* (2016), Smadi and Mattarneh (2015). These studies have been conducted on the motivation of workers in both developing and developed countries. Similarly, studies by Tam (2021; 2018), Naoum and Egbu (2016), Hiyassat *et al.* (2016) Meyer *et al.* (2025) and Premakumara and Siriwardana, (2025) mentioned that critical factors threatening worker motivation towards sustainable productivity of workers in the construction firm remain mostly information sharing and planning management, lack of supervisory compliance, lack of training of skilled/unskilled construction workforce, lack of incentives, communication and change management, rework, lack of payment and industry experience. However, fewer studies have been performed on the organisation and governmental motivational policies that could enhance the sustainable productivity of workers in the South African construction industry. The advancement of these policies requires exploring a motivational framework that specifically signifies the context of this study as it relates to South Africa. Ngwenya *et al.* (2018) suggested that developing a motivational model for the productivity of construction workers in South Africa could facilitate the attainment of project delivery as it relates to worker motivation.

Motivation for workers' productivity has widely attracted research interest in the construction firm. Van Tam *et al.* (2021) confirmed that studies on the motivation of workers' productivity in the construction industry are limited. To buttress this, related scientific journals in this research area were sourced on the African continent, mainly in South Africa, Ghana, and Nigeria and globally, in the United States of America, Australia, the United Kingdom, China, and other countries with at most three related scientific journals. In addition, most of these studies were conducted through descriptive methods (frequency and percentage) between 2015 and 2024. Nguyen *et al.* (2020) and Fischer (2019) mentioned that these scientific journals covered topics relevant to the motivational challenges and drivers of construction workers, the management role in motivating construction workers, and possible remedies to motivate workers in achieving productivity.

Additionally, Khan (2023) and Barg et al. (2014) supported that most of scientific journals examined do not directly connect motivation to construction however discuss workers' motivation. These statistics indicate the proportion of studies done on the impact of the motivation of workers on productivity in the global construction space. The journals were categorised into four relational groups: incentives, empowerment, organisational

motivational policies, and government policies to explore the feasibility of developing a motivational model.

The limited studies on construction workers' motivation and productivity in the construction industry environment extend to South Africa. Among the studies conducted in South Africa concerning construction workers' motivation, one focused on using incentives as a motivational approach to enhancing workers' productivity during project delivery in South Africa (Ndihokubwayo, 2014). The researcher suggested that the non-monetary aspect of motivation is another critical area to explore for sustainable productivity (Ndihokubwayo, 2014). Another researcher, Opperman (2016), performed a related study on supervisory motivational strategies to enhance the performance and productivity of workers in the South African construction industry. The study revealed that workers' motivation is widely identified as a crucial factor in boosting productivity globally, but the motivation was rarely implemented in the South African construction industry (Opperman, 2016). An additional study was conducted by Jesumoroti and Draai (2018) to examine demotivating factors that influence construction workers in the Nelson Mandela Bay metropolis. The study demonstrated that organisations should enhance workers' motivation through rewards, bonuses, and promotions to increase productivity. Lastly, a study by Sekgobela, et al. (2024) stated that worker productivity is based on the level of commitment, energy and innovation that management provided during the working period. Therefore, it is important to maintain and improve motivation in the construction sites. The construction sector is mandated to provide basic needs to worker. These includes incentives, equipment, staff accommodation, and flexible working hours. The content of the study presents the significance of considering further study on how organisational and governmental motivational policies can influence the sustainability of the workers' productivity.

Another related study done in South Africa focused on the motivational factors that improve workers' performance. This study was subjected to a survey analysis of the construction personnel in CIDB grade 1 and above (Ngwenya et al., 2018). The findings revealed the need for further study on the proper implementation of the workers' incentive as an approach towards improving organisational competitive potential (Ngwenya et al., 2018). According to Van Heerden et al. (2020), motivational factors are crucial in enabling construction workers to perform at their highest level and maintain their focus. Understanding how to motivate workers is vital to successful project delivery within budgeted cost, quality, and time.

A study conducted by Jesumoroti and Draai (2021) on workers' motivation to increase the productivity of construction workers in South Africa expressed the crucial need for inclusive knowledge on adopting workers' motivation by construction industries. Study

shows that none of these studies have adopted the CWM model to guide the construction industry in South Africa towards achieving sustainable productivity (Sekgobela, et al. 2024; Jesumoroti & Draai 2021; Van Heerden et al. 2020; Fischer 2019; Ngwenya et al.; 2018; Jesumoroti & Draai, 2018; Opperman, 2016). However, it is essential to comprehend the motivational factors enumerated below in developing a CWM model to boost workers' productivity in the South African construction industry (SACI) and maintain the industry's global competitiveness towards attaining sustainable productivity. The motivational factors are listed as:

- Motivational incentives/rewards that influence workers' productivity in the South African construction industry.
- Motivational empowerment that influences workers' productivity in the South African construction industry.
- Psychological factors that influence workers' productivity in the South African construction industry.
- Organisational motivational policies that will influence worker productivity in the South African construction industry.
- Governmental motivational policies that will influence worker productivity in the South African construction industry.
- A motivational model to enhance sustainable productivity of workers in South Africa.

The above-listed motivational factors have guided the study's main research question, sub-questions, aim, and objectives.

1.6 Research Questions

The main research question formulated for this study states: what motivational model is needed to enhance sustainable construction worker productivity in the South African construction industry (SACI)?

1.6.1 Sub-Questions

1. What motivational incentives influence workers' productivity in the South African construction industry?
2. To what extent does motivational empowerment influence worker productivity in the South African construction industry?
3. What psychological factors influence construction workers' productivity in South Africa?
4. What organisational motivational policies influence construction workers' productivity in South Africa?

5. What governmental motivational policies influence construction workers' productivity in South Africa?

6. What motivational model should be developed and validated to achieve sustainable workers' productivity in the South African construction industry?

1.7   Research Aim and Objectives

This study aims to develop a motivational model that could enhance the sustainable productivity of workers in the South African construction industry.

1.7.1   Research Objectives

1. To identify the motivational incentives influencing workers' productivity in the South African construction industry.

2. To identify the motivational empowerment influencing workers' productivity in the South African construction industry.

3. To ascertain the psychological factors influencing construction workers' productivity in South Africa.

4. To ascertain the organisational motivational policies influencing construction workers' productivity in South Africa.

5. To ascertain the governmental motivational policies that influence construction workers' productivity in South Africa.

6. To establish a model that will achieve sustainable productivity for South African construction industry workers.

1.7.2   Significance of the research

The significance of this study hinges on the construction problems relating to the non-performance of construction workers in terms of improved productivity in South Africa. Previous studies indicate that various critical problems were identified as challenges affecting the construction industry, such as cost overruns, late or non-payment, delays in project completion, the performance of individual workers, and variations in work scope (Fateh et al., 2024; Bageis, 2024; Ekwuno & Nel, 2022). Many studies conducted on productivity in South Africa focused mainly on the workers' performance with limited attention to motivation in the construction industry (Jesumoroti & Draai, 2021; Zita, 2020; Van Heerden *et al.,* 2020; Mafundu & Mafini, 2019; Mukwakungu et al., 2018). Some studies presented a way of providing a motivational model that could improve workers' productivity onsite during project execution. Worker motivation plays a crucial role in improving productivity within various industries. Sanusi and Yudhyani, (2025), Al-Abbadi and Agyekum-Mensah (2022), Sekgobela, et al. (2024), Salleh et al. (2011), Barg et al. (2014), Wang et al. (2019) and Hasan et al. (2018) and other various studies explored the complex relationship between worker motivation and sustainable productivity.

Therefore, there is a need for local research to examine the perception of construction workers on motivation. Also, this study would aim to develop a motivational model that would integrate worker management, environment and culture, incentives and empowerment for the improvement of productivity of the perceptions of construction workers regarding motivation. This study would also aim to develop a motivational model that integrates worker management, environment and culture, incentives, and empowerment to improve the productivity of construction workers during project delivery.

1.7.3 Alignment to national imperatives

The study is aligned with the Paris Agreement and the 2030 Agenda for Sustainable Development, which supports the Sustainable Development Goals (SDGs) as developed by the UN member states. As stated in the SDGs, one of its core elements is to ensure the healthy lives of all people and a better state of development for improvements and amelioration of living standards (UNDP, 2016). In all the listed SDGs, protecting the workers' rights appears both as an explicit goal and an implicit means to implement and achieve other SDGs.

This study aligns with SDG 8.8, which calls for "protecting labour rights and promoting safe working environments" (Chigbu & Nekhwevha, 2023). "Promoting safe and secure working conditions for all employees" is this SDG's main goal, especially in the construction sector (Chigbu & Nekhwevha, 2023). This aims to improve workers' rights, ensure fair wages, provide social protection, and enhance opportunities for skill development and career advancement. Achieving SDG 8.8 has a positive direct effect on productivity in the construction industry. Prioritising health and safety to enable safe working environments and reduce workplace accidents, injuries, and fatalities leads to fewer disruptions, delays, and associated costs caused by accidents.

Additionally, a safe workplace fosters a sense of well-being among workers; it increases their morale and motivation as part of the drivers of productivity. Furthermore, construction workers who are fairly treated and adequately compensated are very likely to be satisfied and committed to their work. This could improve productivity as workers feel valued and motivated to perform at their best. Also, providing social protection measures, such as insurance coverage, healthcare benefits, and retirement plans, contribute to the overall well-being of the workers. When construction workers access these protections, they will likely feel physically and financially secure. Relative to the above illustration, stress and distractions can be alleviated to improve workers' productivity and focus on their assigned tasks. SDG 8.8 emphasises the importance of offering opportunities for skill development and career growth.

The construction industry could enhance its workforce's skills and competencies by investing in training programs, apprenticeships, and continuous learning initiatives. Skilled workers are generally more efficient and effective, leading to increased productivity in construction projects. Inclusive workforces have been highlighted in SDG 8.8. It stresses the need to encourage diversity, inclusivity, and equal opportunities in the workplace. Embracing diversity in the construction industry can lead to the exchange of innovative ideas, different perspectives, and creative problem-solving approaches. Implementing diversity could foster collaboration and teamwork and enhance productivity when workers from different backgrounds contribute their unique skills and experiences.

In summary, achieving SDG 8.8 by promoting workers' rights in the construction industry can positively impact productivity. Also, by ensuring safe working environments, fair wages, social protection, skill development, and inclusivity, the industry can create a motivated and sustainable workforce, improving productivity and project outcomes.

1.7.4 The Scope of the Study:

This study is aimed at developing motivational model towards improving sustainable productivity of workers in the SACI. The study is particularly aimed at contractors and construction professionals working in nine provinces of South Africa. Also targeting both general building (GB) and civil engineering (CE) working in the private and public sector. The study critically analyses five principal motivational factors which includes motivational incentives, empowerment, psychological factors, organisational policies, and governmental policies as important mechanisms that collectively influence worker motivation and overall productivity in project delivery.

Also, the study examines motivation in the form of incentives such as increment in salaries, promotion bonuses, bonuses, leave awards, overtime, and performance bonuses. Motivational empowerment through skill development, autonomy of recognition, decision-making participation, job enrichment, and job security. The study also measures the performance of psychological variables like well-being, resilience, job satisfaction, and conflict and stress support systems. The study further considers organisational leadership style policy, job structure, rotation of work, equality policies, and protection policies as intervention frameworks that influence performance and motivation. Government labour legislation policy, a provision on a minimum wage policy, health and safety policy legislation, and anti-discrimination policy are finally discussed as institution powers influencing workplace productivity and culture. With an examination of these variables in the South African construction industry, the study seeks to construct a valid and context-appropriate motivational model to enhance sustainable worker productivity, organisational stability, and better project delivery performance.

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1.8 The Limitations

The study focuses on general building contractors in grades 1 to 9 of the Construction Industry Development Board (CIBD) registered list of contractors and the South African Council for the Architectural Profession (SACAP) and other professionals who are working for GB and CB, such as construction managers, quantity surveyors, and project managers. The rationale for using architects is that they are considered the principal agents onsite. Also, they are the first point of call whenever a construction project is to commence. Unregistered construction professionals are excluded from the survey. The study is limited to private consultancies, government agencies and construction contractors in South Africa. The research can also be utilised as a reference in other related organisations globally.

1.9 Justification of the Research Approach

The methodology considered for this study is a sequential mixed method. This method involves exploring quantitative and qualitative research methods for data collection (Brzinsky-Fay & Kohler, 2010), as shown in Figure 1.1. The semi-structured questionnaire will be used to determine the impacts of motivation on the sustainable productivity of the workers in the construction.
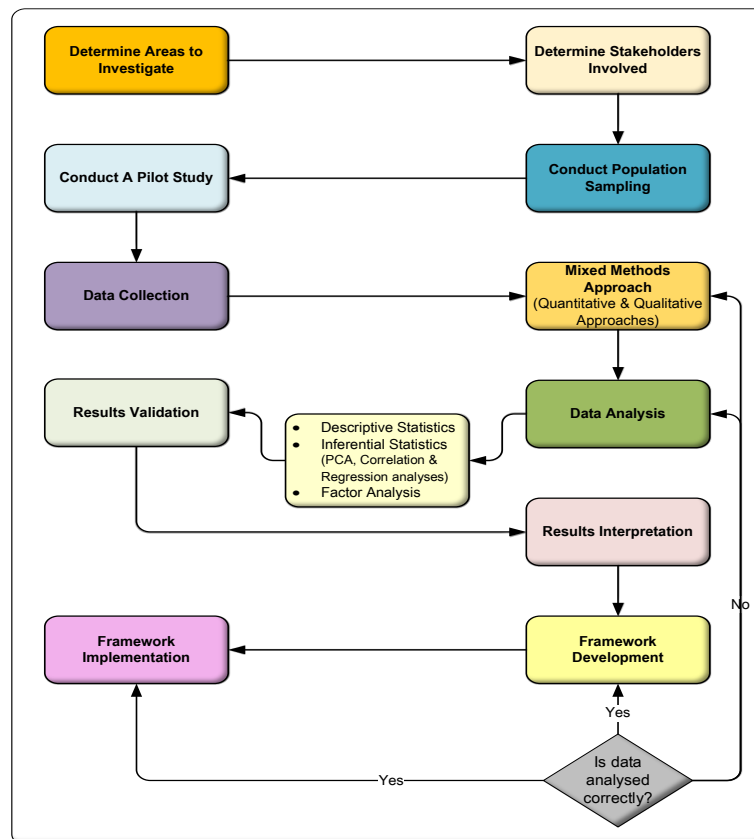
Figure 1.1: The research methodology

The questionnaire contains open-ended and closed-ended questions, facilitating the fundamental method of identifying the significant variables that motivate workers' productivity in construction projects. The sequential mixed method will be applied to examine data collected from the approved construction sites in South Africa using the questionnaire.

1.9.1 Ethical considerations

The study was ethically guided as follows:

- **Informed Consent:** The respondents were properly informed of the motive behind the conduction of the research to obtain proper informed consent for documentation.

- **Confidentiality and Anonymity:** The confidentiality of the information provided will be subject to anonymity. Thus, the identity of the participants will be concealed during the survey exercise.

- **Voluntary Participation:** The research is voluntary and, therefore, not forced. The respondents shall not be compelled, and neither children nor mentally incapacitated persons will be involved.

- **Maintenance of Records**: All confidential documents used in this research will be handled securely and permanently deleted immediately after use.

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- **Compliance with Standards and Laws**: The research study shall strictly adhere to the guidelines and regulations guiding the execution of research at the Cape Peninsula University of Technology.

- **Integrity and Transparency:** The results will be presented as original, with data collection under the agreed conditions in the most ethical manner possible.

- **Minimising harm and risk:** It is ensured that this research will not harm the participants, their rights will be protected, and the information taken will not lead to adverse consequences.

- **Academic Integrity**: Proper acknowledgement shall always be given to other researchers' work, properly cited, and referenced to avoid plagiarism.

1.9.2 Contribution to the knowledge

This research contributed practically and theoretically to assessing the worker productivity of the workers' role as individuals in the South African construction industry. The practical contributions (outcome from the research questions) were specific to the South African construction industry. At the same time, the theoretical contributions could also apply to other industries and/or countries looking to improve their workers' productivity by implementing motivational practices. This research also contributed to the body of literature on motivation by serving as an exploratory study examining the appropriate motivating factors for construction workers. This research developed a conceptual framework summarising workers' motivation and practices in the South African construction industry to facilitate individual workers in private firms, contractors, and government agencies to benefit individual workers, professionals, construction organisations and professional bodies.
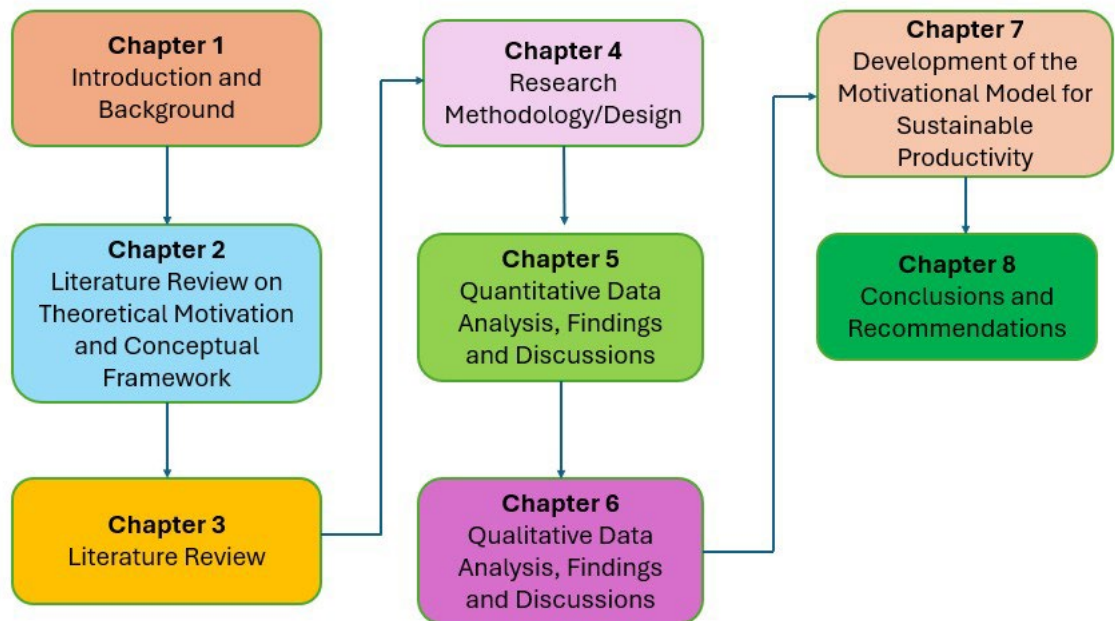
Figure 1.2. A diagrammatic illustration of the thesis outline

1.10 Thesis Outline

The thesis is structured into nine chapters, illustrated in Figure 1.2 above.

Chapter 1 presents introduction and background where introduction and background of the study were explained briefly, along with the research positions, main research question, sub-questions, significance, aim and objectives, scopes, and research delimitation, justification of the research approach and contribution to the knowledge.

Chapter 2 presents the relevant literature review that addresses the conceptual and theory.

Chapter 3 covers the literature review issues identified in the study.

Chapter 4 discusses this study's research methodology, including methodological concepts and examines the structure of the project's data collection approaches.

Chapter 5 presents the quantitative data analysis, findings and discussion of this study.

Chapter 6 discusses the qualitative responses received from the interviewees.

Chapter 7 discusses the development of the motivational model for sustainable productivity of workers in the South African construction industry using SEM.

Chapter 8 contains the conclusions, recommendations, further studies and conclusion of all theses.

1.11 Summary for Chapter

Chapter 1 identified the research problem which seeks to address the issue of inefficient and unsustainable workers' motivation through the development of a motivational model that can serve as a guide for policymakers and stakeholders in the construction industry to boost workers productivity in the SACI. The study aims to develop a motivational model that could enhance the sustainable productivity of workers in the South African construction industry.

The background highlighted specific knowledge gaps that influence worker motivation towards sustainable productivity in the construction industry including sharing and planning management, lack of supervisory compliance, lack of training of skilled/unskilled construction workforce, lack of incentives, communication and change management, rework, lack of payment and industry experience. Furthermore, there are limited studies that have amalgamated factors such as incentives, empowerment, psychological drivers, organisational and governmental motivational policies to evolve a framework that enhances the sustainable productivity of workers in the South African construction industry. The subsequent chapter reviews literature about theoretical motivation and conceptual framework that is applicable to this research study.

CHAPTER 2

LITERATURE REVIEW ON THEORETICAL MOTIVATION AND CONCEPTUAL FRAMEWORK

2.1   Introduction

Construction activities have been increasingly complex as demands for project execution continue to rise over time. This trend has created the need for better approaches to enhancing worker performance to maximise output. However, the issues affecting employees require serious attention within an organisation; otherwise, maximised productivity through optimal performance within an estimated time, cost, and quality will be hard to reach (Kibert, 2016). Relative to this, motivation is seen as a better approach to strengthening workers' commitment, loyalty, and morale in the growth of the construction industry. When appropriately motivated, workers become more committed and active in achieving organisational objectives and goals (Nayak & Sahoo, 2015). This chapter describes the theoretical and conceptual issues of motivation, including the concept of performance, motivational driver types, and challenges. The chapter also explores the key factors of worker motivation and their impacts on productivity.

2.2   Conceptualisation of Motivation

Aspects of motivation have recently drawn more interest in the business management field, as well as other fields, including economics, education, sociology, psychology, public administration, marketing, mathematics, human resource management, and the sciences (Cogdill, 2015). The Society for Human Resource Management (2010) explained motivation as a psychological driver that drives a worker's performance and resilience to face challenges. These include relatedness, autonomy, competence and advancement (Vansteenkiste et al., 2020). Thus, motivation can be considered as a logical decision-making process that determines the direction of goals and behaviour. Liu et al. (2024) state that motivation can be considered a psychological factor that dictates how an individual behaves in an organisation, such as a construction firm. According to Adinew, (2024), motivation is the force that propels, controls and sustains an individual's inclinations. This suggests that motivation is a force that propels an individual towards accomplishing constructive goals and objectives.

An internal drive that influences people's ability to make decisions strategically or determine a goal is known as motivation. On the other hand, motivation is identified as an essential condition of organisational management due to its ability to describe workers' behaviours in the construction sector (Kandoth & Shekhar, 2025; Estudillo, et la., 2024). Moreover, according to Pincus (2024), motivation is a psychological theory that provides individuals within society a motivation and a path to follow. All the

descriptions demonstrated the need to satisfy demands through improved purposive behaviour, including the willingness to actualise a goal. Motivation is recognised in various studies as an approach towards encouraging workers to perform very well at any given task (Aljumah, 2023). Rachmad, (2022). examined three motivational processes in assessing motivation's applicability: needs, rewards, and drives. The individual demands that drive behaviour to get favourable results are the starting point for the motivation process (Ali & Anwar, 2021; Ampofo, 2020). The dependency and interplay of incentives with wants and drives were the main topics of Rachmad, (2022) study on the motivation process. When people are motivated, the need to achieve any given task is driven by stimulating their performances through incentives (Yudhyani, 2025; Bangwal & Tiwari, 2018; Sanusi & Yudhyani, 2025).

Extrinsic and intrinsic motivations are two categories into which motivation can be divided. Simply said, intrinsic motivation is a drive that meets an individual's needs and/or guarantees achieving personal goals (Zhang *et al.,* 2024). This category of motivation is self-driven motivation derived from or experienced in organisational jobs. In management, workers are intrinsically motivated through job design strategies and policies. The intrinsic motivations are linked to responsibility, autonomy, opportunities, career growth, and recognition for improvement. Extrinsic motivation, however, is derived from the means that a company's management deploys on-site to stimulate the workers to achieve maximum production. The methods of extrinsic motivators are mostly financially linked and often directly influence workers' morale (Kassaye, 2020).

Gagné and Hewett, (2024) asserted that intrinsic motivation has a more sustained impact on workers than extrinsic motivation. To buttress this, intrinsic motivation is a long-term influence on workers because it is an internal driver (Ibrahim & Abiddin, 2024). The author discerned that extrinsic motivation is considered a short-term influence, with a visible influence on the workers as it emanates externally from humans. Hence, workers are extrinsically motivated, provided their needs are met (Waiyaki, 2017; Ibrahim & Abiddin, 2024). In some cases, money is regarded as a driver that promotes job satisfaction (Ali & Anwar, 2021; Kamdron, 2015). Based on this, the management is expected to devise effective motivational practices that foster workers' performance recognition as a way of raising productivity across various departments. Effective motivational practices include celebrating workers' birthdays, performance appraisals, involvement in the company's decision-making, and promoting advancement.

2.3 The Effects of Motivational Factors on sustainable productivity of workers

Fletcher and Schofield (2019) pointed out that improving workers' confidence, value, and purpose is essential to motivation application in an organisation as it contributes to workers' job satisfaction. Enhancing these three qualities could help the workers comprehend the significance of their responsibilities in the organisation. The authors further cited that it reinforces organisational culture and values, raises workers' worth by increasing their pride, offers them a sense of competence, and boosts their work commitment attitude (Fletcher & Schofield 2019). The motivational drive effect, as illustrated above, demonstrates the demotivation of the workers when they sense a lack of recognition after accomplishing organisational objectives (Fletcher & Schofield, 2019).

2.4 Theoretical Framework

The motivation of the workers is described through several theories, which are grouped into two major types. The first group is named process motivation theories, while the second is named content motivation theories. These theories are identified as Herzberg's two-factor theory, Maslow's hierarchy of needs theory, McGregor's legacy, and the Expectancy theory. This research adopts multi-motivational theories to determine various approaches best explored in construction projects. Each of these theories incorporates a specific approach that impacts worker motivation based on the level of success achieved. Applying these theories is considered complex but significant in enhancing workers' performance by bridging the gap between willingness and ability to work. An illustrative description of the four theories is given in the following subsections.

2.4.1 Herzberg Two-Factor Theory

Frederick Herzberg claims that the two-factor hypothesis was created in 1968. According to Herzberg, humans have two types of urgent demands: motivation and hygiene. External influences related to working conditions are known as hygiene factors. Although hygiene considerations do not always motivate workers, they provide a sense of serenity in the workplace (Sankar, 2015; Gürcanlı *et al.,* 2024). These factors include management policies, compensation packages, working conditions, and supervision. Workers can be dissatisfied or satisfied when they realise their organisational goals.

Herzberg's Two-Factor Theory

HYGIENE FACTORS
that affect job dissatisfaction

Relations with others

Company policies

Job security

Pay

Physical working environment

Quality of supervision

MOTIVATOR FACTORS
that affect job satisfaction

Promotional opportunities

Recognition

Achievement

Opportunity for personal growth

Responsibility
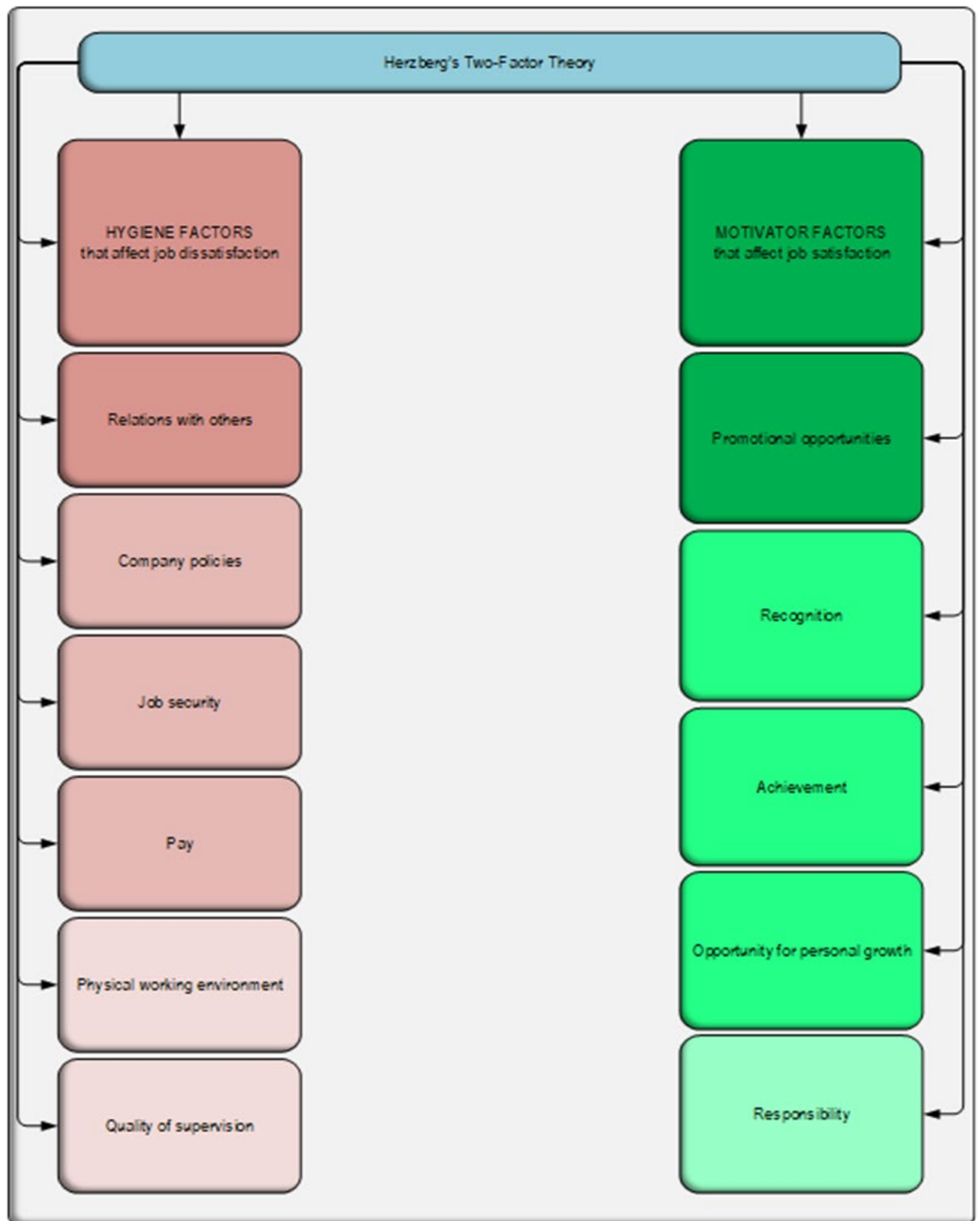
Figure 2.1: Motivator and Hygiene factors (Herzberg's theory)

Source: Haque et al. (2014)

On the other hand, satisfiers—motivation factors—include autonomy, recognition, restraint, acquisition, achievement, progress, personal development, content, and appreciation (Gürcanlı *et al.,* 2024). Employees are inspired to improve their performance once all the demands are met. As a result, there will be a greater understanding of the needs of employees and the elimination of associated issues such as absenteeism, indolence, labour conflicts, and negative attitudes towards work.

According to Altassan, (2024) non-financial incentive elements, including autonomy, recognition, progress, and responsibility, impact employees more than financial motivation factors. This claim is supported by Hertzberg's theory, which posits that motivation factors offer satisfaction to workers. The scholar added that motivational drives boost the workers' morale in the organisation (Hashiguchin *et al.,* 2021; Putra & Prasetya, 2018; Gosselin *et al.,* 2017). It is understood that the construction sector must endeavour to meet the workers' needs to enhance performance. Sankar (2015) suggested that hygiene factors offer no satisfaction to workforces but boost workers' productivity. This infers that construction firms should prioritise hygiene factors to avoid the dissatisfaction of their workers during project execution.

The major weakness of Herzberg's theory is the assumed correlation between satisfaction and productivity. However, Herzberg's study focused more on satisfaction and excluded productivity. The study proposed two forms of needs, which are opportunities (motivators) and treated well (hygiene). For instance, hygiene factors are working conditions, pay, and supervision. The theory is uncertain, but there is a desire to analyse the components associated with the worker's motivation. This study will apply other motivational theories that navigate demotivation factors. Herzberg's theory is presented in **Figure 2.1.**

2.5 Maslow's Hierarchy of Need Theory

The motivation theory formulated by Abraham Maslow in 1943 is called the Hierarchy of Needs. Maslow says that if somebody is motivated by their desire, that specific need is expected to make them happy. He states that there are categories of human needs: namely safety, physiological, social, esteem, security and self-actualisation (Shi & Lin, 2021; Hopper, 2020). These categories of needs are arranged in a hierarchy, with physiological at the base, followed by security, social, esteem, and self-actualisation at the apex. The so-called lower-rank needs must be fulfilled first to avoid problems that may arise from demanding higher-rank needs. The first three needs are basic needs such as the basic, social and safety needs of a worker; and if these are unattainable, then workers may not have the opportunity to develop themselves physiologically and physically (Ștefan *et al.,* 2020)

Many people work to survive and provide basic needs for their families. They are motivated at work by this responsibility. People are significantly motivated to perform by these existential needs. Even those whose lives are in danger will do whatever to satisfy their most basic desires. The terms "job security," "insurance," "sense of peace," "safe working conditions," "freedom of action," "severance pay," "freedom from fear," and "pension" are used to describe security and safety demands.

On the other hand, social needs include love, companionship, belonging, empathy, affiliation, societal acceptance, and ownership. These requirements are sometimes known as the lower-rank needs. The higher-ranking needs will be motivated once the lower-ranking needs have been satisfied. The need for autonomy, status, renown, confidence, respect, admiration, and success are all considered esteem needs. The desire for self-potential, self-development, growth and skill development to support people's creativity and responsibilities is known as self-actualisation needs (Hopper, 2020).

The construction industry must provide yearly leave and free meals as needed to meet physiological needs or basic desires, as this could drive workers to be productive. Additionally, construction managers could satisfy workers' concerns about security and safety by providing a safe, healthy, and non-threatening work environment with competitive pay and employment stability (Hitka *et al.,* 2017 & Jacobo-Galicia *et al.,* 2021). The construction sector should be able to promote workers by granting teamwork and collaborative duties due to basic social needs (Haski-Leventhal et al., 2019; Kjellström *et al.,* 2017; Khan & Wajidi, 2019). If implemented, it will allow workers to have positive interactions and connections with other industry colleagues. Moreover, for esteem to be satisfied, organisations must appropriately recognise workers' efforts, mainly low-rank workers on site (Algashami *et al.,* 2019; Cote, 2019; Nurun Nabi *et al.,* 2017).

Low-ranking employees should contribute to ad hoc committees in order to boost their faith in the organisation. Further investigation suggests that construction workers can only be motivated if their employers can supply their demands or generate opportunities for personal improvement to enhance the workers' self-actualisation needs (Batanova, 2024). Maslow's theory reveals that organisations identify the critical needs of workers and provide avenues to satisfy those needs. Management should also ensure that lower-rank needs are achieved before the higher-rank needs are attended to (Azeez *et al.,* 2019). Self-actualisation, esteem, safety, and social needs are all about the basic motivational drives. Safety should encapsulate the nature of the job; esteem needs to encompass autonomy and recognition. Self-actualisation needs are those that focus on achievement, while social needs concern personal growth, career advancement and corporate social responsibility,

The major challenge of Maslow's hierarchy of needs theory is unverifiable data using an empirical study. This is due to the lack of a proper approach to quantifying the level of need satisfaction at the lower levels before pursuing higher needs. In this regard, this study approach shall explore the practical contributions of the research questions of the construction workers in South Africa. Maslow's hierarchy of needs is, nevertheless, also

the theory on which several motivational practices to increase construction worker productivity would be based.
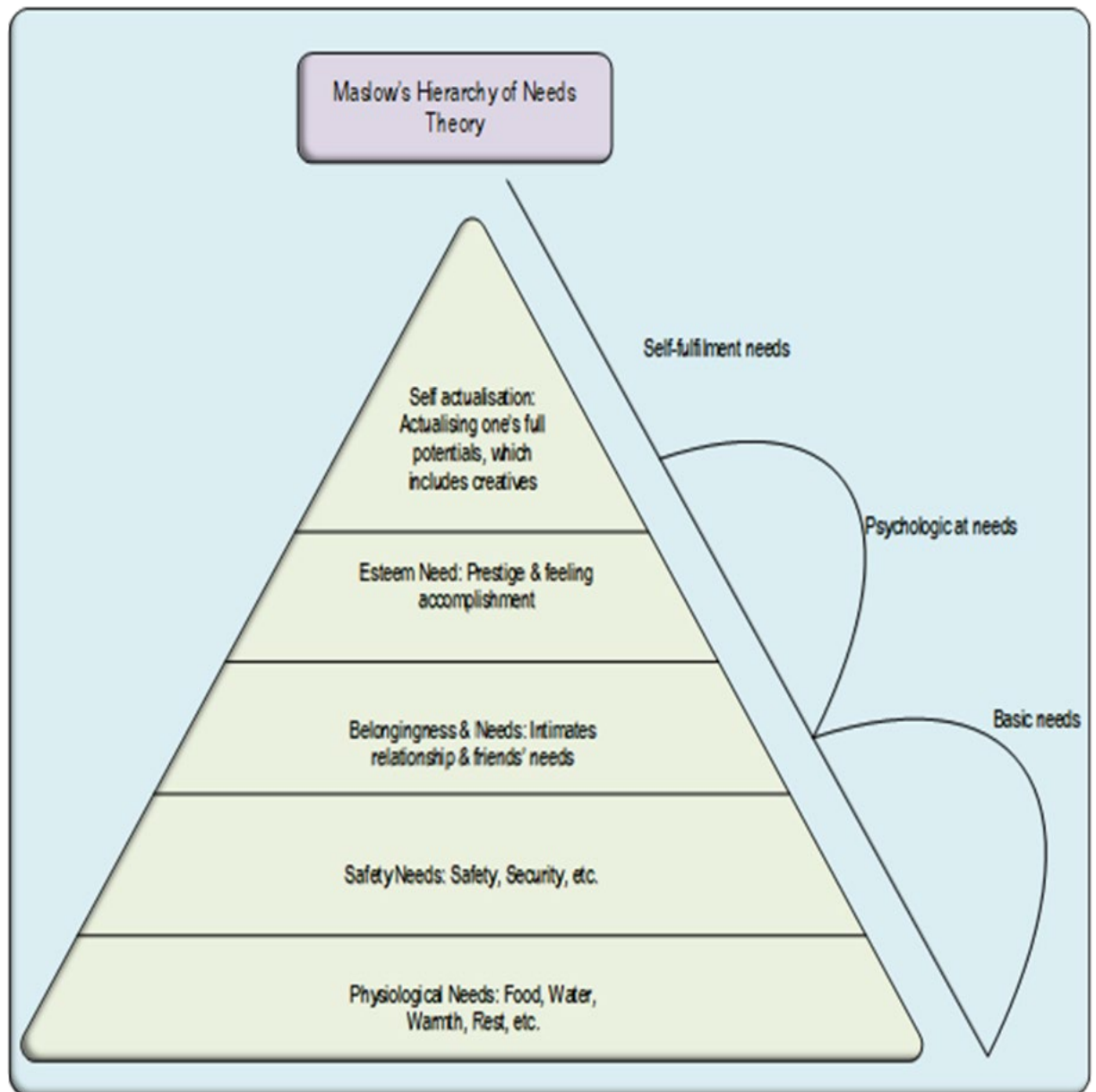
Figure 2.2: Maslow's Hierarchy of various levels of needs

Source: Stone (2005)

Maslow reflected only on a narrow section of the human population. The expressions within the "hierarchy of needs" theory, such as security and self-esteem, have broadly varied classifications in global cultures. For instance, it is challenging for any researcher to ignore these needs or generalise them across all human populations. Hierarchy fails to account for social differences and cultures between individuals, as presented in Figure 2.2.

2.5.1 McGregor's Management Theory

McGregor (1960) mentioned the impact of management philosophy. The author's work focused on established cognitive expectations, including identifying the organisational initiatives and management principles consistent with Theory Y philosophy (management paradigm). Studies by Jarvis (2023), Chikwe *et al.* (2024), Vandekan *et al.* (2025) and numerous others supported McGregor's theory's impact and foundation in the field of organisational development.,

Following McGregor's principles about an organisation's management policies, it is denoted that decentralisation continued with the organisational forms of reliability with Theory Y. According to Li *et al* (2023) mechanistic organisations (Theory X) were still better suited for producing large amounts of technology. On the other hand, modern technologies are more compatible with organic organisations (Theory Y). According to Valeri (2021) and Kaya (2022), organic organisations are better suited to quickly changing contexts, whereas mechanical organisations do better in stable environments. This indicates that environmental factors affect construction workers' incentive to produce effectively. From an alternative viewpoint, Song (2023), Reineke *et al.* (2025) Lawrence and Lorsch (1967) demonstrated that mechanistic and organic organisations can coexist in the same organisation if the roles are categorised based on various levels of task complexity and environmental change rates.

The disadvantage of the McGregor principles is that workers are coerced to do the job/task given to them (Taskinen, 2019). Sometimes, the coercion strategy is considered unreliable. This specifies that it can create a distrustful and hostile working environment. In one situation, an autocratic decision-making style can be initiated, while a democratic decision-making style can be experienced instead. According to McGregor, workers driven by lower-order wants should use Theory X assumptions, whereas workers driven by higher-order needs should use Theory Y assumptions (Ahuja, 2024; Adeoye, 2023). According to Pincus (2023), there is no proof that either assumption is true or that changing one's behaviour and embracing Theory Y boosts employee motivation. A circumstance may call for either Theory X or Theory Y assumptions. The McGregor principles focused on leadership/participation, structure/delegation-decentralisation, organisation, performance evaluation/management, and job growth by objectives— management by objective (MBO). These guidelines improve construction projects' projected completion time, quality, and cost. Therefore, the main driving force for this study is the core principles of McGregor's work. Table 2.1 Summarises McGregor's assumptions about the people.

Table 2.1: McGregor's views on human nature

Theory Y	Theory X
The motivation, the potential for development, the capacity for assuming responsibility, and the readiness to direct behaviour towards organisational goals are all present in the people.	People lack ambition, dislike responsibility, and prefer to be led.
People are not by nature passive or resistant to organisational needs. They have become so because of their experience in organisations.	People are by nature indolent; that is, they work as little as possible.
Management does not put them there.	People are inherently self-centred and indifferent to organisational needs.
It is the responsibility of the management to make it possible for the people to recognize and develop these human characteristics for themselves.	People are by nature resistant to change.
The essential task of management is to arrange the conditions and methods of operation so that the people can achieve their goals best by directing their efforts towards the organisational objectives.	People are gullible, and are not very bright; the ready dupes of the charlatan and the demagogue.

Source: Nelson and Quick (2000)

2.5.2   Expectancy Theory of Motivation: Vroom (1964)

The identified weakness in this theory is that managers fail to keep their words and promises (Vroom 1964). Workers need to trust that managers will grant rewards when they deliver optimal performance (Ali & Anwar, 2021; Ampofo, 2020; Ormel *et al.,* 2019). In most cases, management provides specific motivations and rewards that workers do not value or believe. Therefore, this research adopts the expectancy theory to compare motivations and rewards that workers value during construction project delivery.

Motivation theories have different specific approaches to impact workers' productivity. Each approach is used with a degree of success but also has limitations, as provided in the literature. As a result, this research adopts a multi-motivational theory to improve worker productivity within cost, time, and quality by bridging the gap between weaknesses found in each theory.
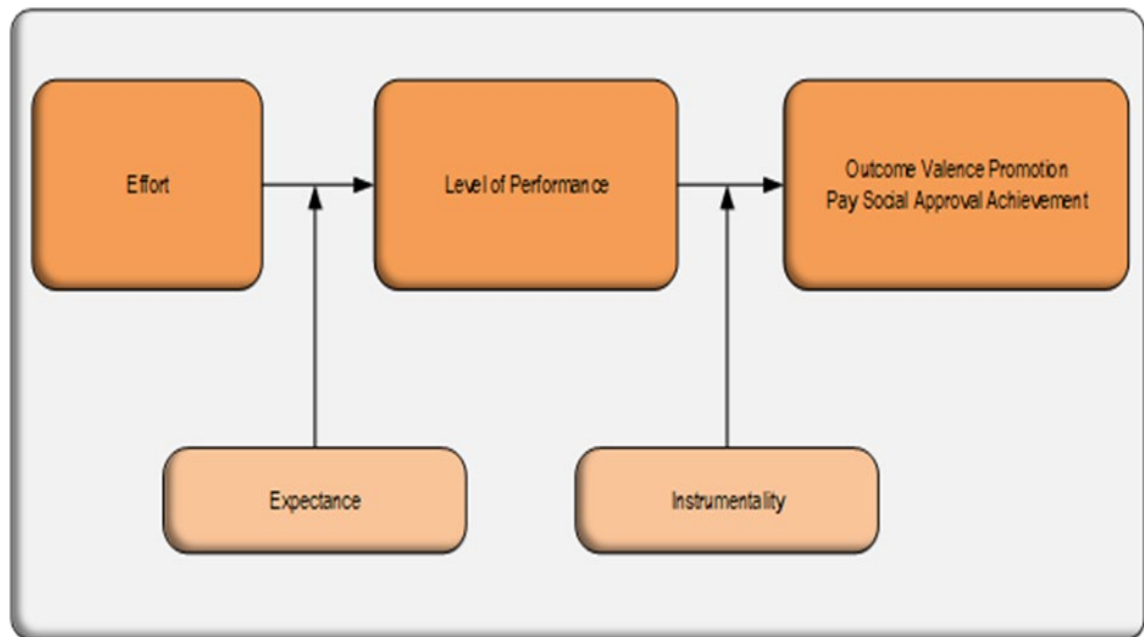
Figure 2.3: Vroom valence instrumentality expectance

Source: Vroom (1964)

2.6 Summary of the Motivation Theories

Theories of motivation, particularly worker motivation theories, can be quantitatively diverse, differ in meaning, and vary in nature. These theories share some common characteristics, such as that motivation can arise from extrinsic (external) or intrinsic (internal) factors. However, previous theories have demonstrated the overwhelming value of intrinsic motivators over extrinsic ones from the individual's perspective (money), as we usually assume. Maslow (1943), the two-factor theory by Herzberg (1968), McGregor's Legacy (1960) and the expectancy theory by Vroom (1964) are selected to be the foundation of this research due to the strong link that each of them has to the other. This attribute has a solid reinforcement for the research topic. All four theories have similar and concrete results because attitudes influence the management of activities and outcomes in any workplace.

According to Maslow's Hierarchy of Needs (1943), every person must satisfy basic needs before moving to the next higher needs. The ideal is to attain and satisfy the highest level of self-realisation in the hierarchy. Similarly, Herzberg's two-factor theory, 1968 illustrates that people are not satisfied with work due to their lower-level needs but only due to satisfying the psychological needs related to recognition, responsibility, achievement, advancement, growth, and the nature of work. All the above theories have extrinsic and intrinsic factors and share a similar base of motivational factors as in Maslow's hierarchy of needs.

2.6.1 Theoretical framework construct

The study's theoretical framework hinged on three theories of motivation postulated by Mc Gregors (1960), Maslow (1943), and Herzberg (1964). These theories have been amalgamated to create a suitable framework for the study. In the diagram below, McGregor's theories of X and Y are directly linked to incentives, empowerment, and organisational policy, while Maslow's theory identified all four variables: incentive, empowerment, organisation policy, and psychological impact. The Herzberg two-factor theory considered three variables— incentive, empowerment, and psychological impact—as factors directly impacting sustainable worker productivity. In Figure 2.4, one can notice that Maslow's hierarchy theory directly relates to all four variables that will be used as motivation agents to promote sustainable worker productivity.
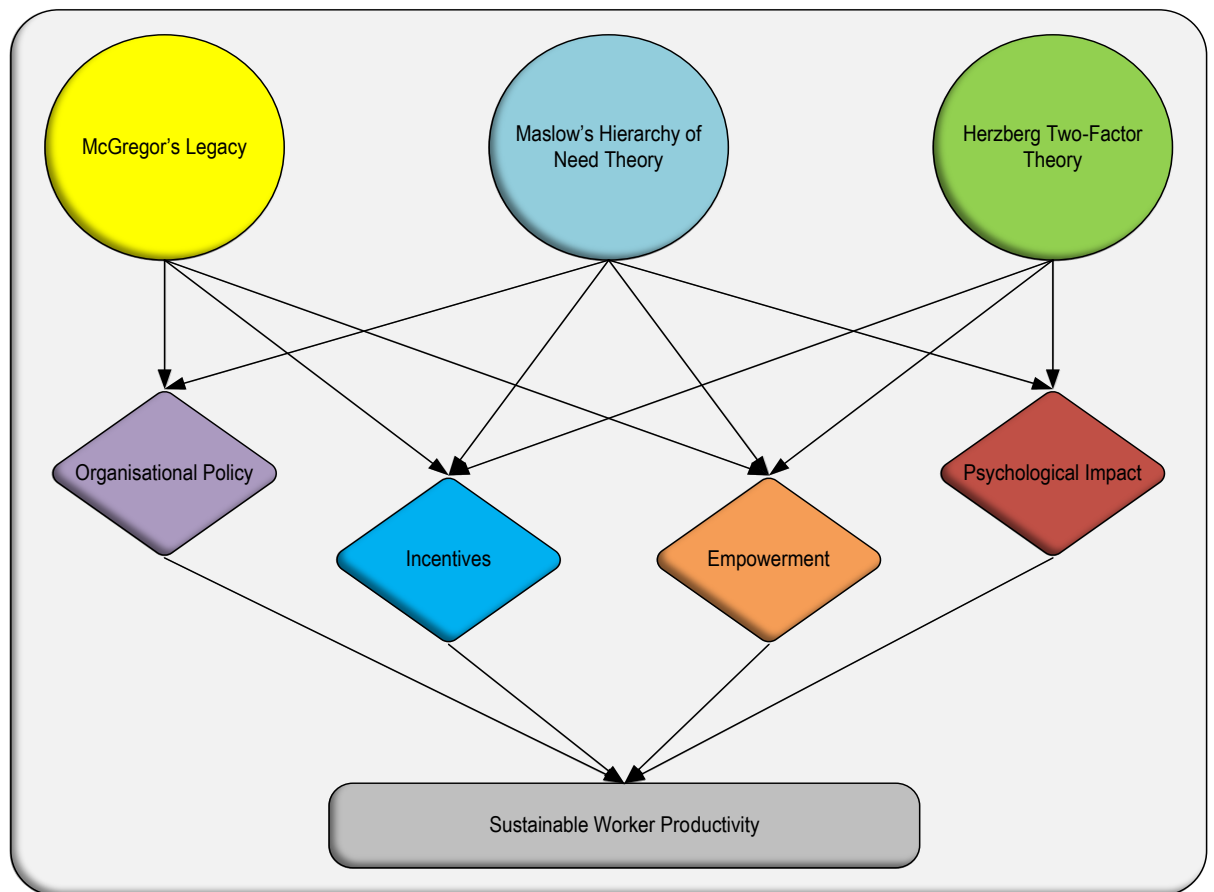
Figure 2.4: A theoretical framework of construction worker motivation on productivity

Source: Author's construct

2.6.1.1 A Theoretical Pathway to Sustainable Worker Productivity

Empirical data reveals that organisational policies help create workplace norms, influence managerial actions, and direct worker energies toward strategic objectives (Akpa et al., 2021; Aguinis *et al.,* 2022 and Adinew, 2024). Open, participative, and worker-centric policies have been ascertained towards fostering a trust, fairness, and high performance (Armstrong & Taylor, 2020). Also, studies by Adekoya (2022), Firmansyah *et al.* (2024), and Nilsson and Nilsson (2021) reveal that health and safety, career management, conflict resolution, and fair compensation policies all help in the creation of an enabling work environment for sustainable productivity. In the construction sector, where the working conditions could be unappetizing and the work demanding, possessing a sound organisational policy will have a direct impact on morale, retention, and staff motivation.

According to Andavar and Ali (2020) and Anwar and Abd Zebari (2015), empowerment in the work environment enables the workers to work independently in their respective areas and feel valued by the organisation. Chandrawaty and Widodo (2020) contend that empowerment is not delegation, but it is putting voice to autonomy, creativity, and worker participation in decision-making, which increases internal drive thereby empowering workers to be more committed and dedicated to productive. In construction industry, in which the workers might be under tension and time-strapped phases, giving autonomy to the workers may result in responsiveness, facilitate problem-solving capability, and therefore raise productivity (Deci et al., 2017).

Sanusi and Yudhyani (2025), postulated that motivational incentives such as salary increase, bonus, overtime are strong motivators that create and sustain performance and best practices. Underpinned by Vroom's Expectancy Theory (1964), many people believe that effort, performance, and reward are linked together as the more has been provided, they will be motivated and the greater their rate of productivity. A study by Jesumoroti and Draai (2021) affirmed that incentive schemes can prevent absenteeism, improve quality of work, and promote employees' long-term commitment. Van Heerden et al. (2020), Fischer (2019) and Ngwenya et al. (2018) also presented evidence that context-dependent incentives practice is a significant factor in determining worker productivity in the construction industry.

Javaid and Ali (2023), Waters et al. (2022), Tijani (2022) and Bailey and Dollard (2019) examined the psychological factors on construction projects from several different perspectives. Psychological factors such as work interaction, work pressure, mental health, and support systems contribute to worker productivity and motivation. Schulte et al. (2024) clarified that the presence of hazards such as overloading or lack of support leads to mental illness, absenteeism will decrease sustainable productivity of workers.

Therefore, a healthy and secure working environment will increase job satisfaction, resilience, and team cohesiveness within a team in a group seen to be crucial in ensuring productivity under project drive.

2.6.2 The study conceptual model

Figure 2.5 Presents the proposed conceptual framework for the study. Studies by Nagalingam et al. (2022) and Shikalepo (2020) supported the idea that conceptual framework can be considered because of bringing together several related concepts to describe and give a broader understanding of the phenomenon under investigation. In essence, this means that a conceptual framework summarises all the findings from the related literature reviewed to set out the research plan for enhancing the understanding of the research aim and objectives. This is achieved by providing a structure that organises the flow of thoughts and provides focus and direction to a review (Saputra *et al.;* 2024). Also, the framework indicates the importance of understanding the relationship between the independent (change variables), intervening variables and the dependent (outcome variables). In this case, the researcher describes the independent variable as a variable that affects another variable identified as the dependent variable. For example, examining the effect of motivation on workers' productivity offers a clear understanding of an independent variable.
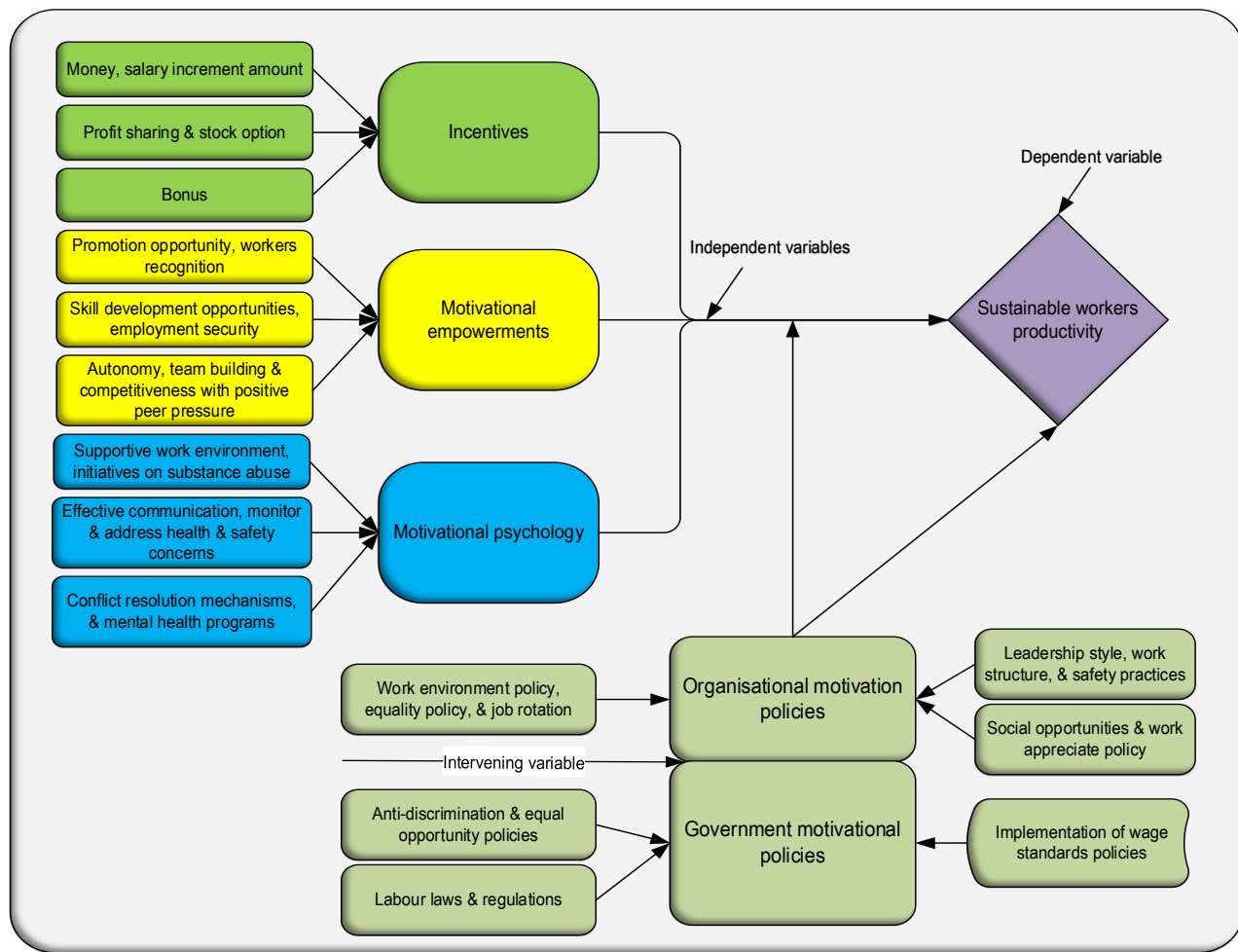
Figure 2.5: Proposed conceptual framework for construction workers' motivation on sustainable productivity.

Source: Author's construct

However, the mediating or intervening variable was incorporated into the conceptual framework to demonstrate the relationship between an independent and dependent variable. Additionally, the variable facilitates understanding of the process or mechanism via which the independent variable influences the dependent variable. The variable also sheds light on how changes in the independent variable impact the dependent variable. The organisational and governmental motivating policies will be referred to as the intervening factors in this study. The dependent variable in research is the variable that is observed, measured, or recorded to determine the effects, outcomes, or changes that result from the manipulation of the independent variable. This variable offers understanding, with the expectation to effect changes in the independent variable (sustainable workers' productivity).

As illustrated in the conceptual diagram, this study considers incentives as a management technique for motivating workers (includes money, salary increment amount, profit sharing and stock options, and bonuses). Also, motivational empowerment measures include promotion opportunities, worker recognition, skill

development opportunities, employment security, autonomy, team building, and competitiveness with positive peer pressure. Psychological influence on the workers' productivity constituted mental health programs, a supportive work environment, health and wellness initiatives on substance abuse, effective communication, monitoring and addressing health and safety concerns, and conflict resolution mechanisms. Similarly, the organisational motivational policy impacts workers' productivity by incorporating work environment policy, equality policy, job rotation, leadership style, work structure, safety practices, social opportunities, and work appreciation policy in organisation policy. Governmental motivational policies are labour laws and regulations, anti-discrimination and equal opportunity policies, and the provision of wage standards for all workers.

2.6.2.1 A Conceptual Pathway to Sustainable Worker Productivity

Motivational incentives play an essential role in promoting sustainable worker productivity in the construction industry (Ndudi, Kifordu, & Egede, 2023), which is known for its physically demanding work, high-risk environment, and fluctuating labour dynamics. According to Ndudi *et al.* (2023), sustainable productivity implies consistent, long-term output and efficiency without burnout, high turnover, or declines in quality or safety. Construction work is laborious, often hazardous, and requires consistent performance under varying environmental and time conditions. Al-Abbadi and Agyekum-Mensah (2022) opine that factors affecting motivation amongst others include job security and stability, fair compensation, recognition and respect, opportunities for growth, safe working conditions, and work-life balance. Therefore, motivational incentives, both financial and non-financial, aim to address these needs and align worker goals with organizational objectives.

Previous studies conducted by Nemteanu *et al.* (2021), Sorensen *et al.* (2021), and Tamers *et al.* (2020) have established the link between incentives and sustainable worker productivity. For instance, a study by Cui (2021) and Wang *et al.* (2020) revealed the availability of incentives improves morale and job satisfaction. Furthermore, Kalogiannidis (2021) and Mokhniuk and Yushchyshyna (2018) stipulated that incentives tied to output increase work efficiency and encourage workers to work faster while maintaining quality, minimising waste of time and materials, and adopting efficient work practices. Anwar *et al*. (2017) adds that the availability of incentives helps to lower turnover and knowledge retention thereby reducing training costs, promoting fewer disruptions, and promoting the retention of institutional knowledge

Motivational incentives like overtime payment, bonus, leave allowance, and social security are effort rewards in direct form and adhere to Vroom's Expectancy Theory that people will put more effort into it once they can see that it will earn them enough

remuneration (Meyer et al., 2025; Basalamah & As'ad, 2021; Sudiardhita et al., 2018; Riyadi, 2020; Paais & Pattiruhu, 2020; Sorensen et al., 2021).

Awad et al. (2021) suggested that sustainability considerations are paramount in terms of improving productivity in construction. Therefore, to ensure long-term productivity, incentive programmes must first and foremost be fair and transparent, thus workers must understand how incentives are earned. In addition, the programmes must be consistent by avoiding random changes that reduce trust and inclusive to cater to different roles such as labourers, site managers, and engineers. Furthermore, the programme should be adaptable in a manner that it evolves with workforce demographics, project types, and market trends. Finally, the incentive programmes should be measurable by adopting KPIs to track the impact on productivity, quality, and safety.

Motivational empowerment is nowadays an important catalyst for the enhancement of sustainable productivity of workers in the construction industry (Andavar & Ali, 2020). This concurs with Syamsir's (2020) argument that worker autonomy to engage in decision-making and career growth renders them intrinsic motivation through increased ownership of activities and tasks. Building operations naturally are complex, often unpredictable, and subject to variable environmental and time constraints. The productivity of labour, in turn, needs to be consistent to be capable of completing the project within the deadline under such strict conditions.

Pancasila et al. (2020) establish that most significant drivers such as job safety, respect and appreciation, opportunity to grow, nice working environment, and work-life balance promote job satisfaction and productivity. Therefore, fulfilling these worker needs regarding empowerment not only creates sustainable productivity but also harmonizes worker objectives and construction industry objectives. Wu *et al.* (2017) supported that empowerment stimulates workers' value perception and satisfaction, thus contributing to organisational goal commitment as well as influencing higher levels of performance.

Similarly, career development is considered as a strong empowerment driver (Aghayeva and Ślusarczyk, 2019; Funso et al., 2016). These opportunities are responsible for building the skills and knowledge of workers, thus making the workers resourceful to develop technically, and thereby boosting productivity level and job satisfaction. Ali et al. (2021) confirm that workers put job security as a way of enhancing productivity. Herzberg's two-factor theory (1959) and an existence need in Alderfer's ERG theory (1972) considered job security is a hygiene factor. Irabor and Okolie (2019) maintained that job security provides a secure working environment, increase workers productivity, and sustains the organisation's image and reputation. Finally, the empowerment programmes should be measurable by implementing knowledges areas to track the influence on productivity, quality, and safety of all workers.

Abukhashabah *et al.* (2020) and Umar and Egbu (2020) stated these drivers affect workers motivation in terms of mental health of workers which causes low productivity during construction projects. Therefore, a conflict management in term of workplace well-being programmes, and risk and burnout management have significant influence on sustainable productivity of workers and satisfaction. Voinescu et al. (2023) posit that mental disease issues like depression and anxiety disorders interfere with work attention and concentration and therefore diminish the effectiveness of workers' work tasks. Ridley *et al.* (2020) and Melnyk *et al.* (2020) stated that mental illness depletes energy and motivation, work time is hard to keep up with which results in project delays, extra costs, and low productivity. Hence management programmes of stressors and distraction are critical to sustain worker productivity during project delivery.

Similarly, Men and Yue (2019) mentioned that improper communication and conflict among workers could develop poor work environments that is not favorable to management and information exchange. Thus, leading to delay, error and low performance during project execution. Although, Awad *et al.* (2021) argue that sustainable construction productivity incentive schemes involve fair, clear, safe, inclusive, flexible, and quantifiable schemes consistent with the nature of work which is part of determinants factor that contribute a sustainable productivity.

Baoguo and Xiaobing (2025) and Krishnan and Rathakrishnan (2025) is a goal that an individual aims to achieve and accomplish through efforts. Goal orientation reflects the individual's perception of the purpose or significance of his learning activities. There is no motivation theory to apply to all organisational and individual situations; employers must thus apply motivational strategies carefully for further effects on workers.

Al-Bayati (2021) distinguishes work content in terms of task difficulty, tasks, skills and work context in terms of equipment, management, compensation and climate as they all create motivation. Demotivators like stress and fatigue decrease productivity. Therefore, there is a need for managing workload and creating work environment (Krishnan & Rathakrishnan, 2025). The determinants factors for job satisfaction and motivation including incentives, reward, working environment, respect from workers and supervisors, opportunity for development, and employment security. Also, organisational equity policies should base on fairness in reward and opportunity is the source of long-term productivity as well as stable employer-workers relationships (Maqsoom et al., 2020). Aldabbas *et al.* (2025) note that a worker needs to be rewarded with enormous incentives and empowerment to encourage participation and creates steady productivity.

Government policies impacting workers similarly affect organisational performance and job satisfaction among construction workers. For instance, policies that relates to anti-discrimination and equal opportunity in employment legislations promote diverse and

inclusive workplaces which makes worker feels belonging and psychological safety (Gropas, 2021; Greer & Carden, 2021; Johari & Jha, 2020; Akhmad & Santoso, 2023). Additionally, policies on open recruitment, fair promotion, and allocation boost worker motivation and trust (Lee et al., 2019). Thus, creating more job satisfaction and productivity for workers through rewarding effort and fostering diversity culture.

Generally, motivational factors to sustainable job satisfaction and productivity requires incentives and empowerment, psychological well-being, organisational practices and government motivational to be managed differently by reformulating these to suit the needs of SACI.

2.7 Sustainable Productivity Theory

When linked to construction workers' productivity, the theory of sustainability is often associated with the idea that sustainable practices and considerations can significantly impact both short-term and long-term productivity in the construction industry (Harris *et al.,* 2021). Another significant element within the framework of sustainable construction worker productivity theory involves the focus on worker welfare. This sustainable productivity theory of workers emphasises workers' well-being, rights, and safety and advocates for measures that reduce accidents, injuries, and exposure to harmful substances (Casino *et al.,* 2019). Thus, any organisation that wants to enhance workers' productivity during project delivery should consider providing adequate training, implementing proper safety protocols, and ensuring access to personal protective equipment. Based on the above, workers are more likely to be motivated and productive if they feel safe and supported (Manu *et al.,* 2019).

Moreover, sustainable productivity emphasises the need for fair and equitable working conditions. This involves paying workers fair wages, giving them access to appropriate benefits, and treating them with respect and dignity. By fostering a culture of fairness and inclusivity (Bhandari, 2024), motivation can enhance worker morale and job satisfaction (Han *et al.,* 2019). This could increase long-term commitment and productivity in the construction industry (Han *et al.,* 2019).

The significance of implementing environmentally responsible practices and prioritising workers' well-being and fairness in the construction industry could be attained by creating a sustainable and supportive work environment. Construction firms can reduce their environmental impact and increase productivity, job satisfaction, and the overall well-being of their workers. Embracing workers' motivation benefits the construction companies and society, promoting a sustainable and prosperous future.

2.8 Chapter summary:

This chapter offered an overview of motivation theory and conceptual models of sustainable employee productivity, especially for the South African construction industry. The overview began by offering the conceptualisation of motivation, providing the background on how motivation is perceived, its components, and the role of motivation regarding employee performance and organisational success.

Their impact was analysed from external and internal factors for their contribution towards worker morale, motivation, and performance in the long term. These includes salary increase, promotion, working condition, over-time privilege, leave privilege, and social security. These were Herzberg's Two-Factor Theory, Maslow's Hierarchy of Needs, McGregor's Theory X and Theory Y, and Vroom's Expectancy Theory. All these theories were sought for their applicability in motivating workers in the construction sector, and it was explained with precision how such theories influence the attitude and behavior of workers. There are limitations of motivational concept use as indicated, and therefore the necessity for a consistent model required.

Furthermore, the chapter introduced the construct of theoretical framework on which the present research is based. The construct combines noticeable aspects of the theories being researched into attempting to come up with a theoretical solution to sustainable worker productivity.

Conceptual framework for research was then established to outline how government policy, organisational policy, motivational incentives, and psychological drives come together to impel sustainable productivity. It is utilised to outline the basis of empirical testing for future chapters. The chapter also considered the sustainable productivity theory that requires a levelled strategy of motivation of well-being, equity, and performance.

Finally, Chapter Two provides the summary of the theory and conceptual basis on which the study is based. It develops the most important connections between the motivation theories and conceptual models and hence the rationale to construct a motivational model to increase sustainable productivity within the construction sector in South Africa.

CHAPTER 3

LITERATURE REVIEW

3.1 Introduction

This chapter describes the literature reviewed on the effects of worker motivation on productivity over decades in the South African and global construction sectors. The professional roles in construction and their development within the South African construction sector are described in this chapter. Construction productivity makes a substantial contribution to the economy of every nation and is crucial to industry, employment, and infrastructure services. The intricacy of numerous work phases is the primary characteristic of the building sector. The construction industry is subject to various variables that have a substantial impact on the achievement of goals and objectives at various stages of construction development in the organisational context.

3.2 The South African Construction Industry

The SACI plays a key role in the economy as it contributes a reasonable share of GDP and employment (Enaifoghe & Ramsuraj, 2023; Hadisi & Snowball, 2024). GDP from construction in South Africa increased to 103164 ZAR Million in the second quarter of 2024 and from 102694 ZAR Million in the first quarter of 2024. GDP from Construction in South Africa averaged 72174.86 ZAR Million from 1960 until 2024, reaching an all-time high of 157768.95 ZAR Million in the first quarter of 2016 and a record low of 14702.00 ZAR Million in the first quarter of 1960 (Trading Economic, 2024). SACI encompasses the infrastructural development of residence, commerce, industry, and civil engineering, which is very critical to national growth and urbanization (Rwelamila, 2020). This industry is characterised by different phases, with a few large, well-established organisations collaborating with many firms. This division shows the differences in resources and skills and promotes access, which shapes overall sector competitiveness and efficiency.

3.2.1 Productivity problems in the South African Construction Industry

Despite its significance in the economy, the industry is still plagued with problems of low levels of productivity, high labour turnover, and dissatisfaction among workers. This is in addition to economic fluctuations, skills shortages, and inefficiency in managing and delivering projects. Delayed projects, budget overruns, and substandard quality of work have been problems in the industry, at times because of inadequate planning and resource management (Lopes & Banaitienė, 2024; Larsson *et al.,* 2021; Adnan *et al.,* 2016).

Among the important productivity issues the SACI faces include poor incentives for workers, hence the motivation and performance of workers. In most cases, workers face delays in salary payments, limited overtime allowances and poor benefits such as leave allowances, provident funds, and workmen's compensation (Meyer *et al.,* 2025; Andavar & Ali, 2020; Anwar & Qadir, 2017; Funso *et al.,* 2016). Besides these, the psychological factors contributing are job insecurity and workplace stress, which further enhance these challenges in bringing down morale and efficiency (Dodanwala et al., 2023; Kamardeen & Hasan, 2022). Another contributory factor to all these issues is a lack of professional development and empowerment in the industry (Umar & Egbu, 2020). Most workers reported that promotions are not timely, training programs are few, and long-term service is hardly recognised. It affects career growth and organisational loyalty.

Organizations should focus on creating safe and welcoming workplaces and improve communication methods while recognizing employees' efforts through awards and public recognition (Dalle Mura & Dini, 2022; Wilkinson et al., 2018). Government policies should better support SACI by offering subsidized training programs, tax breaks for companies that treat workers well, and strict enforcement of labor laws that protect workers' rights (Johari & Jha, 2020; Dachner et al., 2021). With this approach, workers' motivation will increase, leading to higher productivity levels and sustainability; SACI will thrive with ongoing contributions to economic growth and better living standards for workers (Watermeyer & Phillips, 2020).

3.2.2 Challenges to workers' motivation

3.2.2.1 Socioeconomic Factors

Socioeconomic inequalities in South Africa remain negatively impacting workers' motivation, particularly in the construction industry. Unemployment, increasing inequality, and high levels of poverty lead to economic pressure that reduces workers' ability to engage in their work (Salisu *et al.,* 2023; Yu & Santos, 2025). Most construction workers have more dependents in their nuclear families to take care of, subjecting them to stress and literally driving them into exploitative or dangerous working conditions (Rudolph *et al.,* 2018; Meades, 2020). Morale and productivity are, thus, worsened since most of the workers lack the mental space to undertake long-term career development and ongoing improvement in productivity during project delivery (Khan *et al.,* 2022).

Also, inadequate quality training and education brings the workers' employment to an end and inhibits most of the workers from achieving high-wage, innovative jobs and therefore denies them incentives and leads to attrition in South African construction industry (Carpini *et al.,* 2024; Sitopu *et al.,* 2021). Beyond transport issues, housing issues, and access issues of social services, chronic fatigue and absenteeism are

sustained (Soliman *et al.,* 2023). Socioeconomic insecurity, if not addressed, will further prevent efforts towards enhancing productivity in the construction industry, calling for cross-cutting study of gaps in construction and psycho-emotional impact on workers (Shin *et al.,* 2015).

3.2.2.2 Workplace Conditions

Working conditions in the South African construction sector are a cause of concern that negatively affect worker motivation. Stress and dissatisfaction at work are also some of the reasons caused by occupational hazards, insecure employment, and lack of health and welfare facilities (Meades, 2020; Soliman *et al.,* 2023). Hazardous working conditions are faced by most workers with fewer cases of occupational health protection measures being implemented. Additionally, inefficient distribution of proper protective equipment and poor training necessary to justify that their image to project timelines is sustained (Ansah & Tekpe, 2022; Salisu *et al.,* 2023). Therefore, institutional complacency results in demoralization and alienation of workers, ultimately disrupting labour stability. Additionally, poor labour-management communication, no space for decision-making, and no reward for performance further worsen the motivational climate (Barg *et al.,* 2014). Hierarchical control and exploitative subcontracting grant the power imbalances that reduces workers' power and restrict their autonomy (Khan *et al.,* 2022; Carpini *et al.,* 2024). Without support and inclusivity arrangement for safety at workplace will demotivate workers productivity and turnover (Sitopu *et al.,* 2021).

3.2.2.3 Policy Gaps

Organisational policy such as the Basic Conditions of Employment Act that can make workers' rights feasible is the greatest hindrance to workers' motivation in South Africa. This implementation in SACI is inconsistent, especially against small and medium sized firms (Yu & Santos, 2025; Soliman *et al.,* 2023). The employers do not want to pay workers when due, overtime, or comply with labour standards of health because the government lacks sufficient capacity for enforcement and poor institutional capacities (Salisu *et al.,* 2023; Meades, 2020). Thus, reduces the confidence that the workers have in the system thereby making workers decision to leave system in the short terms. Besides, existing labour laws are not addressing industry-specific workers motivational concerns like cyclical employment and other work arrangements (Ansah & Tekpe, 2022; Rudolph *et al.,* 2018). Without systemized reward programmes for career development, career progress, and mental well-being, efforts towards strengthening the workers commitment are being eroded (Carpini *et al.,* 2024; Khan *et al.,* 2022). Developing implementable inclusive policies, and those specific to the construction industry's needs, are essential in maximizing staff morale and work satisfaction and project delivery performance overall are critical for a sustainable productivity.

3.2.2.4 Managing motivational issues for sustainable productivity in the SACI

The manpower-intensive and project-delivery culture of the industry is one factor that defines the application of motivational measures as paramount to ensuring the performance of the workforce. Literature gives the application of intrinsic and extrinsic motivators in achieving the balance of the productivity of the workers. Van Niekerk and Amoah (2023) concluded that the most intrinsic motivational drivers of job satisfaction, such as feeling valued, growth for oneself, and delegation of power, made the greatest contribution to driving construction workers. Each of these is a condition that lies within Self-Determination Theory, and where autonomy, competence, and relatedness each have some role to play in creating intrinsic motivation (Muthambi *et al.,* 2025). Whereas intrinsic motivators as much as anything else are needed, extrinsic motivators like job security, fair reward, and progression opportunities are no less of a priority. Ngwenya *et al.* (2018) came to realize that safe work culture, fair performance management practice, and participation in career development programmes most affect South African construction company workers' motivation.

Sound leadership and organisational culture supportiveness also complement these intrinsic and extrinsic motivational drivers. Balakrishnan *et al.* (2024) claimed that the behaviour of the leader gratitude, open communication, and respect are very related to team performance and motivation. An employee's commitment and belongingness, which is provided by employees' appreciation of work corporate culture, are vital to their work performance and motivation in the long run. But occupational stress pervades South Africa's construction sector because of working for extended periods, work requirements, and lack of workplace control to account for elevated levels of stress and further inhibit motivation (Bowen *et al.,* 2021). Stress management to be addressed at the root of stress to be targeted and enable work-life balance as a short-term measure in avoiding its effect on workers' motivation.

In addition, gender diversity and inclusion are also some of the priority areas that enable motivation in the industry. Career development, family well-being, and job satisfaction are the greatest determinants that influence women professionals who are employed in the construction industry, according to Muthambi *et al.* (2025). Overcoming the gender diversity obstacles as well as equality enhances the achivement of Sustainable Development Goal 10, which is aimed at promoting sustainable development and equality reduction in all businesses. Hence, in seeking to address motivational problems in South Africa's construction sector with full awareness, an interdisciplinary solution based on extrinsic and intrinsic motivational interventions is required. Firm organizational culture formation, leadership, occupational stress management, and diversity and

inclusion formation are the efficacious stepping stones to employees' motivation and hence sectoral productivity.

3.2.2.5 Overcoming productivity challenges by motivating workers in the SACI

Motivational strategies can play their role in metamorphosing the challenges identified herein: instituting structured incentive systems, such as performance-based bonuses and salary adjustments; promotions on time will increase workers' motivation levels and their production, too (Al-Abbadi & AgyekumMensah, 2022; Bangwal & Tiwari, 2018; Shin *et al.,* 2015). Adequate training and skill development can lead to employee empowerment (Brandhorst & Meisenbach, 2024; Paudel et al., 2024; Wu & Li, 2019). Implementing environmental wellness programs, such as stress management workshops and counselling services support, can assist in addressing psychological challenges (Almaskati *et al.,* 2024; Aung *et al.,* 2023).

Furthermore, organizations should focus on creating safe welcoming workplaces and recognizing employees' efforts through awards and public recognition for well performance thereby boosting workers morale (Dalle Mura & Dini, 2022; Wilkinson *et al.,* 2018). In other hands, government policies consider supporting SACI through offering subsidized training programs, tax breaks for companies that treat workers well, and strict enforcement of labor laws that protect workers' rights (Johari & Jha, 2020; Dachner *et al.,* 2021). With this approach, workers' motivation will increase, leading to higher productivity levels and sustainability; SACI will thrive in contributing to economic growth and better living standards for workers at large (Watermeyer & Phillips, 2020).

3.3 Construction Industry and Stages

Shurrab *et al.* (2020) and Herman (2016) affirmed that the roles of construction workers can be summarised in the following four stages:

- Feasibility stage
- Pre-contract stage (a)
- Post-contract stage (b)
- Construction management and resource procurement stage

3.3.1 Feasibility stage

This stage efficiently satisfies the client's needs when considering the client's unique requirements, structural design, aesthetic considerations, environmental aspects, and financial, technical, and regulatory constraints. The project's sustainability and financial viability are assessed during the feasibility phase, which offers insightful information that guides the project direction and provides informed recommendations to the clients (Kavishe *et al.,* 2019). Numerous initiatives result from in-depth program design, where

clients perceive the program as essential to their organisation's larger goals. Well-informed clients frequently engage in continuing capital accumulation while maintaining reasonable timelines for project timelines, cost, and quality (Koh *et al.,* 2019).

3.3.2 Pre-contract stage

This stage is crucial during project delivery for the organisation to understand the in-depth cost analysis, detailed design work, procurement operations, and the production of contract documentation are in this phase (Whang *et al.,* 2021). At this stage, however, construction workers mostly contribute by creating cost estimates based on a specific design. Furthermore, they are crucial in the preparation of contract documentation, which entails the development of contract formation and the bills of quantities (Gajaman *et al.,* 2019).

3.3.3 Post-contract stage

The post-contract stage involves project planning, commissioning and installation phases. This phrasing is initiated once the contractor is present at the construction site. Moreover, the stage can also be described as the construction period because of the contract approval and immediate commencement of work on the site (Saka *et al.,* 2019; Abobakr *et al.,* 2018). Hence, the contractor is officially instructed on the design revisions at this stage. Subsequently, the interim payment certificate evaluation is prepared and approved, and the final settlement is decided upon. Misunderstandings and inaccurate information frequently result in contractual problems.

3.3.4 Construction management and resource procurement stage

The post-contract phase includes the resource procurement and construction management phases. Considering the type and scope of the work included in this stage, the construction management and resource procurement tasks will be divided into two phases in this study (Abobakr *et al.,* 2018).

3.4 The Construction Professionals in Project Delivery

Many professionals work in the construction industry, including clients, contractors, consultants, quantity surveyors, project managers, construction managers, engineers, and architects. The success of a construction project depends on the development experts (Elraaid *et al.,* 2024). According to the division of labour in construction work, architects design the building projects, while engineers design the construction projects with the responsibility of ensuring that the projects are structured and environmentally friendly to society. On the other hand, quantity surveyors provide the contractually required information on the costs of construction projects. The involvement of quantity

surveyors in the construction industry starts at the early and completion stages of a project (Umuhoza & An, 2024).

3.5 The Role of Construction Workers Onsite in Project Delivery

Construction professionals are essential to the success of construction projects. They play a key role in project delivery, with their duties covering a broad range of crucial tasks that guarantee the smooth execution of a project. In construction, professionals demonstrate their expertise towards attaining adequate delivery of a project, from the development of the buildings as executed by both the architects and engineers to the deadlines and finance preparedness by the project managers and involvement of the brilliant artisans in ensuring that all project plans are actualised (Meyer *et al.,* 2025; Turner, 2022). These professionals are in the position of coordinating the construction on-site and dealing with unforeseen problems by ensuring that safety requirements are upheld. They also help the team members, contractors, and stakeholders communicate effectively to ensure that everyone has a collective interest in the project's objectives (Kerzner, 2025). Other responsibilities of the professionals include quality control, material supervision, local laws, and building code awareness. Construction experts are fundamental to transforming designs into real, usable structures, and their combined efforts are crucial to the successful completion of projects on schedule and within budget (Beste & Klakegg, 2022).

3.5.1 Construction and project managers

Construction managers, also called project managers, plan, coordinate, and supervise all aspects of the construction works (Levy, 2018). The responsibilities discharged by the construction manager depend on the size of the project, including his or her decision to work with other managers (Turner, 2022). However, all the workers and subcontractors are hired and trained to foster project and work schedule development (Turner, 2022). Moreover, project managers' daily work includes reducing and negotiating the cost of the project by providing the clients with updated project progress information and ensuring that everyone on the construction site works as a team to keep the project on schedule, within budgeted cost, and monitor workers.

3.5.2 The civil engineers

The civil engineers primarily manage, plan large-scale, and design construction projects. This includes buildings, bridges, transportation links, and other notable structures (Abbas *et al.,* 2022; Kerzner, 2025). To develop project plans, they investigate, test, and map data using computer modelling tools which assist in reducing risk and environmental effects while advising contractors on the optimal course of action.

3.5.3 The architects

Architects create our environment by designing spaces and the buildings around us. They bring newly renovated buildings to life. Architects also work with others to ensure that the design fits and is safe, whether in a single building or a primarily residential area (Levy, 2018).

3.5.4 The quantity surveying profession

The quantity surveying profession began in the mid-17th century. In the 1960s, surveyors developed more significantly in numbers, and their responsibilities have expanded as follows:

- Quantity estimation cost control during construction
- Progress review
- Payment
- Annual report
- Final accounts
- Advice on cost estimates
- Contractual claims settlement
- Evaluation of tenders
- Organising tender invitations
- Preparation of tender reports (Saliu, 2022)

Surveyors continued to perform their responsibilities in the 1970s into a decade of procurement bidding and contract selection advice (Morledge *et al.,* 2021). The evolvement of construction designs intensified competition among construction professionals in the 1990s and increased the number of surveyors. Typical surveyor roles that have evolved since the 1990s include management of subcontractors and advice on contractual disputes.
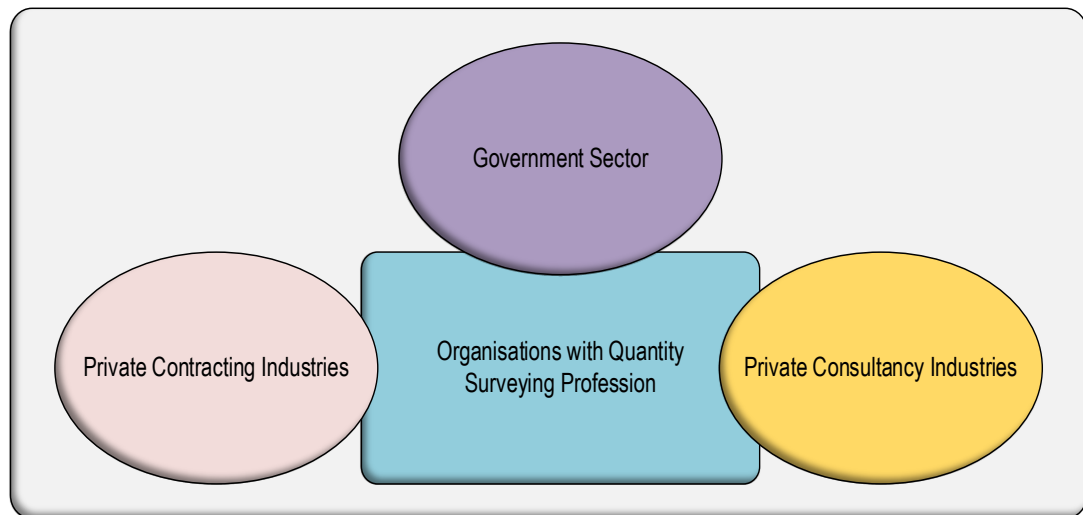
Figure 3.1: Organisations involved with professionals in the construction industry.

Source: Author's construct

According to Boadu, (2022), the public sector surveyors are allocated to perform heavy workloads in the construction sector, with some private companies involved in performing some or all public workloads to ease the pressure the public sector surveyors face. The QSs also work with private contractors in public organisations and private consultants. The size and nature of contractors vary widely from company to company, which can significantly impact the amount of research work. A surveyor works as a private contractor and mainly focuses on pricing and/or measurement.

3.6 The Role of Quantity Surveyors (QS) in Motivating Construction Workers

QSs are important stakeholders in construction projects, with their role extending from the inception of the project through to its completion and into the building's operational phase of maintenance, repairs, and modifications (Spellacy *et al.,* 2021).

Financial planning motivation such as timely salary increments, bonuses, and overtime compensation, the environment is made supportive and rewarding (Wang *et al.,* 2020). Furthermore, QSs collaborate with project managers and other professionals to enhance the integration of workers' needs concerning safety measures and welfare conditions into the cost planning of a project during tendering (Pan & Zhang, 2021; Taylor *et al.,* 2019). These strengthen the QS's key function in motivating the workers towards sustainable productivity during the construction.

3.6.1 Cost planning

Cost planning is very significant in motivating construction workers since it determines the financial directions and expectations of a project (Eldenburg *et al.,* 2016). It is also conducted during the early period of the project development phase as part of the cost management process. It allows the provision of comparative costs for alternative

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materials. Such early planning enables clients to make informed decisions and allows designers to investigate alternative solutions that would drive the project in terms of efficiency (Atmaja *et al.,* 2022). Similarly, cost analysis and budget planning could motivate workers at a construction site as clarity about financial status helps to align workers' expectations, thereby enhancing job satisfaction and creating an atmosphere of accountability and involvement in the project's success (Beste & Klakegg, 2022).

3.6.2 Procurement/tendering procedures

The QS motivates the workers on the construction sites by efficiently managing the procurement and tendering process. The QS ensures that the selected contractual framework is proper for the project's aims regarding time, cost, and quality and directly affects worker motivation (Spellacy *et al.,* 2021). A well-managed procurement process informs and sets expectations, thus enabling workers to understand their role and contribution within the scope of the project. The QS's ability to assess and apply the appropriate contractual methods, whether design and construct, turnkey, or project management, can influence how workers perceive their job security, remuneration, and career advancement (Ebekozien *et al.,* 2023). This understanding of the procurement process means that the workers are better informed, and their contributions are focused on the project's goals, motivating and engaging them at the site. Moreover, when procurement setting fluctuations, there is a need for QS to update workers thereby enabling workers to gain current and future methods. This contributes to job security and professional stability, which is key to maintaining productivity and morale on construction projects (Ebekozien *et al.,* 2023).

3.6.3 Contractual arrangement and documentation

In construction, the QS ensures that contract documents are well prepared, including bills of quantities and specifications, for the understanding of all stakeholders. Clarity and fairness in contractual arrangements have a positive influence on worker motivation. If workers are certain about what to expect from their remuneration, benefits, and conditions of employment, they are likely to remain focused and committed to their duties. In addition, having a standardized and correct bill of quantities for construction planners means that workers also know the clear scope of the project and what is expected of them, and therefore, uncertainty is avoided; it also motivates them to do well (Fateh & Zamri, 2022).

3.6.4 Cost control

Cost control has to do with the assurance of efficiency in resource utilization while also directly influencing worker motivation because, when costs are controlled, there is job security and timely payment. When the QS pays great attention to the project cost and

manages the budgets accordingly, delays and financial uncertainty are avoided; such factors tend to demoralize workers. Workers become motivated once they realize that the project is well managed and that their hard work serves to accomplish a successful project with proper financial management. Furthermore, QS may reveal areas of cost saving that might be cost-saving incentives or entitle the workers who help achieve those goals to a bonus (Fateh & Zamri, 2022).

3.6.5 Variation/ final accounts

One of the critical roles that QS plays involve assessing and managing variations and final accounts. By fairly compensating the contractors concerning changed project scopes or additional jobs, QS helps cement good relationships between the contractors and workers. This will boost their motivation when workers realize that extra effort or changes in the scope of work are acknowledged and compensated for accordingly. Correct final accounts and timely adjustments to payments also ensure that workers feel their contributions are valued, hence a productive and motivated workforce (Fateh & Zamri, 2022; Olatunde *et al.,* 2025).

3.6.6 Claims and insolvencies.

The QSs ensure that when there are claims or financial disputes, the QS must provide fair assessments and resolutions. This is to motivate workers' willingness to continue with the tasks given to them. Hence, they feel their rights are safeguarded, and any delay or disruption is compensated. Clear communication and transparency of claims help maintain the trust between the workers and the management team. Moreover, by ensuring insolvency or financial uncertainty is solved, the QS is likely to reduce anxiety among workers such that they can concentrate on doing their work with free minds (Fateh & Zamri, 2022).

3.6.7 Lifecycle costing

Lifecycle costing is considered a long-term cost for any given project. This can influence worker motivation because workers are proud to be part of a well-planned and sustainable project. Moreover, workers will take more pride in their work and be motivated when they know the project is being designed and managed with long-term efficiency in mind. Therefore, good lifecycle costing results in higher quality projects, pride in artistry and consequently, higher worker motivation for sustainable productivity (Fateh & Zamri, 2022)

3.6.8 Project management

Good project management, led by the QS, will ensure that all construction aspects are properly coordinated. The role of the QS in planning, controlling, and coordinating

resources ensures the completion of projects on time and within budget. The organization ensures a motivated workforce whereby workers will benefit from clearly defined expectations, adequate resources, and efficient project schedules. When the project management team, including the QS, works effectively, it prevents delays and reduces stress, allowing workers to stay focused and motivated (Olatunde *et al.,* 2025).

3.6.9   Value management

Value management enhances the identification of cost-effective results that improve quality, supporting both the project and the workers whenever it is properly managed. By applying value management principles, the QS can create opportunities for cost savings without compromising the quality of the work. These savings can then be reinvested into worker incentives or bonuses, directly influencing the workforce. Moreover, workers who find that their input is considered important in optimizing the project will have a greater interest in the success of the project, thus better morale and motivation.

Thus, the QS greatly influences worker motivation in managing the contract, costs, variations, and project planning. Fairness, clarity, and timely recognition of workers' contributions will make the work environment positive and motivating, allowing sustainable productivity (Olatunde *et al.,* 2025).

3.7   The Role of the Contractor in Motivating Workers in the SACI

Contractors are the backbone of the South African Construction Industry in terms of productivity and morale among construction workers. As key stakeholders, contractors have direct responsibility for policies and practices that ensure a motivated workforce (Kawimbe, 2024). In ensuring worker satisfaction in tangible and intangible aspects, contractors bear greatly on the success and sustainability of construction projects. The contractors' leadership and management approaches directly influence workers' empowerment and overall productivity during project delivery (Mutungi, 2022). Fundamentally, contractors contribute to worker motivation by paying fair and timely wages as expected. Overtime allowances, bonuses, profit sharing, and timely payment of wages instil confidence and reduce the financial pressures that workers encounter (Flammer *et al.,* 2019). Construction contractors play a major role in paying benefits such as provident fund contributions, leave allowances, and workmen's compensation, which create job security and stability for workers (Mokhniuk & Yushchyshyna, 2018). In addition to providing financial incentives, contractors make significant contributions to creating an enabling work environment that allows workers to realize their full potential and take pride in their work through the provision of opportunities for skill development, career advancement, and professional growth. Recognition through publicity and long-

service awards raises worker morale and instils a culture of excellence among construction teams.

Workers' safety and psychological well-being fall within the other spheres where contractors have a direct influence. Construction companies with strong measures of safety, compliance with occupational health, and first-aid arrangements show care on their site (Wu *et al.,* 2023; Gómez-Salgado *et al.,* 2023). Counselling, stress management programs, and team-building activities address workers' psychological concerns related to work to decrease workplace stress and boost morale (Waters *et al.,* 2022; Tijani, 2022). Considering that such motivational strategies are among the priorities of the contractors, the latter support the well-being of their workforce while also contributing to increasing productivity and ensuring sustainability for SACI.

3.8   Organisational Motivational Policies Methods

Motivation primarily affects the ways and extent to which employees in an organisation use their skills and abilities. In terms of this, an organisation can be defined as a goal-oriented and social entity designed to coordinate and structure activities connected to the external environment (Rasool *et al.,* 2024). An organisation is made up of people who influence each other's relationships. No motivational theory covers the full range of existing organisational and personal situations. Therefore, employers face significant challenges in implementing the right motivational approach that could positively influence their employees. Appropriate knowledge of motivation theory obliges managers to understand the work principles to value their employees.

3.9   Conceptualisation of Relationship between Motivation and Effective Job Productivity

Rasool *et al.* (2024) described motivation as the product of workers' productivity, except ability and environment. Workers' productivity is also considered as the implementation of actions or skills. Jesumoroti and Draai (2021) cited that workers' productivity depends on the motivation organisations use to measure the quality and quantity of workers' productivity. Motivation is key to improving worker performance and productivity (Van der Vaart, 2021). Van der Vaart (2021) emphasised that organisations should prioritise workers' motivation to enhance productivity. In other words, motivation can be referred to as a determinant of raising the performance of the workers towards achieving a reliable output in a construction firm (Jahanger, *et al.,* 2025; Jesumoroti & Draai, 2021; Van der Vaart, 2021; Churchill et al., 1999; Saeed *et al.,* 2013). Another researcher, Rasool *et al.* (2024) supported the findings that motivation directly determines workers' productivity. Wu *et al.* (2023) pinpointed that identifying issues concerning employee motivation is critical to attaining any organisation's improved performance. Matloob *et al.*

(2021) focussed on the non-monetary and financial incentives as factors for employee motivation in determining the relationship between job satisfaction and performance in SMEs.

However, there is limited research on the workers' motivation and job performance in the SACI. Studies on the skill levels of construction workers concerning motivation and job performance during project delivery cannot be generalised (Jesumoroti & Draai, 2021; Van der Vaart, 2021). To assess the research gap, this study explores a mixed method to develop a motivational model that will address the relationship between the motivation and productivity of the workers during project delivery.

3.10 Sustainability Unlocking Workers' Productivity in the Construction Industry

In sustainable development, the construction industry plays a crucial role in shaping the future of the construction firm. As the demand for infrastructure and buildings grows, so does the need for sustainable construction practices. Within this context, construction worker productivity emerges as a crucial factor. From a perspective, motivating construction workers to embrace sustainability can benefit the environment and improve their productivity and well-being. The development of a sustainable approach can create a positive setting that promotes the construction firms globally (Langston & Zhang, 2021).

3.10.1 Vision of a sustainable future

There are several aspects envisioning a sustainable future for construction worker productivity that is critical. To integrate advanced technologies has great potential to improve productivity and lessen environmental impact in accordance with the UN Sustainable Development Goals (SDGs) 2030. Therefore, using Building Information Modeling (BIM) systems, robotics, and automation can streamline construction processes, reduce material waste, and optimize resource use, thus enhancing worker productivity during project delivery (Goralski *et al.,* 2020; Fatimah *et al.,* 2020). Additionally, productivity can be improved using smart sensors and Internet of Things (IoT) devices (Zakari *et al.,* 2022; Nižetić *et al.,* 2019). These technologies allow for real-time monitoring, predictive maintenance, efficient equipment operation, and waste reduction during project execution. Hence, adopting these technological advancements, the construction industry can not only boost productivity but also support its overall sustainability goals which will fostering resource efficiency.

Furthermore, sustainable construction supports skill development and continues learning among construction workers (English & Carlsen, 2019; Dixit *et al.,* 2019). This skill growth is seen as critical for sustainable productivity of worker. Moreover, empowering workers through on-site innovation and teamwork can boost their engagement and motivation. By offering chances for career advancement and skill enhancement, the

construction industry can create a skilled workforce that can implement sustainable practices and improve productivity (Lacovidou *et al.,* 2021; Karman, 2020).

Lastly, a sustainable future in construction worker productivity needs a comprehensive approach that considers the health and well-being of the workers. Studies by Chen *et al.* (2023) and Faez *et al.* (2021) have shown that workers' productivity can be improved through safety measures, ergonomic designs, and a healthy work atmosphere. These basics can also help reduce accidents and work-related health issues. Other studies have suggested that having enough rest areas, access to natural light, and good ventilation at construction sites can significantly support the physical and mental health of the workers (Ntoumanis *et al.,* 2021; Melnyk *et al.,* 2020; Karman, 2020). Putting these measures into practice would help the workers improve their performance. Therefore, it is important to focus on the safety and well-being of workers. This will not only leads to sustainable productivity but also shows a commitment to fostering a supportive and ethical work culture in the construction industry. This vision aligns with global sustainability goals and can potentially turn the construction firm into a front-runner in sustainable progress (Kioupi & Voulvoulis, 2019).

3.10.2 Continuous learning and innovation

The ongoing nature of learning and innovation is essential for improving the productivity of construction workers. Sustainability is important for any construction company that is growing and adopting new technologies and methods. Workers must learn new skills and adapt to remain competitive. Continuous learning allows construction workers to keep up with the newest developments, best practices and sustainable techniques in construction to enhance their performance (Hamza *et al.,* 2022; Ershadi *et al.,* 2021; Darko et al., 2020). Therefore, focusing on innovation and continuous learning will allow the construction workers to adapt changes in the industry while ensuring that sustainable construction becomes a priority for the future.

3.10.3 Team collaboration and empowerment

Team collaboration and empowerment are very important for enhancing the sustainable productivity of construction workers. Complex projects are seen in the construction industry where it is done by different teams, effective collaboration is needed to reduce errors and smooth operations thus increase sustainable productivity. When team members work together by share knowledge, skills, and resources these will empower the decision-making, problem-solving, and overall project efficiency. Another way to boost productivity among workers in the construction industry is through team collaboration, where all workers feel a sense of unity and shared responsibility hence

encouraging them to take ownership of their tasks and put in their best efforts to reach project goals and vision of the firm (Liang *et al.,* 2021; Pan & Zhang 2021).

Empowerment is a motivational approach used to boost the productivity of workers in the construction company. Giving construction workers the skills, autonomy and safety working environment that enable them to succeed is important for achieving lasting productivity. Consequently, when workers are provided with the right tools, resources, and the ability to make decisions and take charge of their work, they feel more motivated, engaged, and dedicated to their tasks, leading to higher productivity. This method helps construction workers feel included and satisfied with their jobs. As a result, there is greater job satisfaction and fewer workers leaving their jobs. According to studies by (Al-Omari *et al.* (2020) and Taylor *et al.* (2019) mentioned that workers are encouraged by creating an environment that encourages open communication, offering training and skill development programs, and assigning tasks based on individual strengths and skills.

Collaboration and empowerment play important roles in making construction more sustainable. When construction companies encourage open communication and share knowledge among team members, they can adopt sustainable practices and innovative solutions more easily. Collaboration helps bring together different viewpoints, which can lead to finding environmentally friendly materials, reducing waste, and creating energy-efficient designs. On the other hand, empowered workers are more likely to take part in sustainable actions, like saving energy and managing waste (Hanke & Lowitzsch, 2020; Cheema *et al.,* 2020). This happens because they feel a sense of ownership and responsibility for the project and the environment (Hanke & Lowitzsch, 2020; Cheema et al., 2020). Overall, collaboration and empowerment are considered to have a positive work culture to support sustainability at a long-term of construction projects (Jitwasinkul *et al.,* 2016).

The adoption of worker empowerment should be implemented because it boosts motivation and sustainable productivity of workers during project execution. Additionally, collaboration and empowerment contribute to sustainability in construction by facilitating the adoption of creative solutions and environmentally friendly practices. Hence, construction companies should prioritise the creation of a collaborative and empowering work environment to increase productivity and support the long-term projects.

3.10.4 Recognising and celebrating achievements

Recognising and celebrating the accomplishments of construction workers. Productivity plays an important role in enhancing and cultivating a sustainability culture in the construction firms during project. Sustainable construction practices are essential in reducing environmental impact, economic benefits and promoting long-term social

(Nguyen & Watanabe, 2017; Kent *et al.,* 2016). The Recognition and celebration of productivity of the construction workers can be highly encouraging by giving awards and accolades annually or quarterly to those who have shown exceptional commitment towards sustainable practices.

Through creating awareness of the achievements of performing workers, are not only commending their efforts but this will inspire their co-workers to perform exceedingly. These include trophies, certificates and monetary incentives, which points out tangible rewards for workers' dedication and industriousness (Schildberg-Hörisc & Wagner, 2020; Saqib *et al.,* 2015). Therefore, construction industry should cultivate a culture of celebration and appreciation for its workers to improve dedication and motivation. Sharing success stories and best practices that highlight workers' contributions can inspire and motivate them. This can be achieved through internal newsletters, industry conferences, or online platforms (Robin *et al.,* 2023; Bawalla & Omolawal, 2022). Recognizing and celebrating workers' achievements fosters a sense of belonging and contributes to a sustainable future in the industry. By acknowledging and honouring individuals or teams who exemplify sustainable practices, others can be inspired to follow suit, driving positive change in the industry.

Eventually, celebrating and recognising the accomplishments of workers' productivity is supportive towards promoting and driving positive change in the industry. Likewise, honouring individuals and acknowledging or teams who demonstrate justifiable practices can motivate others to create alike efforts. Therefore, through awards, incentives, and sharing success stories, the construction industry can create a culture that values sustainability and motivates construction workers to continue making significant contributions towards the environmentally conscious and socially responsible construction sector (Sayed *et al.,* 2021).

3.11 Motivational Incentives Regarding Construction Workers Productivity

Motivation factors are an important aspect of the construction industry. Understanding how employees perceive an employee's motivation reduces costs and time and increases quality at work (Sanusi & Yudhyani, 2025; Bangwal & Tiwari, 2018; Al Ahbabi *et al.,* 2018). Although motivation has positive and negative effects on employee experiences, understanding the appropriate motivating factors for effective employee performance increases productivity and satisfaction. These motivational incentives are discussed below.

3.11.1 Basic salaries

Construction workers' basic salaries are an essential part of their remuneration, motivating their productivity rate during project execution. Fair and competitive base

compensation is essential for sustaining a stable and happy workforce since it attracts qualified and motivated individuals (Meyer *et al.,* 2025; Basalamah & As'ad, 2021; Sudiardhita *et al.,* 2018). Construction workers are likelier to stay loyal to their employers when placed on a fair base wage. This reduces worker turnover rates and the associated costs of training and recruitment for new. The consistency in the employment of workers promotes a sense of security and belonging within the construction industry (Lorincová *et al.,* 2019). This has a favourable effect on morale and motivation (Lorincová et al., 2019). All workers who are satisfied with their basic salary and feel valued by their employers demonstrate higher levels of commitment, work satisfaction, and desire to deliver quality.

Furthermore, Siddiqi and Tangem (2018) stated that basic salary also acts as a financial stabiliser for construction workers, guaranteeing them a steady flow of cash to take care of their fundamental necessities and be able to plan. Financial stability assists people in focusing on their jobs and obligations by lowering the stress and distractions brought upon by economic uncertainty (Spisakova, 2019). Further understanding indicates that financial stability fosters a productive workplace, where employees are less distracted by financial issues as leverage upon productivity improvement on building projects.

Basic pay essentially serves as the cornerstone for construction workers' productivity by encouraging job security, motivation, and mental well-being and is critical for delivering long-term, high-quality building results (Sitopu *et al.,* 2021).

3.11.2 Social benefits

Social benefits are essential for increasing construction employees' productivity (Didit & Nikmah, 2020). A responsive and welcoming work environment fosters a sense of community and friendship among employees. Employees are more likely to interact successfully, exchange expertise, and function as a cohesive team when they feel valued and linked to their peers (Cui, 2021; Wang *et al.,* 2020). A culture of teamwork in the construction firm will lead to more sustainable project completion that reduced conflicts among workers, and increased job satisfaction by the clients, ultimately boosting overall productivity. Offering social benefits like healthcare, childcare, and retirement schemes can alleviate employees' stress and anxiety, enabling them to focus on work rather than personal issues (Rudolph *et al.,* 2018). A healthier, more engaged workforce is crucial for sustainable success, and this approach can significantly improve work-life balance.

Social benefits significantly impact construction employees' quality of life, extending beyond their work to their families. Also, fair salaries, promotion opportunities and job security contribute to psychological well-being thereby enhance worker financial stability (Nemteanu *et al.,* 2021; Sorensen *et al.,* 2021; Tamers *et al.,* 2020). Moreover, social

benefits attract and retain skilled workers, leading to higher productivity minimized errors, and lower training costs due to a stable and experienced team (Nguyen, 2020; Heisler & Bandow, 2018). Ultimately, incorporating social benefits into the construction industry boosts worker productivity and contributes to the industry's sustainability.

3.11.3 Statutory benefits

Social security and insurance laws are critical for boosting construction workers productivity during project delivery (Uchiyama *et al.,* 2022; Kolberg *et al.,* 2019). These benefits act as a safety haven for employees as they guarantee their financial stability in trying times. Workers need to have access to healthcare, disability, and retirement benefits because construction work is frequently demanding and occasionally dangerous (Jaafar *et al.,* 2018). Construction employees are dedicated and well-focused on their allocated tasks when their employer offers them reliable welfare and financial security.

Additionally, construction workers' morale and satisfaction are influenced by statutory perks (Chinyio *et al.,* 2018). As stated earlier, when employees are certain that their employer upholds the laws and ethical standards of the company as well as values their well-being, they tend to be committed and loyal (Mairia *et al.,* 2021). This provides adequate benefits to the construction employees in terms of insured medical costs to aid prompt medical assistance, recovery from illness, and recovery from injuries sustained on the job. Consequently, this lowers turnover rates in the construction sector by ensuring that experienced and qualified people are kept in their positions. In addition, this could reduce project delays and interruptions. In essence, statutory benefits provide a win-win situation by promoting workers' well-being and encouraging a more reliable and productive workforce in the construction industry (Nilsson & Nilsson, 2021; Darko *et al.*, 2018).

3.11.4 Salary increments.

Some previous studies considered salary as a basic need for every construction worker to sustain their lives and prosperity (Cassar & Meier, 2018; Shin *et al.,* 2015) but also declared that money is not the only motivating factor that could sustain a construction worker's commitment. Salary-related factors were identified in many studies about motivational factors affecting labour productivity in the construction sector. Many researchers have shown that the level of remuneration is considered a crucial factor as far as construction workers are concerned (Ohueri *et al.,* 2018 and Funso *et al.,* 2016). In many developing countries, construction workers receive low salaries (Aghayeva & Ślusarczyk, 2019) but increasing workers' salary levels are an effective mechanism for improving their productivity (Funso *et al.,* 2016). Thus, rewards are a strong motivator, low wages and unpaid time demotivate workers during project delivery.

According to Kalogiannidis (2021) and Mokhniuk and Yushchyshyna (2018), salaries and financial compensation are the most important incentives for the decision to accept or reject a job offer. Financial rewards can attract, retain and motivate people to perform better. According to Cassar and Meier (2018), workers tend to prioritise financial rewards and compensation over other motivational factors. The authors' research suggested that the prospect of earning a substantial income is a significant driver of motivation. Essentially, the study underscores that financially content employees tend to exhibit higher levels of motivation in their work, which could result in increased effort and dedication. Money is the main motivator for industrial workers to be highly productive (Basalamah & As'ad, 2021) However, various financial aspects, including salaries, allowances, bonuses, and premiums, significantly influence employees' performance. All these effects enable them to attain top levels of productivity. Effectively leveraging these financial components can substantially boost an organisation's bottom line.

According to Basalamah and As'ad, (2021) based on a study performed, motivated individuals were found to be more productive in terms of moneary motivation. This significantly enhances individual performance towards a productive organisational system because many employees desire robust salaries and bonuses to feel secure (Shin *et al.,* 2015). Spano and Monfardini (2018) clarified this in a study by establishing the relationship between motivation and productivity. The study revealed that monetary rewards had the greatest impact on job performance. Another study by Vroom (1964) clearly explained the impact of paying higher wages to certain workers than other workers for the same level of work. The study indicated that the impact could demotivate the lower-paid workers and diminish organisational performance.

3.11.5 Profit sharing and stock option

Construction firms opt to distribute a portion of their profits to their workforce. This approach fosters a sense of accomplishment among the employees when the company attains its objectives. Profit-sharing emerges as a compelling motivational method that can maintain the construction workers' commitment and concentration on achieving the company's primary goals (Asimakopulos, 2020; Flammer *et al.,* 2019). Implementing stock options is considered as incentive scheme that benefits construction employees by allowing them to acquire company stocks. This financial incentive motivates workers and provides them with the opportunity to purchase company shares at a discounted rate (Barkai, 2019). A significant share allocation can improve employees' work engagement and financial prospects, ultimately driving their performance and commitment to the firm.

3.11.6 Bonus and financial incentives

Bonuses and financial incentives play a vital role in motivating construction workers. A bonus is extra compensation beyond regular earnings, serving as a motivational tool to enhance workers performance (Shin et al., 2015). These bonuses are often tied to the company's profitability and, also productivity. Financial incentives also include supplementary benefits like sick leave compensation, hardship allowances, travel allowances, child education assistance and housing subsidies (Meyer *et al.,* 2025; Al-Abbadi & Agyekum-Mensah, 2022; Funso *et al.,* 2016). These incentives motivate construction workers to excel and maintain high performance levels. By offering incentives, organizations can bolster work engagement and effectiveness (Kalogiannidis, 2021). Embracing motivational innovation, including rewarding creativity and achievement-based incentives, can substantially improve construction projects and overall productivity (Faisal *et al.,* 2015).

3.12 Motivational Empowerment Influencing Workers' Productivity

3.12.1 Worker's recognition

Recognition is an important part of the motivation in any construction industry to achieve maximum workers' productivity (Andavar & Ali, 2020; Chandrawaty & Widodo, 2020; Anwar & Abd Zebari, 2015). Providing recognition makes employees feel valued and fulfilled. It propels employees' desire to perform well in their tasks. The more workers' behaviour on a task is positively recognised, the more motivated they will be at their workplace (Pancasila *et al.,* 2020). Recognising the impact of workers during a successful production requires valuing their contributions. The construction industry must recognise its workers as a key factor in effective production (Anwar & Qadir, 2017). According to Desselle *et al.* (2022), rewarding workers' performance through recognition is better than giving grants. However, monetary and non-monetary approaches are used to detect the effective productivity of workers (Mokhniuk & Yushchyshyna, 2018). Most employees appreciate things acknowledged in company newsletters, letters of recommendation, verbal thanks, and extra time off. Organisations should use this avenue to show that their companies care and value their employees. The above illustrations indicate that non-monetary recognition is more motivating than monetary factors.

Anwar and Qadir (2017) cited that employees recognised at their workplace are highly motivated to raise their performance and increase their willingness to contribute more to task activities. Effective worker performance results from motivation and skills applied during project delivery (Febrianti & Se, 2020). Thus, employee appreciation and work performance are directly related. Valuing an employee influences motivation and self-

esteem greatly in the workplace. The effect of this demonstrates that valuing employees during project execution improves their morale towards any assigned tasks. This could be termed as a hallmark of any industry's overall efficiency.

Many studies have examined the impact of motivational processes and the requirements for organisational effectiveness (Riyadi, 2020; Syamsir, 2020; Paais & Pattiruhu, 2020; Anwar *et al.,* 2017). Worker recognition was identified as a crucial component of motivation in these studies (Sobaih & Hasanein, 2020; Alrawahi *et al.,* 2020; da Cruz Carvalho *et al.,* 2020). Moreover, some authors indicated that employee appreciation is crucial as a source of motivation and a promoter of individual growth (Syamsir, 2020). Based on previous findings, lack of appreciation is perceived as one of the reasons for work-related psychological distress affecting workers in their various workplaces (Ali & Anwar, 2021). In that case, this is vital to a worker's mental health in his/her workplace.

3.12.2 Skill development opportunities

Workers consistently find greater motivation in their work environments when they encounter abundant prospects for professional growth and career advancement (Aghayeva & Ślusarczyk, 2019; Funso *et al.,* 2016). Skill development amongst workers is a crucial opportunity for them to advance technically in their area of specialisation. Employees thrive better when a company offers them the skill tools required to foster creativity within their obligated positions. This would contribute greatly to an industry's overall success by establishing a beneficial structure to sustain the company's development (Ohueri *et al.,* 2018). Therefore, availability of career development opportunities exerts a profound influence on the motivation of the employees, a factor intrinsically linked to the quality and diversity of training and educational initiatives within a company.

Employees' perception of personal growth and developmental prospects is a critical determinant of their engagement at work. Rooted in Maslow's hierarchy of needs, this desire for advancement aligns with the aspiration for self-actualisation (Syamsir, 2020; Anwar *et al.,* 2017). This motivates the employees to continually strive for greater achievements (Paais & Pattiruhu, 2020). Conversely, a job position that lacks a progression plan can demotivate, trap, and uninspiring a worker by causing disengagement from his/her assignment. Therefore, organisations that provide their employees with relevant career development opportunities are expected to benefit from the product.

3.12.3 Employment security

Employment security is proposed as a hygiene factor in the two-factor theory (Herzberg et al., 1959) and as a "necessity of existence" in the ERG (Existence, Relatedness, and

Growth) theory (Alderfer, 1972). Job security means a relaxed atmosphere in the workplace; it reduces employee turnover and strengthens an organisation's reputation and image (Irabor & Okolie, 2019). Employment security is the most influential motivational tool, far from the psychological burden that allows individuals to do their best for the industry and ultimately maximise performance (Ryan & Deci, 2019). Baird & Munir (2018) emphasised that an organisation that considers employment security as part of its policies offers workers confidence in achieving their career goals (Sobaih & Hasanein, 2020).

Khorev (2021) study found that workers received bonuses and rewards as motivation instigators for good work, work safety, work commitment, and improved productivity. Also, Ali *et al.* (2021) proved that job satisfaction is a priority for construction workers; it is an important factor for workers at the local and international levels of the construction industry. This shows that employment stability is an important motivational factor influencing the productivity of workers. However, empirical studies have shown a positive relationship between job security and employee motivation, wherein job security positively affects employee performance. In addition, employee motivation can be significantly lower if job security is low. Job security has many benefits, including making employees more engaged and committed to their jobs (Khorev, 2021).

3.12.4 Autonomy

Understanding how to motivate workers within the organisation is crucial to good management. Their involvement, dedication, overall well-being and success at work are all reflected in their motivation level (Funso *et al.,* 2016). Managers and leaders are essential in motivating workers to achieve positive results (Wu & Li, 2019). Ryan and Deci (2019) assert that the Self-Determination Theory (SDT) is a well-known theory of motivation that offers leaders a framework grounded on empirical research for successfully inspiring their workforce. According to Self-Determination Theory (SDT), social environment elements, such as leaders' interpersonal style, predict high motivation at work environment (Deci *et al.,* 2017). The theory posits that motivation, well-being, and optimal functioning rely on three fundamental psychological needs: autonomy, competence, and relatedness (Deci & Ryan, 2017).

A worker's level of motivation for their work is influenced by meeting their basic psychological requirements. When managers encourage autonomy, skills, and connections, employees are more likely to be autonomously driven (Van den Broeck *et al.,* 2016). When an employee performs a task autonomously and recognises the importance and purpose of their work, they are said to be autonomous (Ryan & Deci, 2017). As a result, self-motivated employees will perform better, learn more, and enjoy their jobs more (Deci *et al.,* 2017). On the other hand, a worker loses motivation and

becomes dominated when their basic psychological needs are not satisfied. Workers who participate in activities to feel needed or accomplish distinct goals exhibit controlled motivation (Ryan & Deci, 2017). Rewards, force dynamics, or internal pressures like guilt or upholding one's self-esteem can contribute to controlled behaviour. In contrast to regulated motivation, autonomous motivation leads to improved behaviour (long-term willingness to participate), favourable subjective experiences, reduced stress at work, and improved job performance, all of which improve employee satisfaction (Febrianti & Se, 2020).

3.12.5 Team building

A spirit of teamwork often emerges when individuals are compelled to cooperate and rely on each other's contributions for their livelihood. Within such a collaborative setting, construction workers may experience an increased sense of empowerment and productivity compared to working independently (Baird & Munir, 2018; Dahou & Hacini, 2018). This effect can be extended to various factors of the construction project, ultimately bolstering the workforce, fostering allegiance to the brand, and extending the duration of their association with the organisation.

3.12.6 Competitiveness with positive peer pressure

Amongst construction workers, a sense of friendship frequently emerges when individuals must collaborate and depend on each other's contributions to their livelihoods (Kuvaas *et al.,* 2017). In addition, a cooperative workplace, worker are considered to feel more confidence and productive than when working in isolation. This enhanced spirit of teamwork can permeate different aspects of construction projects. Ultimately, this could strengthen the workforce, nurture loyalty to the company, and prolong their tenure within the organisation (Dahou & Hacini, 2018).

3.12.7 Promotion opportunities

Different studies have identified promotion opportunities as a motivational factor positively affecting construction workers' productivity. Promotion opportunities will improve employee performance and satisfaction (Paudel *et al.,* 2024). The evidence is consistent with the results demonstrated in the previous studies (Van Tam *et al.,* 2018; Ugulu *et al.,* 2016; Ohueri *et al.,* 2018) and shows that career opportunities have a significant impact on labour productivity in the construction sector. Therefore, regular promotion is an optimistic approach, usually aimed at meeting the psychological needs of the workers in the workplace. Similarly, the awareness and prospects for the promotion of technical managers are linked with the competence-based professional development of employees and overwhelmingly reflect their determination to achieve higher performance (Ghoddousi *et al.,* 2015).

3.13 The Psychological Factors Influencing Construction Workers' Productivity

According to Sunindijo and Kamardeen (2017), over 70% of construction sector personnel in both developed and developing countries suffer from psychological conditions such as excessive stress. As a result, many workers may be absent or unable to perform up to expectations (Almaskati *et al.,* 2024). When construction worker productivity falls, there is the possibility that output during construction projects will fall as well (Wu *et al.,* 2023; Gómez-Salgado *et al.,* 2023). For instance, stress increases the number of accidents in the work environment, which causes reworks and unexpected costs to be imposed on the project as well as productivity being exaggerated (Dodanwala *et al.,* 2023; Kamardeen & Hasan, 2022; Abukhashabah *et al.,* 2020, Umar & Egbu, 2020).

Previous research by Javaid and Ali, 2023, Waters *et al.* (2022), Tijani (2022) and Bailey and Dollard (2019) examined the effects of mental health addresses on construction projects from several different perspectives. In the studies by Waters *et al.* (2022) and Tijani (2022), construction workers are prone to psychological problems that lead to suicide. This impacts the productivity of the workers during construction project delivery. A method was proposed by Waters *et al.* (2022) to address the reduction of the suicide rate among the affected workers. Tijani (2022) discovered that workers suffer from a mental well-being imbalance as this can affects their performance and productivity. According to Bailey and Dollard (2019), absenteeism significantly impacts the worker's declined productivity. Therefore, the consequences of mental well-being are severely extensive, which repeatedly result in economic and societal problems (Cianconi *et al.,* 2020). There are mental illness leading to suicide is millions of dollars which causes expenditure (Cianconi *et al.,* 2020). This shows that taken adequate care taking of any construction workers with mental health conditions is expensive for any company with mental disorders (Frasquilho *et al.,* 2015). Frasquilho *et al.* (2015) stated that psychosocial risks and economic issues of mental health are critical among construction workers thereby affecting productivity. Also, construction workers with no job security can demonstrate depressive symptoms due to constant stress on employment duration, and other employment-related challenges (Frasquilho *et al.,* 2015). There is need to investigate psychological work environment and enhancing the environment work by providing polices that enhances employment related challenges that workers are facing.

A study by Langdon and Sawang (2018) mentioned that the main causes of stress are poor management of money, lack of safety and lack of time management in the work environment. They recommended policies for promoting healthy and productive work environments. These policies are appropriate emotions and drug usage in the workplace will reduce suicidal thoughts

Furthermore, training workers on how to manage stress remained vital in supporting them in managing through depression. Cendales *et al.* (2024) examined, and symptoms of depression and the signs existing amongst employees and established that lack contributing to decision-making and social support are basic problems of depression. The study recommended that appropriate decision making, social support and workplace therapy programmes should be established to cater to the affected workers (Cendales *et al.,* 2024). Also, there should be focus on communication between healthcare teams and workers, and access to evidence-based treatment to reduce absenteeism. Naseer and Raja (2021) and Nauman *et al*. (2019) examined the bullying as a cause of mental illness of workers which affect their sustainable productivity. These studies showed that bullying worker causes lack of work-related information and lead to separation thus reduce organisational productivity. Therefore, recommended policies strict against harassment and bullying which will promote worker engagement and social balance.

Brandhorst and Meisenbach (2024) explored how physical weakness affects construction workers' mental health. Their study found that dissatisfaction can lead to both physical and mental disorders amongst workers. Using electroencephalograms, the researchers assessed the mental state of workers with physical weakness and found that enhancing physical tasks can reduce mental dissatisfaction and boost workers' attention (Brandhorst & Meisenbach, 2024). A study conducted by Al-Omari and Okasheh (2017) on the work environment condition showed that a distressing work environment could cause depression and anxiety among construction workers. Therefore, relationship between mental health and coping among construction workers regarding the social conduct, cognitive prevention, and responsibility contribute to anxiety among workers thereby reducing productivity of workers. On the other hand, Grill *et al.* (2019) extended the study to determine the effects of depression or anxiety disorders on the construction managers' leadership by establishing hypothetical theories and evaluating the project's relative delay.

3.14 Mental Health Issues on Workers' Motivation Towards Productivity

In the construction industry, workers encounter physical demands and stresses in their various jobs, which cause mental health challenges like anxiety, depression, and burnout. Voinescu *et al*. (2023) confirmed that anxiety and depression could reduce concentration and attentiveness and impair the ability of the affected workers to execute tasks effectively. Construction tasks often necessitate meticulous attention to detail and precision, but when mental health challenges are experienced among workers, standards may be difficult to attain. Mental health issues can significantly impact construction workers' performance, leading to errors, accidents, and rework. According to Ridley *et al.* (2020) stated that mental well-being issues can weak workers energy

levels and motivation, making it challenging to sustain productivity. This can result in increased costs, decreased production and project delays.

 Similarly, Studies by Ntoumanis *et al.* (2021), Melnyk *et al.* (2020), and Chen *et al.* (2017) confirms that mental health problems can also affect construction workers' physical well-being. Also, sleep disruptions, often linked to mental health challenge which can lead to fatigue and reduced alertness during project delivery on-sites (Franceschini *et al.,* 2020; Bowers *et al.,* 2018; Zhang *et al.,* 2017). These determinants can delay and low productivity due to high rate of sick days.

3.14.1 Minimisation of distractions and lack of focus

Minimizing distractions and lack of focus is crucial for construction workers' safety towards productivity. Addressing psychological factors like stress, fatigue, and personal issues can significantly impact work performance and safety (Franceschini *et al.,* 2020; Zhang *et al.,* 2017). Proactively managing these factors can yield several benefits. These include mitigating worker distractions, maintain focus and concentration on their tasks, which will reduce errors and delays (Melnyk *et al.,* 2020). In a noisy construction environment, reducing external disruptions is crucial for enhancing productivity (Ridley *et al.,* 2020). Factors like individual concerns, mobile phone usage, and other distractions can impact efficiency and output (Bialowolski *et al.,* 2020; Tzenios, 2019). A lack of focus among construction workers can cause safety hazards and accidents, potentially causing injuries, property damage, and project rework (Sanni-Anibire *et al.,* 2020; Shao *et al.,* 2019; Winge & Albrechtsen, 2018). Production errors emerging from a worker's lack of concentration could significantly impact budgeted overruns and delay project delivery

3.14.2 Absenteeism and presenteeism

Poor mental health can lead to increased absenteeism, where workers frequently call in sick, and productivity is affected (Nunes *et al.,* 2018; Magee *et al.,* 2017). On the other hand, presenteeism refers to employees showing up for work while mentally or emotionally unwell. While physically present, they may struggle to perform at their best, reducing overall productivity. Absenteeism and presenteeism have detrimental effects on the productivity of construction workers. These effects negatively affect individual workers and construction projects (Rouhanizadeh & Kermanshachi, 2021). Addressing absenteeism can significantly boost workers' motivation and organisational productivity during project execution. Habitual absences negatively impact productivity, particularly when highly skilled workers are absent, affecting project quality and operational efficiency (Magee *et al.,* 2017). This can lead to decreased productivity, morale, and increased stress among other workers (Aboagye *et al.,* 2019). On the other hand,

presenteeism is when workers show up to workplace but are idle and unproductive due to illness, fatigue, or personal issues. In the construction industry, presenteeism is huge challenge due to the physical demands which need focus and attention (Rouhanizadeh & Kermanshachi, 2021; Bubonya et al., 2017). Presenteeism at work can result in low-quality work delays, safety risks, cost overruns and rework

3.14.3 Conflict and communication issues

Conflict and communication issues can significantly impact construction workers' productivity. Poor communication skills and unresolved conflicts can create a negative work environment, disrupting coordination, cooperation, and information sharing, and leading to delays, errors, and decreased productivity (Men & Yue, 2019; Wu *et al.,* 2017). Therefore, conflict and communication issues are huge challenge adversely affect workers' mental health, hindering concentration, motivation, and productivity (Obrenovic et al., 2020; Hasan *et al.,* 2018). Also, misunderstandings, poor communication channels, and unaddressed conflicts can create a hostile work environment, negatively impacting morale, teamwork, and productivity (Ne'Matullah *et al.,* 2021). According to studies by Faris *et al,* (2022) and Suleiman (2022) supported that construction projects involve diverse workers with different personalities, backgrounds, and communication styles, making it essential for management to understand individual differences to prevent conflicts and communication issues. Hence, establishing a strong communication system can help prevent errors, delays, and rework, while resolving conflicts is essential for enhancing overall productivity (Lee & Kim, 2018).

3.15 Training and Awareness Creation of Substance Abuse

The demanding nature of construction work highlights the importance of proactive stress management and support systems to foster positive outcomes for workers' motivation. Organisations can play a crucial role in mitigating anxiety, fatigue and stress among their workforce by providing support structures, counselling services, and stress-reduction programs (Wardell *et al.,* 2020; Mohammadi *et al.,* 2018). This approach safeguards physical health and workers' mental, boosting their coordination, decision-making processes and cognitive abilities which are essential to sustaining high productivity levels of workers (Kelly *et al.,* 2020).

Moreover, the stigma surrounding mental health in the construction industry can prevent workers from seeking help, leading to increased isolation and substance abuse (Milner *et al.,* 2017). Substance abuse creates vicious cycle, exacerbating mental health issues and hindering workers' ability to carry out their jobs effectively. Therefore, addressing the psychological well-being of construction workers not only results in enhanced productivity but also causes reduced absenteeism and decreased rates of accidents and

injuries, including an overall improvement in the efficiency and safety of construction projects. This positive approach is instrumental in mitigating substance abuse issues within the industry to benefit both the workers and the organisation (Carpenter *et al.,* 2017).

3.16 Organisational Motivation Policies on Construction Worker Towards Productivity

Motivation primarily affects the ways and extent to which employees in an organisation use their skills and abilities. In terms of this, an organisation can be defined as a goal-oriented and social entity designed to coordinate and structure activities connected to the external environment (Baoguo & Xiaobing, 2025). An organisation is made up of people who influence each other's relationships. No motivational theory claims to cover the full range of existing organisational and personal situations. Therefore, employers face significant challenges in implementing the right motivational approach towards achieving an effective approach that could positively influence their employees. Appropriate knowledge of motivation theory enables a manager to have the necessary understanding of the work principles to value their employees.

3.16.1 Work environment/culture

This section examines the motivation for workers about the culture and environment of construction. Al-Bayati, (2021) examined the workplace from the standpoint of work context and content. While work content pertains to a range of related activities, the skills needed, and the problems posed, contextual elements include supervision, material resources, remuneration systems, and the work environment. According to the same author, a third of employees have desires for job-related growth; as a result, rewarding positions or modifications to job content would inspire them. Additionally, Nikoloutsopoulos *et al.* (2021) recommended that contractors take note of employees who are worried about contextual variables. As a result, elements that enhance the workplace can inspire them.

By identifying long hours, disorder, failure to acknowledge finished labour, and aggressive supervision by coworkers as reasons for demotivation at construction sites, Fordjour *et al.* (2021) expanded the effect of contextual factors on motivation. Fatigue has been found in certain research to be a demotivating factor. Krishnan and Rathakrishnan, (2025) stated that lacking motivation contributes to low productivity. An empirical study on several factors that affect workers' motivation: incentives, bonuses, rewards, and salary; team relationships and respect from superiors and colleagues; working conditions, freedom, and physical environment and opportunities to learn new things; management and supervision, positive reinforcement, and job security; and intrinsic ways to accomplish meaningful things, do things you enjoy, make decisions, and

develop skills (Krishnan & Rathakrishnan, 2025). The workers identified these factors by participating in a survey.

Another study, carried out by Kundi *et al.* (2022), revealed that pressure experienced by workers from the time given to perform a particular task could affect their motivation. The study declared that a moderate level of deadline pressure could enhance productivity. Aliyyah *et al.* (2021) examined methods of cultivating these factors in a construction project. The researcher identified self-protection ability, working environment, stable working relationship methods, and salary management as areas to consider towards improving the hygiene of the construction worker environment. Also, Brockman (2014) declared that the occurrence of interpersonal conflict in a construction environment could significantly affect the motivation of the construction workers.

3.16.2 Organisational policies on equality

Equality focuses on how individuals are treated regarding rewards, opportunities, and allocating specific organisational tasks. This aspect is important in sustaining the construction industry's success and impacting the enduring viability of the employer-employee relationship (Maqsoom *et al.,* 2020). Consequently, organisations in this sector should consistently prioritise trust, engagement, and cultivating high levels of employee satisfaction. Unfortunately, construction organisations may encounter situations where employees who maintain close relationships with their superiors are inexplicably acknowledged, rewarded, and advanced in their careers (Dahanayake *et al.,* 2018). Regrettably, these workers are not always the most productive, yet they continue to receive recognition and incentives from their managers, which could be attributed to their adept networking skills (Wilkinson *et al.,* 2018). This problem can cause other hard-working employees to become demotivated. Victor Vroom (1964) determined that workers may be happy with their wages but highly dissatisfied when they learn that their colleagues earn more than them for similar work.

3.16.3 Organisational policies related to job rotation.

Job rotation is intertwined with the motivation and performance of construction workers, as it may not initially appear as a motivating factor. Job rotation entails a deliberate and systematic shift of employees from one role to another within an organisation. It also promotes serving various staffing objectives, modifications in compensation structures, organisational milieu, job frameworks, and safety protocols (Dalle Mura & Dini, 2022). Moreover, all of them can undergo incremental adjustments (Dalle Mura & Dini, 2022). However, the one facet that can be swiftly altered is the leadership style within the organisation, a change that can yield substantial impacts. When these factors are meticulously implemented in an organisation, construction workers can experience

heightened satisfaction (Paul & Gracious Kazaara, 2023). This ultimately results in increased productivity throughout the project's execution (Paul & Gracious Kazaara, 2023).

3.16.4 Organisational policies related to leadership style.

Determining how the employee feels about the organisation and what motivates them is critical. When an organisation's leadership changes, the organisation's psychological atmosphere changes as well. These changes enhance the productivity of the construction workers. In addition, an organisation determines its leadership style by its goals and objectives, its people and the external environment (Ichsan *et al.,* 2021; Purnomo, 2020; Wen *et al.,* 2019).

The long-term result should be the top priority of the leadership style since effective management always motivates workers. Being receptive to human nature is essential for leaders. Decision-making would be considerably simpler for leaders who are aware of the various needs of their subordinates. Understanding what drives people is essential for an effective leader. Thus, he must also be aware of the fundamental needs of colleagues, coworkers, and superiors (Al-maaitah *et al.,* 2021; Zawawi & Putrawan, 2019). In that case, executives must have leadership qualities and a spirit of motivation to lead and motivate their employees.

Moreover, leadership serves as a method for exerting influence on others. It requires the leaders to uphold an efficient moral and ethical code within an organisation (Fakhri *et al.,* 2020; Naoum, 2016; Atmojo, 2015). The authors emphasised that leaders discharge their duty of ensuring that employees receive the necessary motivation and training that align with the organisation's requirements. Consequently, when acting as role models, leaders can effectively inspire team members to achieve goals. Ultimately, they should be able to guide their teams through personal demonstration to promote development and facilitate efficient achievement of objectives.

3.16.5 Organisational policies related to work structure

One of the most significant factors of motivation for workers is work structure, sometimes referred to as job type. Some careers are intrinsically motivating since they call for creativity and much energy. Work that requires talking, negotiating, and engaging with others to gain their cooperation to complete a task quickly and effectively brings out the best energy in the individuals. However, to attain efficient and inexpensive performance, it is crucial to standardise and routinely perform a huge amount of work to fascinate the workers (Akinwale & George, 2020). For example, the factory workers who spend their days on a production line are carefully monitored to maintain optimal performance. Based on this, a manager can struggle to keep factory workers motivated due to the

stressful work structure encountered by the construction workers. Therefore, good companies strive to structure tasks according to the nature of the work and the employee's personality. This could be exciting and joyful for employees to boost their motivation (Davidescu *et al.,* 2020).

3.16.6 Organisational policies related to safety practices

Safety practices significantly impact employee motivation because poor safety practices lead to severe employee demotivation (Aung *et al.,* 2023). Organisations that do not care about their employees' health and safety often demotivate them. People dissatisfied with their work, organisation, or supervisor will likely have accidents. Accidents usually happen through carelessness. For example, many hand injuries associated with power tools could be related to a lack of concentration on the part of the operator. Again, work motivation has a negative relationship with accidents. Hence, it has also been found that increased work motivation contributes to improved safety practices in the workplace (Paais & Pattiruhu, 2020). Limitations can distract concentration from the activity at hand, which is one of the underlying causes of such mishaps.

3.16.7 Organisational policies related to appreciation.

According to a study by Aldabbas *et al.* (2025), employers must recognise the employees occasionally and provide additional benefits, such as money, to foster employee engagement. Organisations giving their workers substantive incentives such as appreciation, respect and material rewards show that their employers appreciate workers' engagement in their tasks. Aldabbas *et al.* (2025) define appreciation as the abstract of immaterial incentives. Another area to consider for workers' appreciation is education. Quality education can enhance workers' capacity to raise their productivity within a particular firm and deserve recognition for a job well done. The success of a job is always being appreciated through education as a factor in responsibility and appreciation. Based on the above, workers in various departments can have the opportunity to express their ideas at different levels.

3.16.8 Policies on social opportunities

Colvin *et al.* (2021) asserts that workers become part of a community or social team. Most employees hope their efforts will be recognised, rewarded, and appreciated. In addition to the standard financial incentives of career possibilities and compensation, organisations also need to consider social and lifestyle factors outside of the workplace. Similarly, Javed (2024) concluded that conflicting views among employees over behavioural assertions can be resolved by "social chances supplied at the greatest level with working time enables the employee to realize their goals of the organisation."

Conversely, a social opportunity is utilised to increase an employee's motivation, which ultimately helps accomplish the organisation's goals and objectives.

3.16.9 Policies on effective equipment maintenance

Effective equipment maintenance procedures are essential for maintaining construction equipment in top functioning condition, including downtime reduction and productivity increase among workers (Manikandan *et al.,* 2018). These policies encompass regular inspection, maintenance schedules, and proactive measures to promptly identify and address potential issues. Therefore, regular equipment inspection is a cornerstone of any effective maintenance strategy. Regular inspections and evaluations enable early identification of wear and tear, broken parts, or possible issues (Nurprihatin *et al.,* 2019). Regular inspection of construction equipment allows for planned repairs and replacements, preventing severe failures (Relkar, 2021). This proactive approach helps avoid unplanned failures that can disrupt workflow and reduce production. By maintaining equipment in good condition, organisations can enhance a safer working environment for construction workers.

3.17 Governmental motivational Policies Regarding Construction Workers' Productivity

3.17.1 Labour laws and regulations

Labour laws and regulations play a vital role in moulding the work environment for construction workers, directly impacting their motivation and productivity (Johari & Jha, 2020; Vanesa *et al.,* 2019). These includes safe conditions, fair compensation and guaranteeing acceptable working hours, these laws create fundamental worker rights and protections thus motivating workers and promoting job security (Chien *et al.,* 2020). Labour laws also promote a positive organisational culture which requires management to treat workers with respect, decency, encouraging training and skill development opportunities (Othman & Elwazer, 2023; Dachner *et al.,* 2021; Girdwichai & Sriviboon, 2020). Whenever workers feel that their rights are protected and they have opportunities for growth, they are more likely to be dedicated, motivated and productive. Finally, adherence to labour laws contributes to a more motivated and productive workforce which will minimise conflicts, disruptions, and enabling steady project progress, quality standards and overall worker satisfaction.

3.17.2 Anti-discrimination and equal opportunity policies

Anti-discrimination and equal opportunity policies significantly impact the motivation and productivity of construction workers (Akhmad & Santoso, 2023; Gropas, 2021; Greer & Carden, 2021). These polices/laws aim to eliminate biases and unfair treatments based on factors like race, gender, and age, promoting a diverse and inclusive workplace. By

fostering a sense of psychological safety and belonging, these policies encourage collaboration, idea-sharing and creative problem-solving, and ultimately improving project outcomes. In construction environments where discrimination is addressed and opportunities are equitable, workers are more likely to contribute their best efforts and skills (Williams *et al.,* 2020; Woods & Tharakan, 2021).

However, continued monitoring and effective implementation of anti-discrimination and equal opportunity policies are crucial to positively impacting construction workers' motivation. Simply having policies in place is not enough; consistent enforcement and clear communication are necessary to demonstrate a genuine commitment to fairness. Organizations can enhance workers' buy-in by offering training initiatives that raise awareness about bias, discrimination, and their effects. Furthermore, transparency in hiring, promotion, and resource allocation processes helps maintain workers' trust and confidence (Lee et al., 2019). By creating an environment that values individual contributions and supports diversity, these policies can boost motivation and productivity in the construction industry.

Furthermore, these Laws boost the overall reputation of the construction sector which will attract a broader talented skilled worker. When potential workers perceive a commitment to fairness and inclusivity, they are likely to work for a firm that values diversity. This influx of skilled and motivated workers can lead to a more innovative and dynamic workforce by driving productivity improvements through new perspectives and expertise (Canning et al., 2020). In essence, equal opportunity and anti-discrimination policies are support with ethical considerations which will catalyse improved construction project outcomes and worker motivation.

3.17.3 Implementation of wage standards policies

Construction firm significantly influences employee motivation and productivity. These includes fair and competitive pay which can improve workers' quality of life, leading to increased job satisfaction, reduced turnover rates, and greater project commitment (Ali & Anwar, 2021; Adil *et al.,* 2022; Irabor & Okolie, 2019). Employee motivation can also be improved and sustained by establishing wage standards consistent with ethical employment standards and worker welfare. When workers feel wages are fair for their jobs, they are more likely to engage actively, perform better, and demonstrate a stronger commitment to completing tasks effectively.

Wage standards also play a crucial role in building a more skilled and motivated workforce. By offering adequate wages, the industry can attract, retain and skilled workers while ensuring that projects are staffed with the necessary expertise to drive success. When workers feel that their skills and efforts are valued through appropriate

compensation, they are more likely to invest in improving their skills and staying updated with industry trends. This continuous skill development enhances workers' productivity and promotes higher-quality work and efficient project delivery (Alawag *et al.,* 2023; Kitthiwichayakul *et al.,* 2023). Additionally, fair wages can reduce turnover rates, including the associated costs of hiring and training new workers. Implementing wage standards ultimately enhances workers' financial stability, which positively impacts workers motivation, job satisfaction, and overall productivity during the project lifecycle.

3.18 Enhancing the Sustainable Productivity of Workers

The enhancement of sustainable productivity amongst workers is very complex but crucial to construction industry during project delivery (Van Tam *et al.,* 2018). Sustainable productivity involves consistently achieving high productivity levels while minimizing environmental and social impacts (Ugulu *et al.,* 2019).

Hwang *et al.* (2017) and Kazaz and Acikara (2015) examined factors that influence labor productivity in construction. These includes skills, experience, communication, decision making and site safety measure are critically important. For example, regarding the perspective of contractors, a study by Lim & Alum (1995) established the main factors affecting the construction workers productivity in Singapore as:

- Difficulties in recruiting workers
- Difficulties in recruiting supervisors
- Absenteeism from work
- High turnover rate
- Communication problems with foreign workers.

Another researcher, Mahamid (2022), found factors that have significant impacts on labour productivity in the construction industry in Palestine, such as:

- Rework
- Lack of communication
- Financial status of the owner
- Work experience
- Shortage of materials

From the perspective of project managers, the results of a study conducted in Qatar by Jarkas *et al.* (2015) showed that the top five factors affecting labour productivity in construction are:

- Lack of financial incentive schemes
- Slow decision-making process through owners
- Compensation scale
- Delay in responding to requests for information.
- Lack of skilled workforce

Ghoddousi *et al.* (2015) cited factors that have the greatest impact on productivity in Iranian construction projects, such as:

- Level of compensation
- Job satisfaction
- Timeliness of compensation
- Ethical behaviour of the manager
- Opportunities for promotion

As a result, many factors influencing construction workers' productivity have been recognised and categorised in many research projects conducted in different countries. However, the frequency and significance of these factors differ according to the situation in each project, country, and even within a single project. These factors must be divided into broad global groups to fully incorporate and relate to the numerous pertinent aspects.

3.19 Chapter Summary:

The scope of the present research lies in developing an all-rounded motivational framework to ensure enhanced sustainable productivity amongst workers within the SACI. These dimensions are incentives, empowerment, psychological factors, organizational motivation, and governmental motivation policies. Each one touches on specific critical challenges to productivity within the industry with corresponding appropriate strategies that will guarantee improved worker satisfaction and overall productivity. Incentives are measured as crucial motivators: money-oriented incentives include salary hikes, timely promotions, bonuses, provident funds, and leave allowances. In places where the power of empowerment lies, the opportunities for skills development, professional growth, and career advancement will enable the workers to decide about their work and help them achieve a sense of fulfilment through training and mentoring. The other assessed psychological factors include workplace stress, job security, and morale, which are needed to understand and drive their output by putting forward wellness programmes with supportive workplace practices. Organisational motivation, by looking at leadership and communication and the implementation of safety measures, fosters a helpful work culture, while governmental motivation looks at policy intervention and incentive schemes for welfare of workers. Combining these dimensions yields actionable insights that provide recommendations for improving worker motivation to enhance productivity, economic growth, and sustainability in the SACI. Table 3.1 summarises the literature review on workers' motivation and productivity in the construction industry.

Table 3.1: Motivational factors affecting construction workers' productivity during project delivery

No	Motivational factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
1	Incentive/reward	x	x		X	x	x	x	x	x	x	x	x	x	x		x		X	x	x	x	x	x		x		x	x	x	x	x	26
2	Good relationship	x		x	X	x	x	x	x	x			x	x	x	x	x	x	X	x		x			x		x	x				x	22
3	Promotion opportunities	x	x	x	X	x	x	x	x	x			x	x	x		x		X		x	x			x	x	x	x		x		x	22
4	Job security	x	x	x	X	x	x	x	x	x			x	x	x				X		x	x					x	x	x	x	x		20
5	Good supervision	x			X	x	x	x	x		x	x		x					X	x		x	x		x			x	x		x		16
6	Amount of salary	x			X	x	x	x	x	x	x	x	x		x	x				x								x	x				15
7	Good work environment		x		x		x	x	x	x	x			x	x		x		X	x					x			x			x		15
8	Recognition programs		x	x		x	x		x					x					X	x	x	x			x	x		x				x	14
9	Participation in decision making	x		x	X		x	x	x	x			x		x		x											x	x	x			13
10	On-time payments			x				x	x	x			x		x				X			x	x	x				x				x	12
11	Work satisfaction					x		x		x		x	x		x		x		X							x		x			x		11
12	Giving responsibility							x	x	x		x	x	x	x	x											x	x					10
13	Challenging work opportunities	x	x		X	x		x	x					x							x							x				x	10
14	Opportunities to develop skills and abilities	x		x	X	x		x		x			x				x					x			x			x	x		x		13

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#	Factor	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	25	26	27	28	29	30	31	Total
15	Work appreciation and feedback	x	x	x		x	x	x						x										x		x	x					9
16	Working overtime					x	x		x		x		x					x	x							x					x	9
17	Freedom in work	x		x	X	x					x	x							x												x	8

1= (Jesumoroti and Draai, 2021); 2= (Yu and Santos, 2025); 3= (Soliman et al., 2023); 4= (Salisu et al., 2023); 5= (Meades, 2020); 6= (Shin et al., 2015) 7=(Al-Abbadi & AgyekumMensah, 2019); 8=(Ghoddousi *et al.*, 2015); 9=(Momade & Hainin, 2019); 10=(Gunduz & Abdi, 2020); 11= (Solima and Altabtai, 2023); 12= (Abdu et al., 2023); 13= (Aung et al., 2023); 14= (Adil Albalush and Devesh, 2023); 15= (Khan et al., 2022); 16= (Wang et al., 2020); 17= (Nguyen et al., 2020); 18= (Halmetoja et al., 2024); 19= (Kgekoane, 2019); 20= Cassar & Meier, 2018); 21= (Didit & Nikmah, 2020); 22= (Cui, 2021); 23= (Wang et al., 2020); 25= (Rudolph et al., 2018); 26= (Nemteanu et al., 2021); 27= (Sorensen et al., 2021); 28= (Tamers et al., 2020); 29= (Basalamah & As'ad, 2021); 30= (Sudiardhita et al., 2018); 31= (Ghoddousi et al., 2015)

CHAPTER 4

RESEARCH METHODOLOGY

4.1 Introduction

This chapter includes the motivating model of the study as well as the research methods employed to accomplish the goals and objectives. This methodology involves the application of both the quantitative and qualitative methods and the mixing method as a sequential approach. These approaches facilitate the best way to assess and investigate the challenges facing workers' motivation as factors required to improve productivity.

4.2 Research Methodology Values

A common definition of research is an exploration of knowledge. Another definition of research is the systematic search of pertinent data on a topic of interest (Jayaratne, 2024). The acts of curiosity, information gathering, fact-finding, and scientific investigation require an understanding of unknown facts (Creswell & Poth, 2017). Furthermore, research is also purely an academic issue, and a scientific exercise requires collecting and evaluating data, formulating hypotheses or proposing solutions, and reaching conclusions (Kothari, 2004). From the above descriptions, one can categorically describe research as collecting information to find answers to unanswered questions or create a radical idea (Goddard & Melville, 2004).

4.3 Research Approach

This approach aims at giving the reader a sense of facts. It forms a very important part of scientific research, whatever the field of study. It also, describes the most suitable manner of constructing a research study and mainly focuses on data collection, results obtained, scientific methods applied, data analysis, and final reports (Mulisa, 2022). Integrating four research strategies into a single research project is done while researching to discover a new phenomenon. The four research strategies are qualitative research, quantitative research, mixed method research and participatory action research. (Amaratunga *et al.,* 2002; Creswell, 2013).

4.3.1 Quantitative research

Quantitative research in social and natural sciences is an empirical study that systematically considers observable phenomena using computational, mathematical, statistical, and other methods (Creswell & Poth, 2017). The data analysis in a quantitative research approach is in numerical forms such as percentages, statistics, and graphs. In addition, quantitative research involves the use of statistical and numerical methods, which by their nature are for numerical measurements of some

views of a phenomenon (Creswell 2013). The features of quantitative methods that aim to produce generalisable results are careful sampling strategies and the design of experiments (Thomas, 2003). In testing these theories of the objectives, the techniques used will include quantitative research techniques that analyse the relationship between the variables. The variables shall be measured using the quantitative questionnaire, which will be required to facilitate the application of data analysis techniques involving statistical procedures. (Jamieson *et al.,* 2023). The report on quantitative research has a sequence of constructs comprising an introduction, theory, literature review, method, result, discussion, and conclusion (Creswell, 2013).

4.3.2 Qualitative research

Qualitative research focuses on multiple methods by combining realistic and interpretive methods to address the topic. This research method means that researchers study phenomena in the natural environment. The qualitative research approach carefully collects various empirical materials such as case studies, personal experiences, interviews, and observations (Mumba & Alici, 2021; Tungka, 2020). Qualitative data is a detailed description of direct records of situations, events, observed behaviours, people, interactions, and people's experiences and beliefs (Creswell 2013). Creswell (2013) further stated that qualitative research is a method for investigating the implications of different groups and individuals due to human and social problems. This process involves putting together procedures and questions. Interviews are used to gather data, and inductive analysis is used to move from specific to general topics. For accurate comprehension, researchers use content analysis to determine the relevance of the data they have gathered.

Table 4.1: The aims of using quantitative and qualitative research.

S/N	Main Aims	Quantitative Approach	Qualitative Approach
1	Type of data	Data are illustrated in a numerical form	Data are illustrated in an explanation form
2	Analysis	Mostly as inferential and descriptive statistics	It is used for the Identification of major theme
3	Scope of inquiry	Mostly used for specific questions or hypotheses	Broad, thematic concerns
4	Primary merit	Large sample, statistical validity, accurately reflect the population	Rich, in-depth, narrative description of a sample
5	Primary Demerit	A superficial understanding of participants' thoughts and feelings	Small sample, not generalizable to the population at large

Source: Author

The crucial significance of qualitative research is that it offers an in-depth understanding of the studied population. Qualitative research methods consist of interviews and focus groups that prompt the respondents to provide specific answers and information (Mumba & Alici, 2021). Table 4.1 Presents various definitions of qualitative and quantitative research to assist researchers in selecting the most appropriate method for a given study. The conventional research method is diagrammatically represented in Figure 4.1.
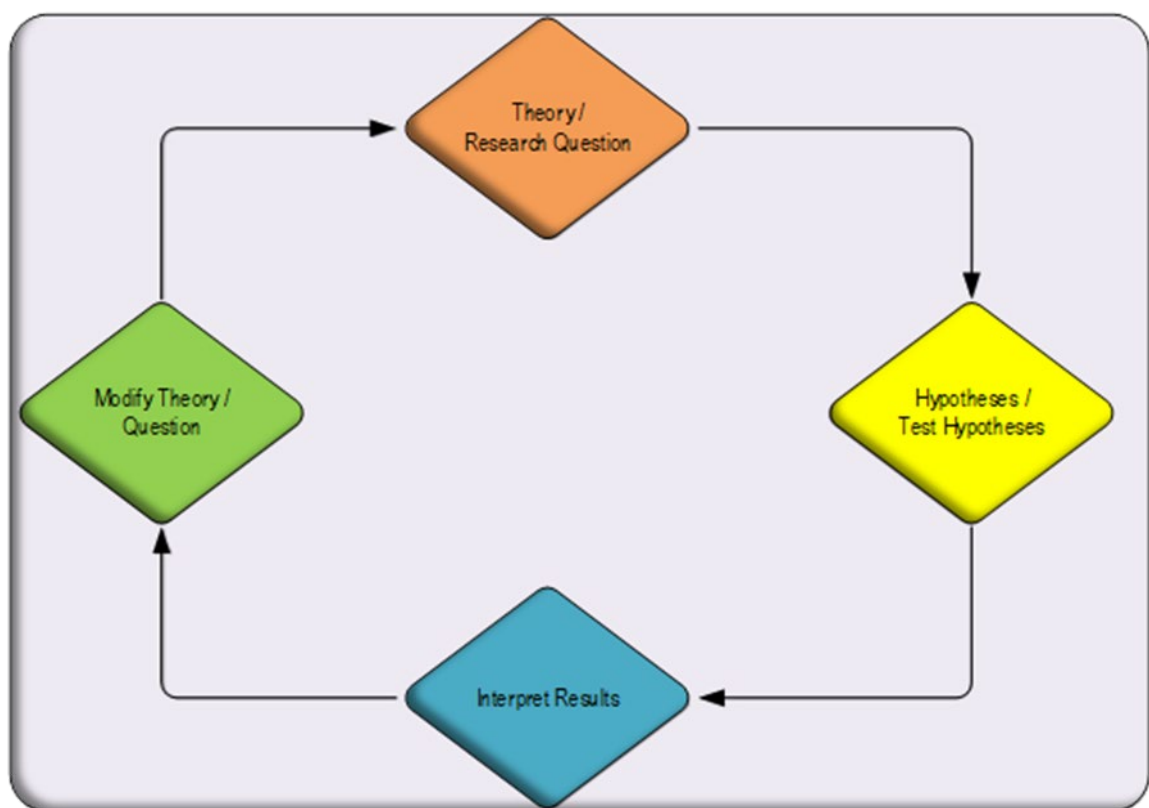
Figure 4.1: Standard research method

Source: Author' construct

4.4 Philosophical Standpoint of the Study

The study considered a pragmatic paradigm as it supports methodological pluralism mixed research design philosophy. Creswell (2013) identifies four philosophies of mixed-method design for gathering a broad range of data: transformative worldviews, critical realism, pragmatism, and dialectical pluralism.

Also, Creswell (2013) further posed the following questions regarding the concept of designing mixed research:

- How do you find the theory?
- How is this theory used in mixed-approach research?

4.4.1 Pragmatism

Bhatia (2020) stated that the pragmatic approach creates a new way of thinking about applying classical approaches to methodological problems within the study. Although, according to Morgan, (2022) claimed that pragmatism is a deconstructive pattern that advocates using mixed research techniques and raises controversial problems of reality and truth. Pragmatism emphasizes problem-solving approach that support the use of different method to address the research objectives.

4.4.2 Transformative worldview

Learning to negotiate and act upon goals, values, mental states, and meanings instead of ones that have been blindly borrowed from others (Hyde, 2021). Moreover, a transformative worldview is identified as a structure of assumptions and expectations that influence thoughts, beliefs, and behaviours. Essentially, transformation can simply be described as a revision of the baseline relating to reflection of experience. It can be addressed by the theoretical perspective of transformation. Stetsenko (2008) suggested that the attitudes of transformative activist's advocate for people to know themselves and change the world together in the light of their goals. This aligns with the study's focus on motivating workers and empowering stakeholders through promoting policy that will change the SACI.

4.4.3 Critical realism

Critical realism shows why ontology is necessary. This approach argues that reality exists outside of how humans think and talk about it. The ontological view explains that things exist on their own, separate from how we experience them or what we know about them (Fujimura, 2024). Critical realism supports ontology by examining different layers of reality, recognising the world's stratified nature and how it changes. Specifically, critical realism emphasises that we must first study the nature of things themselves through a new ontological approach. The mixed method approach also embraces innovation and establishing good research in the study which can be executed using quantitative and qualitative methods. Hence, acknowledges the existence of an objective reality influenced by social structures, especially in relation to worker

productivity and organisational practices (Bhaskar, 2014; Mingers, Mutch & Willcocks, 2013).

4.4.4 Dialectical pluralism

Goertzen (2010) states that dialectical pluralism describes the theoretical conceptualisation of plurality in psychology. This method is a successful basis for scientific advancement in a study. The three major theoretical propositions in dialectical pluralism are listed as follows:

- That tension between the competitive theories should be sustained to yield evaluative and integrative solutions.

- That debate of substance in psychology is expressed as a continuum, and

- In periods of oscillating convergence and divergence pluralism, one finally comes across a productive model in any scientific research.

According to this third theory, inter-contextualism is examined as the intellectual underpinning of dialectical pluralism. To reconcile psychology's historical division, Walsh-Bowers (2010) relies on dialectical pluralist impulses, unification, and social contextual analysis. By emphasising a cogent argument, unifiers and dialectic pluralists appear to use the justification context. However, the sceptic in the unification argument focuses on the irrational aspects that make up the social-historical background for an epistemic stance on alliance and plurality. Smythe and McKenzie (2010) promote an integrated approach to disciplinary pluralism based on dialogical and reciprocal engagement among psychologically diverse traditions, arguing that human cognition is dialectically pluralistic both ontologically and epistemologically. Therefore, integrating of multiple realities and participant beliefs, deepening the mixed-method framework more suitable.

4.4.5 Epistemological

This refers to studying the origin, nature, and scope of knowledge within research, which involves examining how knowledge is developed. In order words, what qualifies as valid knowledge, and what is the relationship between the researcher and what is being studied? Similarly, the research focuses on identifying the primary assumptions, principles, and beliefs that guide the process of investigation, which involves how truth and evidence are defined and interpreted within a particular field of study. Therefore, epistemology research critically investigates how we know what we know, and interpretation influences the design of research findings (Dehalwar & Sharma, 2023). The research adopts a constructivist-interpretivist epistemology in the qualitative phase

and a positivist method in the quantitative approach which of consistent a mixed-method focus.

4.5   Mixed Method Research

Mixed method research is a combination of both qualitative and quantitative methods known as actual triangulation. Therefore, triangulation combines methods in the study of a phenomenon. In this case, an example of this method is capturing and combining data on the same phenomenon in a comprehensive report. Triangulation in the study reveals the inherent variation the individual methods would have ignored. As part of the integrated method, qualitative methods reveal hidden facts through interviews (Hirose and Creswell, 2023; Hussein, 2009). Mixed approach research incorporates quantitative and qualitative expressions with technical data to achieve quality and applicable findings in a particular study (Hirose and Creswell, 2023). Mixed method research can simply be described as a methodology for conducting a study that relates to analysing, collecting, and integrating quantitative data such as surveys and experiments, whereas qualitative approaches include interviews and focus groups. This method is identified as a new research method of increasing interdisciplinary acceptance. Hence, a sequential design was chosen to first establish empirical relationships quantitatively and then examine these designs qualitatively for better interpretation. This phased approach confirmed that quantitative results were not only statistically valid but also practically significant.
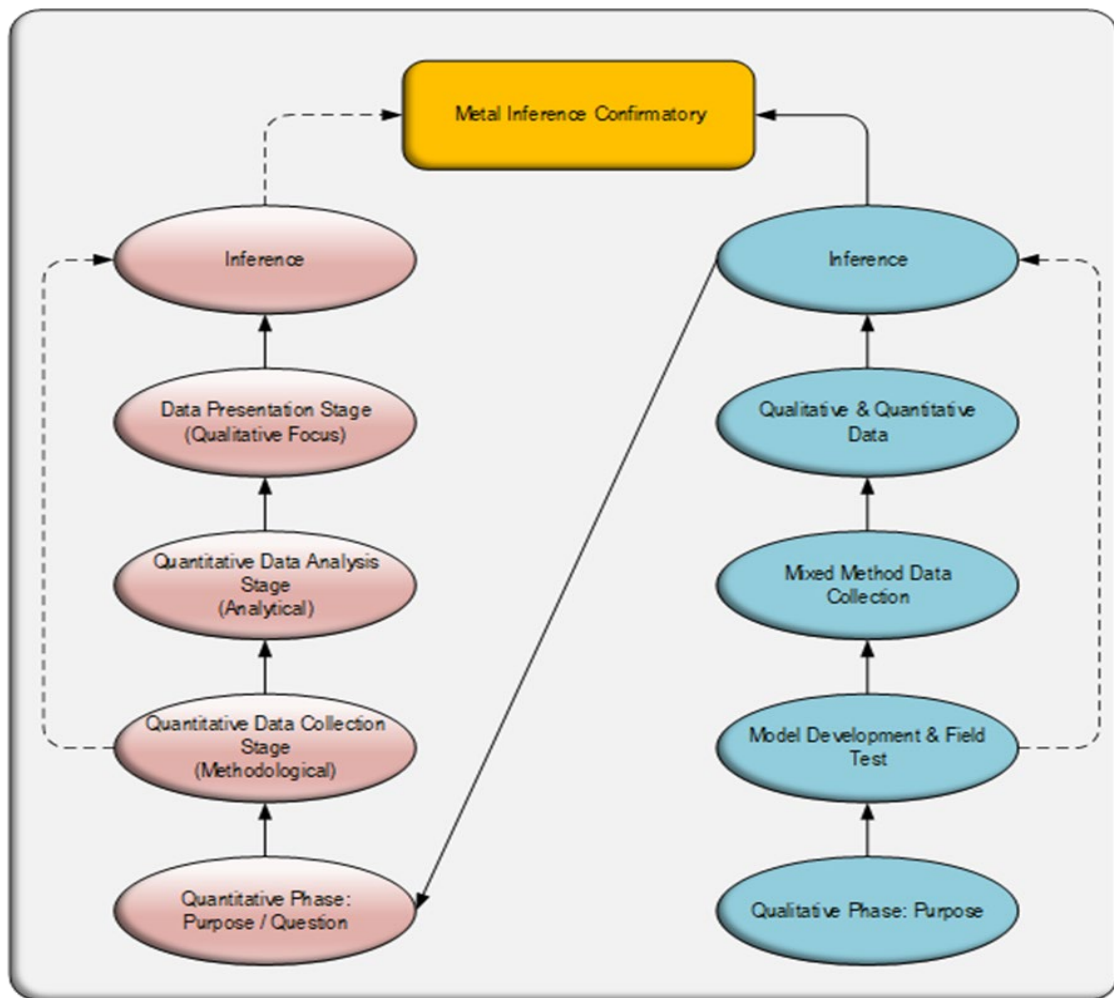
Figure 4.2: Mixed method design approach designed for this research.

Source: Author's construct

Creswell *et al*. (2017) showed that researchers have consistently depended on quantitative research to answer many research questions over some time. Stentz et al. (2012) leadership studies emphasised the long history of quantitative approaches as the prevalent approach among leadership researchers. However, qualitative research has gratified interviews directly with the participants. Nonetheless, the combination of these methods has been proven effective and result-oriented over the years despite the study area (Hussein, 2009; Hirose and Creswell, 2023). Finally, researchers from various fields are incorporating mixed-method design into their studies to develop the theory further. For instance, Creswell (2013) indicated that during the past ten years, mixed methods have become a research methodology that has gained high popularity in several disciplines and parts of the world. In addition, Cameron and Molina Azorin (2011) have proved that mixed-methods research has emerged as a valid methodological

option, which researchers currently employ in several fields. The third theory discusses intercontextualism.

There does not seem to be a consensus on what constitutes a standard for describing mixed methods. The following is one of many definitions of mixed methods research (Creswell & Poth, 2017). In that respect, the researcher referred to mixed methods research as the research strategy that combines quantitative and qualitative data in one study or more studies in a philosophical assumption that inspires and informs data collection and its analysis. As argued, combining quantitative and qualitative approaches brings a more complete understanding of an issue under study than relying on one approach alone (Cameron & Molina Azorin, 2011; Creswell & Poth, 2017). Creswell (2013) confirmed that the mixed method is characterised by five research approaches highlighted as follows:

In mixed methods research, questions and hypotheses are addressed, quantitative and qualitative data are gathered, and the data is analysed collectively.

- Rigorous processes are frequently used when conducting qualitative and quantitative research using mixed techniques.
- To find novel phenomena, mixed approaches combined quantitative and qualitative findings.
- A process for gathering, analysing, and integrating data was created using a combination of approaches.
- The process of data collection, analysis, and integration in mixed methods is based on theory.

4.5.1 Non-probability sampling approach

Non-probability sampling is part of the population sampling technique considered in this study due to the large number of construction companies in South Africa. Because of the numbers, taking the entire population of the construction sector into account is unrealistic. To obtain reliable information on the factors causing the lack of appropriate motivation that results in low productivity efficiency, a sample of the population is selected from the number of professionals who participated in this study. According to Marshall (1996), quantitative research reinforces a broader population of the study, whereas non-probability sampling enables the selection of a group from the larger population taken into consideration by the researcher. Therefore, non-probability, purposive sampling method was used in both phases. Respondents were selected based on their professionalism and importance to the study setting.

4.5.2 Purposive Sampling Techniques

Purposive sampling methods were employed in this study to determine the variables for the population chosen to get high-quality data. All the South African provinces were included in the study's sample. Thus, in this study, 317 respondents were approached in these provinces for the questionnaire survey. In South Africa, worker productivity is one of the common issues facing the construction industry. Moreso, purposive sampling strategy is an attempt to analyse a population containing hidden facts from which a sample frame is not easily accessible, according to Snijders (1992), as cited in Faugier and Sargeant (1997). A novel approach to overcoming a population with hidden skills was developing the chain sampling method, a methodology for gathering high-quality data. Since more informal methods are developed to make conclusions about a group of people, it is an informal method of reaching a population. In addition, purposive sampling has some useful advantages, according to Hendricks and Blanken (1992), cited in Faugier and Sargeant (1997), where the study is expected to be mainly exploratory, descriptive, and qualitative, particularly in collecting data about hard-to-observe phenomena in areas with sensitive issues. Hence, purposive sampling was employed in the qualitative phase to identify key respondents. Further helped in ensuring the inclusion of rich and experience-based insights.

4.6 Primary Data Collection Approach

4.6.1 Quantitative data collection phase

The fundamental process of data collection is driven by gathering data for a purpose. Data collection can be qualitative or quantitative (Hox & Boeije, 2005). Quality data collection is the target of any primary data collection undertaken in a study. This study will use quantitative and qualitative methods to extract data from working professionals. Primary data collection was performed to gain valuable insight into the problem identified in the study.

4.6.1.1 Sources of the quantitative data

An online survey given to a predetermined sample of registered was administered by email to randomly chosen professionals in SACI. Therefore, the sampling frame for this study is focused on construction professions for only architects and contractors in two different categories, civil building (CB) and general building (GB), who are registered from Grades 1-9 in CIBD. The reason for using architects is that they are considered as the principal agents on-site. Also, they are the first point of call whenever construction is to start. Other construction professionals working for GB and CB include construction managers, quantity surveyors, and project managers.

4.6.1.2 Development of the research questionnaire

A questionnaire survey is one kind of research instrument suitable for gathering information from respondents. It comprises a series of questions that may be open-ended, closed-ended, or a mix of the two. A questionnaire survey can be considered a written interview and can be conducted in person or over the phone (McLeod 2007). However, McLeod (2007) notes that most questionnaire surveys are sent to respondents by mail or disseminated online using LimeSurvey and WhatsApp. The questionnaire survey is a very efficient and moderately costly means of collecting data from a sufficient sample size.

The questionnaire survey's design, including its content, structure, and response format, was emphasised to ensure its correctness and success. When designing the survey, the following factors were considered. The flow, length, and structure of the questionnaire should facilitate its completion by respondents; questions should be easily administered during an interview process; the responses recorded should be easy to edit, code, and transfer onto a computer file for statistical analysis; and the questions themselves should be clear and easy for respondents to understand.

Much work has been done to meet these requirements for this research project. The questionnaire survey for this study's initial phase was developed using the literature review in Chapter 2 as a guide. It consists of six sections: the first section represents general information needed from a respondent. The remaining five sections addressed specific content-related questions according to each research question, with a five-scale Likert scale to elicit responses ranging from 1 = Not important at all, 2 = Not important, 3 = Slightly important, 4 = Important, and 5 = Very important. This will provide the opportunity for quantitative responses, which will enable this study to rank and assess the stated motivational factors in terms of their prominence, as listed below:

- To identify the motivational incentives that influence workers' productivity in the South African construction industry.
- To identify the motivational empowerment that influences workers' productivity in the South African construction industry.
- To ascertain the psychological factors that influence construction workers' productivity in South Africa.
- To ascertain the organisational motivational policies that influence construction workers' productivity in South Africa.
- To ascertain the governmental motivational policies that influence construction workers' productivity in South Africa.

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4.6.1.3 Construct used in the design of the questionnaire.

The data and factors identified in the literature study served as the basis for the questionnaire's design. All the factors that comprise the conceptual framework described in Chapter 3 have been included in the construct.

4.6.1.4 Unit of analysis

Pesämaa *et al.* (2021) asserts that the most crucial idea in the context of a research project is the unit of analysis. Pesämaa *et al*. (2021) specifically suggests that the unit of analysis is related to the main entity under investigation in each study. These consist of, for instance, the study's geographic unit (town, census tract, and state), social interactions (dyadic relations and arrest), individuals, groups, and artefacts (books, photographs, newspapers, or any combination of these). Easterby Smith *et al.* (2021) defined the unit of analysis as the thing that forms the basis of a study sample and is the primary focus area of data collection for a research project. Therefore, construction companies registered with the CIDB as GB and CE contractors, grades 1 through 9, in all nine provinces of South Africa, serve as the unit of analysis for this study.

4.6.1.5 Piloting the questionnaire

The researcher must pilot the questionnaire with prospective participants in the target group after developing it using question formulation principles (Azhari *et al.,* 2023). This will guarantee that the gathered data is understandable, resulting in effective data analysis. Therefore, the questionnaire underwent two pilot testing. First, an internal pilot wherein the researcher subjected the questionnaire to the supervisors for their observations and amendments, which the researcher subsequently attended to; a second pilot test among a randomly selected sample of the potential study participants in the target population of the research was conducted to establish the feasibility and clarity of the questionnaire survey. Piloting a questionnaire enables a researcher to assess the validity and reliability of the data that will be gathered, which are markers of the survey's methodological rigour (Saunders & Darabi, 2024). For the study, comments and constructive feedback concerning the draft questionnaire were requested by distributing the questionnaire to 25 SACI professionals to examine the questions' depth. Subsequently, 17 questionnaires were retrieved, indicating a 72% response rate, with an average of 30 minutes used to complete the questionnaire by the participants. The opinions of these professionals were integrated into the questionnaires. Afterwards, the questionnaire was presented to the researcher's supervisor for corrections based on the research supervisors commented. These questionnaires were not included in the data

analysis, because the pilot questionnaire was only used to understand if the respondent understood the questions administered to them.

4.6.1.6 Population for the study

To consider the appropriate collection of data constructs of the population for the study. The ability of the respondents to read, write, interpret and understand information through interviews and questionnaires has been measured. This is primarily to establish the most suitable sample among the workers' population. For the research, construction workers who can adequately understand the questionnaire and are willing to respond to the same are considered. According to the study by Kindig and Stoddart (2003), the population has different meanings to various researchers, that is, slightly different meanings than the general definition. In general, it is said that population can be defined in terms of people or living things, although it can also be described in terms of objects or things. Hinde (2014) states that the structure of the population and its heterogeneity is one of the essential aspects of the population, and from the demographic perspective, one can come to the point that people are different in age and gender, thus showing clearly the diverse classification of the people. Of course, there are lots of other manners that vary people. Such variation includes but is not limited to education, physical environment, occupation, marital status, and income. The population considered for this study constitutes construction professionals and workers on the site. Since the study focuses on the sustainable productivity of the workers, the required population was determined to assist in realising the aim and objectives of the study by involving the professionals in the SACI during the project delivery.

4.6.1.7 Sampling for the main study

The questionnaire for the primary research was then extensively shared following this piloting. Several well-known researchers (Babbie,2015; Collins, 2024) contend that sampling is crucial in helping researchers determine how many participants to select from and what methods to use for their selection (sampling method) while staying within budgetary and temporal constraints. Similarly, sampling provides an achievable way of ensuring that the sample appropriately reflects the study population while streamlining the collection and processing of data in a study (Fellows & Liu, 2021). Therefore, the sampling frame for this study is focused on construction professions for only architects and contractors in two different categories, civil building (CB) and general building (GB), who are registered from Grades 1-9 in CIBD. The reason for using architects is that they are considered the principal agents on-site. They are the first point of call whenever construction starts. Other professionals who are working for GB and CB, such as

construction managers, quantity surveyors, and project managers, as stated in section 4.5.1.1. The sampling population for architects and general building contractors in all nine South African provinces to choose an accurate population for the study is shown in Table 4.1 and Table 4.2. List of South African Council for the Architectural Profession by Province for 2022-2023.

Table 4.2: List of South African Council for the Architectural Profession by Province for 2022-2023

Province	Registered Architects in all categories	Professional Architect
Eastern Cape	746	255
Free State	226	102
Gauteng	4513	1953
KwaZulu Natal	1491	502
Limpopo	259	45
Mpumalanga	280	73
Northern Cape	88	26
Northwest	213	49
Western Cape	3082	1214
TOTAL	10898	4219

Source: SACAP 2022/2023 Annual Report (2023:57)

Table 4.3: Records for the Population of general building and Civil contractors on the CIBD register.

Province	CIBD Grade							
	3	4	5	6	7	8	9	Total
Eastern Cape	139	99	65	29	25	10	3	379
Free State	97	77	40	32	26	6	5	283
Gauteng	1109	855	659	149	165	33	20	2990
KwaZulu Natal	527	356	157	76	30	7	3	1156
Limpopo	82	45	33	24	22	4	2	216
Mpumalanga	98	67	53	48	26	6	1	299
Northern Cape	73	51	25	30	15	3	2	193
Northwest	99	62	46	28	16	6	4	266
Western Cape	1181	678	469	168	84	20	18	2618
TOTAL	3307	2290	1547	584	409	86	58	8400

Source: CIBD official website (2023)

In Table 4.2 and Table 4.3, since data from all the targeted groups might not be available, sampling is necessary to ensure that the questionnaire survey is representative of the population and has a generalisable sample. The formula by Czaja and Blair (2005), which was also used in (Ankrah, 2007, Panda & Mohapatra 2024), and Akadiri (2011) was applied to obtain a representative sample.

$$ss = z^2 \; x \frac{p(1-p)}{c^2}$$

Where ss = sample size z = standardised variable p = percentage picking a choice, expressed as a decimal c = confidence interval, expressed as a decimal

To arrive at the calculation of sample size with stated precision, the worst case of 50% selecting choice (p) for the worst case, as put forward by Czaja and Blair and utilised by Ankrah (2007) and Akadiri (2011), was used. A 95% confidence level, α=0.05, c ± 10%, z =1.96 were used for the computation below:

The sample size was computed as follows: $\; ssss = \dfrac{11.9999^2 \times 00.55(11-00.55)}{00.11^2} = 9999.0000$

A total of 96 professionals are required for the questionnaire survey. This required generating a new sample size from the research population based on the method proposed by Czaja and Blair (2005).

$$\text{New } ss = \frac{ss}{1 + \dfrac{ss - 1}{pop}}$$

Where:

pop = population

$$\text{New } ss = \frac{96.04}{1 + \dfrac{96.04 - 1}{12619}}$$

New ss / = 95.3222 approximately 95

From the calculations, the sample size estimated for this study from the research population was 95 (Akadiri, 2011; Ankrah, 2007; Oyewobi, 2014). All noted that the response rate from construction professionals was poor, especially in research questionnaire surveys. Therefore, Idrus and Newman (2002) and Takim *et al*. (2004) regarded a response rate of between 20% and 30% as acceptable for studies within the construction industry. To allow for non-responses, a conservative approach was taken by assuming the upper boundary of 30%. The sample survey was then calculated as follows:

$$survey\ ss\ \frac{new\ ss}{response\ rate}$$

$$survey\ ss\ \frac{95}{0\ 3}\ =\ 3.17$$

From the recalculated sample size, a random sample of construction managers, project managers, architects, civil engineers, and quantity surveyors was selected from the South African Council for the Architectural Profession (SACAP) Register and the Construction Industry Development Board (CIDB) database. The sampling process resulted in 317 participants who could potentially complete the survey.

Table 4.4: Sample survey participants for Registered Contractors for 2022/2023

Province / CIDB Grade	Western Cape	Northern Cape	North West	Mpumalanga	Limpopo	Kwa Zulu Natal	Gauteng	Free State	Eastern Cape	Total
1GB	5	2	2	2	2	3	5	2	2	25
1CE	5	2	2	2	2	3	5	2	2	25
2GB	4	2	2	2	2	2	4	2	2	22
2CE	4	2	2	2	2	2	4	2	2	22
3GB	4	2	2	2	2	2	4	2	2	22
3CE	4	2	2	2	2	2	4	2	2	22
4GB	3	1	1	1	1	1	3	1	1	13
4CE	3	1	1	1	1	1	3	1	1	13
5GB	3	1	1	1	1	1	3	1	1	13

5CE	3	1	1	1	1	1	3	1	1	13
6GB	2	1	1	1	1	1	2	1	1	11
6CE	2	1	1	1	1	1	2	1	1	11
7GB	2	1	1	1	1	1	2	1	1	**11**
7CB	1	1	1	1	1	1	1	1	1	**9**
8GB	1	1	1	1	1	1	1	1	1	**9**
8CB	1	0	0	0	0	1	1	0	0	**3**
9GB	1	0	0	0	0	0	1	0	0	**2**
9CB	1	0	0	0	0	0	1	0	0	**2**
Total	49	21	21	21	21	24	49	21	21	248

Table 4.5: List of professional architects surveyed in the SACI.

Provinces	No
Eastern Cape	6
Free State	5
Gauteng	18
KwaZulu Natal	9
Limpopo	4
Mpumalanga	2
Northern Cape	2
Northwest	3
Western Cape	20
TOTAL	**69**

4.6.2   The Survey Administration and Data Collection

The quantitative questionnaire survey method was used in this study since the research involved a larger population of construction professionals in South Africa. The above description demonstrates the relevance of a questionnaire in data collection as it guides the researcher's understanding of both the main and sub-questions presented in the Chapter. Chapter 1. The duplicates of the quantitative questionnaire designed for effective management of motivation and improved productivity in project implementation were administered to the selected respondents to obtain applicable information. In addition, the quantitative questionnaire employed in this study was structured into a Likert scale question format of 1— 5 to enhance respondents' true representation of their perceptions through response assessment.

The questionnaire was administered using a sample drawn from the CIDB professional registry. This was obtained via a formal request procedure, supported by letterhead from the university, and sent to the CIDB together with a request for the CIDB registration of professionals employed in Grades 1–9 in the GB and CE grades. This made it possible for the researcher to distribute the survey by obtaining contact

information from the national CIDB database of professionals. Invitation letters were emailed on September 18, 2023. Twenty per cent of the target population confirmed their willingness to participate in the study within a week. The non-responsive ones received follow-up phone calls between September 23 and September 30, 2023. After the follow-ups, 83% of the sample agreed to participate. On October 6, 2023, the participants received the study questionnaire through the LimeSurvey link (refer to Appendix A), and an online tool called SurveyMonkey after providing their informed consent. The deadline to complete the survey was December 31, 2023. This strategy was used because of the wide geographic dispersion.

Blaxter *et al*. (2006) and Creswell (2009) recommend internet-mediated questionnaires for wide geographical areas based on the advantages involved, including cost-effectiveness and time efficiency. However, some issues arose, such as failure in email delivery and opt-out by the participants. Those who opted out said they were too busy to complete the questionnaire. This was indicated in the response emails and telephone calls made.

4.6.3 Qualitative data collection phase

Qualitative data are primarily collected using open-ended questionnaires, in-depth interviews, focus groups, direct observation, and diary extracts (Amaratunga et al., 2002; Easterby-Smith *et al.,* 2021). Several researchers have identified various advantages and disadvantages associated with qualitative research methods. One of the strengths is that the approach can allow an in-depth investigation and thus provide rich and comprehensive information about the subject matter, even when the number of respondents is few (Easterby-Smith *et al.,* 2021).

This study used open-ended questions and individual interviews to gather appropriate qualitative data to supplement the quantitative results in developing a viable, sustainable motivational worker productivity model. It also intends to find answers to the following important research questions through interview questionnaires: What kind of motivated incentives affect the productivity of workers in the South African construction industry? To what extent does motivate empowerment influences worker's productivity in the South African construction industry? What psychological factors influence the construction workers' productivity in South Africa? What motivational policies influence the productivity of construction workers in South Africa? What are the governmental motivational policies that affect the productivity of the construction workers in South Africa? Other parameters are perhaps necessary for the development of an all-encompassing motivational model to attain sustainable worker productivity.

4.6.4   Qualitative data collection

Qualitative data collection is considered when designing a data collection process for a study, as well as robustness in data design, appropriate planning for data collection, and sampling of the population used. According to Strong *et al.* (1997), data quality problems can arise from a lack of appropriate conceptualisation in this study, which is a crucial data collection technique for uncovering hidden information that is considered relevant to this study. This information is derived from the qualitative interviews performed with the selected professionals with vast experience in the field of investigation. The qualitative aspect provides additional findings to reinforce the other findings acquired through quantitative analysis. The participation of the respondents was facilitated by a request regarding the need to procure their valuable opinions about the qualitative questions asked of them.

The investigative questions were grouped into five sections. Section (A) is general and demographic information of respondents (SACI); Section (B) is for objectives 1 to 5. To identify the motivational incentives that influence workers' productivity in the South African construction industry. To identify the motivational empowerment that influences workers' productivity in the South African construction industry. To ascertain the psychological factors that influence construction workers' productivity in South Africa. To identify organisational, motivational policies influencing the productivity of construction workers in South Africa. To identify the motivational policies of the government that influence construction workers' productivity in South Africa. A copy of the interview guide is attached as Appendix B.

4.6.5. Qualitative data analysis

Qualitative data, gathered via semi-structured interviews were content analyzed. According to Mouton (2001), content analysis can be applied to analyze the content of texts or documents like letters, speeches, and annual reports. According to Flick (2011), content analysis technique makes it possible for the researcher to filter out irrelevant word and terms via paraphrasing and giving summary of accounts. Qualitative data analysis entailed conceptualization and transcription from the interview, documentary reports, and all opinions of the open-ended questions that were found to be pertinent to the research in study. Therefore, qualitative data thematic analysis of the study was conducted following Flick (2011) with a six-step process. Interviewees comprised contractors and civil engineers alongside general contractors working on the construction projects. The researchers administered to the civil engineers and general contractors who are working in the construction sectors based

on worker motivation were in the best position to respond to the major factors affecting productivity. First, the data familiarization was obtained through transcription of the audio recordings of the interviews and repeated readings of the data. Secondly, initial coding was accomplished through identification of significant statements and allocation of significant properties to data. Thirdly, the similar codes for the potential themes were organized by classifying similar ideas. In step four, they went back to these themes and defined them in a way such that they were representing the data best as well as bringing out the significant patterns. Fifthly, the themes were labeled and defined by good descriptions and parameters. Finally, composing the report using a series of reflective quotes and placing the results in the context of the research objectives and literature was done. There were 8 participants, and the point of saturation was achieved at the 5th interview where there was no new information and themes that emerged. This provided adequacy and trustworthiness of the data that were being collected.

The details of the interviews are presented in Chapter Table 6, and they were thoroughly examined by employing content analysis to validate the findings acquired from the qualitative investigation.

4.7 Reliability and Validity Test

The reliability and validity tests of the data were performed to have a clear view of the internal consistency of the data for the purpose it was collected as well as to establish that methods, approaches, and techniques utilised in this study are related to, or measured, the research problems under investigation. This demonstrated the importance of having research that could yield similar results from another research approach but with different interpretations (Blaxter *et al.,* 2010).

4.7.1 Reliability measurement

The techniques used to ascertain if the tools used, and the information gathered during a study accurately and consistently measured the desired notion. A study can be considered credible if its methods are used and the same results achieved for specific periods can be repeated (Blaxter *et al.,* 2010). Pre-testing the questionnaire's dimensions and questions helped ensure reliability in this study. Most of these results are covered in Chapter 6. Cronbach's Alpha Coefficient was utilised in this study's validity and reliability tests to determine the degree of data dependability and suitability for the research's measuring instruments. According to Krawczyk *et al.* (2019), an accuracy-excluded research study suggests that the study has lost its usefulness and usability; as a result, every research method's validity and reliability are highly valued.

Hence, Cronbach's alpha was calculated for each construct to ensure internal consistency.

4.7.2 Validity measurement

In this study, measurement of validity is fundamental, and verification of quantitative analysis depends on the fulfilment of the aim and objectives of the study. It is important to note that validation of findings from data analysis ensures the degree to which the research instruments adequately measure what they are supposed to measure in this study. The findings of the quantitative data analysis and qualitative interviews conducted with the five groups are used to validate the instrument and determine whether it measures the intended variables. In Chapter 7, a validation report is completed. For this study, content and construct validity were achieved through expert review and factor analysis.

4.7.3 Data analysis techniques

The modelling and knowledge application of both statistical and verbal analyses were among the data analysis methods used in this study. Methods from content analysis, inferential statistics, and descriptive statistics were carefully used to get realistic results from both qualitative and quantitative data. Descriptive and inferential statistics were used to analyse the quantitative aspect of the data collected to fathom the factors that influence the motivation of the workers for efficient production in the delivery of projects. Descriptive statistics establish the degree of significance of factors in items measuring their contributions to the impact on motivating construction workers to enhance productivity, along with other measures of central tendencies, measure of dispersion, frequency measure, and position measures. Factor analysis (FA), Predictive Analysis, Pearson correlation coefficient and Path analysis among other statistical procedures.

4.7.4 Descriptive statistical data analysis

Descriptive statistical data analysis can simply be described as an analytical summary of the data collected through numerical calculations, and graphical and table illustrations. This approach establishes the basis for analysing and describing the data collected by quantitative questionnaires. This study uses four types of descriptive statistics, namely:

- Measure of central tendencies
- Measure of dispersion
- Frequency measure
- Position measure

This study uses the mean, median, and mode as measures of central tendency. Along with the measure of frequency, which comprises count, frequency, and percentage, other measures of dispersion, such as variance, range, and standard deviation, were also used. The study also included positional measures, such as percentile and quartile ranks.

4.7.5 Measure of central tendency: mean scores

The mean of a dataset or statistic is the average of a collection of data values. Mathematically referred to as the sum of values divided by the number of values counted. The mean, median, and mode are utilised to extract valuable information about a population from its sample size.

Calculation of the mean:

$$\text{Mean} = \frac{\text{Sum of X values}}{\text{Number of X values}}$$

Symbolically:

$$\bar{X} = \frac{\sum X}{N}$$

Where:

$\bar{X}$ = Mean of the set of X *Values.*

$\sum X$ = Summation of all the X values

N = Number of X values

The mean score shows the importance of the items measured for the study of the effect of motivation on the performance of construction workers in South Africa. This is possible because of the data extracted from the population sample of the dataset gathered for the study. Manikandan (2011) mentioned some types of mean statistics to include arithmetic mean, geometric mean, weighted mean and harmonic mean. The mean can be generally defined simply as an average obtained from a summation of all the values in the dataset directly divided by the number of observations counted. One positive side of the mean score is that it enables all values in a data set to be used and impacts its robust representation.

4.7.6 Measure of frequency: percentage and frequency

Frequency measurement is a way to concisely organise the dataset into a telling format regarding the magnitude of the occurrence of the variable involved, i.e., items. In other

words, frequency distributions may even help classify the population under survey study, taken in general understanding. Gravetter and Wallnau (2000) better described frequency as one of the methods in descriptive statistics used to construct the extent of occurrence of variables and present the distribution in a tabular or graphical form.

4.7.7 Measure of dispersion: variance, range, and standard deviation

The measure of dispersion refers to another way that descriptive statistics describes dispersion or distribution within a different group of variables. Computing the measure of dispersion involves several techniques like range, variance, and standard deviation. These techniques will show an understanding of the changes occurring within the dataset, meaning variations. Range amongst these techniques can be explained as the difference between the largest and smallest observation in the data. Also, the standard deviation can be mathematically explained as the square root of the sum of squared deviation from the mean divided by the number of observations (Manikandan, 2011).

4.7.8 Factor analysis

Factor analysis (FA) is used to reduce the dimensionality of the quantitative dataset assembled. In this context, a factor can be expressed through its relationship to other measured items. In this study, FA is applied as a data reduction technique by using SPSS. Ledesma *et al*. (2021) emphasised the predominant use of FA in social sciences as a type of statistical analysis that reveals the underlying factors associated with the items being measured. Rotation and extraction techniques, factors interpretation, and sample size are all part of the process involving the application of FA (Ledesma *et al.* 2021). In a statistical procedure for FA, principal component analysis (PCA) is an option with a distinct approach to problem-solving. However, they both have the characteristic of reducing the dimensionality and description for the KMO and Bartlett test of the sphericity of a dataset (Jolliffe, 1986). Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) metric were used to assess sample adequacy, confirming that FA was suitable for this investigation. To preserve factor groups with eigenvalues more than 1 and suppress those with eigenvalues less than 1, FA was conducted using PCA as the extraction method, following Kaiser's criterion (Pallant, 2020). This was used to improve the interpretability of the relationships between the variables within latent components.

4.8   Structural Equation Model

The underlying study is supposed to enhance sustainable business performance among South African SMEs in the construction industry. To this end, an appropriate model would be needed which can simultaneously test the multiples of hypotheses on the effect that latent and manifest variables can have on each other by the control of measurement error - according to Klein (2023), it concerns the structural equation modelling as a statistical tool being used to this end.

The SEM consists of two components: first, the confirmatory factor analysis model, in which one connects the latent variables with respective manifest variables or, as they are usually called in this context, indicators and allows for measurement errors. It works like a regression model wherein manifest variables are regressed on a smaller set of latent variables. The structural regression model defines the relations of endogenous/dependent latent variables and their linear combinations of both endogenous and exogenous/independent latent variables (Klein 2023; Hoyle, 2012). Latent variables could not be analysed using any standard regression technique since they could not be observed from raw data. However, SEM conceptualises, constructs, and estimates analytically and computationally based on basic assumptions that validate its model interpretation.

4.8.1   Assumptions in SEM

Assumptions about the data in construction management studies guide the interpretation of models resulting from the analysis. Klein (2023) states that the following five key presumptions underlie SEM:

It is considered that the cause, let us say X, comes before the consequence or that X causes Y. Between X and Y, there is a discernible covariation or association. There is isolation since there are no other plausible explanations for the covariation between X and Y. The distributions that are present and the distributions that the estimate methods assume should be equal. It is necessary to accurately specify causation, meaning that X should cause Y or X, and Y should cause one another. Therefore, SEM requires establishing the variables' temporal precedence to ensure that the model's interpretations are valid.

4.9   Chapter Summary

This chapter outlines the research methods used to examine the variables influencing construction workers' motivation to achieve higher project delivery productivity in South Africa. The significance of both quantitative and qualitative data in accomplishing the study's stated goal has been covered in this chapter. Because it reflects on the various stages involved in determining correctness in implementation a sequential mixed method, reliability and validity test assessment, and descriptive and inferential statistics further discussion revealed the necessity of implementing the research process designed for this study. The population sampling, data gathering, and analysis techniques were also covered, including the use of logistic regression analysis, PCA, FA, correlation analysis, and other techniques to begin the dimensional data reduction and prediction of the capacity of the model. All these were considered imperative in developing a proper investigation channel to produce applicable findings that could enhance the development of a motivational model for sustainable productivity of workers in the construction industry.

CHAPTER 5

QUANTITATIVE DATA ANALYSIS, FINDINGS AND DISCUSSION

5.1 Introduction

The data analysis, findings, and discussion are fundamental in showing the realisation of the questions and objectives of the study to facilitate the development of the motivational model for sustainable productivity of construction workers. The research question was developed to aid the development of the model by having potential knowledge regarding the relationship between the stated objectives of the study. The motivational model will include the underlying variables to support sustainable productivity amongst South African construction industry workers. It is concerning that the findings of the research work in analysing the data gathered and the interpretation of the results generated through the extent to which it was applied to develop a model based on the obtained results from EFA and SEM conducted via the AMOS software.

5.2 Response Rate

Out of the 317 questionnaire surveys distributed online to participants, 240 responses, representing a response rate of 76%, were achieved based on the number of appropriately completed questionnaires. According to construction management ethics, this response rate is considered acceptable (Ebert *et al.,* 2018). The provincial response rates are arrayed in Table 5.1 to demonstrate the frequency of responses from the respondents. The results showed that a high number of responses were acquired from Western Cape Province, followed by Gauteng Province, compared to other provincial areas in South Africa. This shows that the two provinces have a strong economic impact on the economy of South Africa in terms of employment, capital, and infrastructure rates (Sihlongonyane, 2018; Vukeya, 2015).

Table 5.1: Respondents' provincial location for survey completion

Provincial area for respondents		
Provinces	Frequency	Percent (%)
Eastern Cape	10	4.6
Free State	5	1.2
Gauteng	25	10.4
KwaZulu-Natal	11	4.6
Limpopo	8	3.3
Mpumalanga	9	3.8
Northern Cape	5	1.2
Northwest	7	2.9
Western Cape	160	67
Total	240	100.0

5.3   Demographical Information

The first section of the questionnaire contains demographic questions aiming at obtaining detailed demographic information from the respondents. The section comprises information regarding gender, age, experience level, profession, firm description, and education level. Then, the analysis of the demographic data gathered is to assess the suitability of the participants regarding their experience in dealing with the workers' motivation as a prerequisite for sustainability productivity. The analysis of the demographic questions is presented in the following subsections.

5.3.1   Gender Group

The demographic question on gender was inquired to determine the gender categories of the respondents. However, the determination of a respondent's gender does not affect the ability to motivate a worker towards improved productivity. The results obtained are presented in where a higher number of male respondents (81.1%) participated in the survey than their female counterparts, representing 17.92% of the respondents. This shows the high involvement rate of male construction workers in the engineering field, which propels their chances of attaining apex positions in the field. It also indicates the impact of work categories that involve more male workers than female workers in the construction industry.

Table 5.2: Respondents' gender

Respondents' gender		
Genders	Frequency	Percent (%)
Female	43	17.92
Male	197	81.1
Total	240	100.0

5.3.2 Age group

A demographic question about respondents' age group generated meaningful results about the understanding of the age distribution of the participants. In the results indicate that a high number of respondents fall within the 31 – 40 years age group, followed by respondents within the 41 – 50 years age group, and respondents within the 25 – 30 years age group, while the least participation was demonstrated by the respondents within the age group greater than 60 years. From the results, one can deduce that most respondents are within their working age group.

Table 5.3: Respondents' age group

Age of the respondents		
Age (years)	Frequency	Percent (%)
< 25 years	18	7.5
25 – 30	50	21
31 – 40	84	35
41 – 50	65	27.1
51 – 60	15	6.3
> 60 years	8	3.3
Total	240	100.0

5.3.3 Work position

The data analysis results regarding the occupation of respondents are presented in Table 5.4. The results show that Quantity Surveyor (QS) had the highest participation rate of 30.4%, followed by General Foreman (GF) with a participation rate of 23.8%, and Civil Engineer (CE) with a participation rate of 22.5% and the Construction Manager (CM) participation rate of 9.2%. Lastly, the Project Manager (PM) and Architect have the lowest participation rate, with an aggregate participation rate of 8.8 and 5.41%, respectively.

Table 5.4: Respondents' occupational positions

Occupational positions in construction		
Positions	Frequency	Percent (%)
Architect	13	5.41
Project Manager	21	8.8
Civil Engineer (Site Engr)	54	22.5
Quantity Surveyor	73	30.4
General Foreman	57	23.8
Construction Manager	22	9.2
Total	240	100.0

5.3.4   Years of experience

The data analysis results for the respondents' years of experience are shown in Table 5.5. The findings showed that 63.8% of respondents had four to eight years of experience in the construction industry. In addition, 7.6% and 3.8% of respondents had ten and fifteen years of experience, respectively. Fewer respondents with over 15 years of experience also participated in the survey.

Table 5.5: Number of respondents with years of construction experience

Years of experience in construction		
Years	Frequency	Percent (%)
1-5	64	26.7
6-10	114	47.5
11-15	28	11.7
16-20	23	2.4
21 above	11	9.6
Total	240	100.0

5.3.5   Firms' descriptions

The results presented in Table 5.6, demonstrate the operational categories of the construction firms included in the survey. Two categories of construction firms were considered: general building (GB) and civil engineering (CE). The researcher ensures that the involved firms are duly on the CIBD construction firms register within grades 1– 9, which represents the industry's approved operational capacity within South Africa (Windapo *et al.,* 2020; CIBD, 2020). The results indicated that 54.6% of the

respondents work in the GB category, while 45.4% work in the CE category. In essence, construction workers from the two categories hugely participated in the survey to offer their opinions about developing the motivational model to motivate sustainable productivity during project delivery.

Table 5.6: Respondents' firm's description

Firms' description		
Firms' category	Frequency	Percent (%)
General Building (GB)	131	54.6
Civil Engineering (CE)	109	45.4
Total	240	100.0

5.3.6   Education level

The results displayed in Table 5.7 were obtained from the data analysis representing education level. Data for this demographical factor was based on the respondent's highest qualifications. Thus, 36.7% of the respondents have the highest qualification in BSc /BTech /Advanced Dip, 28.1% of respondents have the highest qualification in Honours degree, and 28.8% have the highest qualification in master's degree. An aggregate of less than 15.0% of respondents have the highest qualification in PhD, National Diploma (ND), Matric Certificate, and others.

Table 5.7: Respondents' educational level

Education level		
Items measured	Frequency	Per cent
Matric certificate	6	2.5
ND (National Diploma)	24	10
BSc / BTech / Advanced Dip	88	36.7
Honours degree	69	28.8
Master's degree	46	19.2
PhD	4	1.7
Other	3	1.3
Total	240	100.0

5.4 Descriptive Analysis

This section discusses the quantitative assessment of the data analysed using descriptive statistical methods to determine the importance of the identified motivational factors influencing construction workers' productivity in the South African construction industry. Closed-end questions with a Likert scale of five-response options were introduced to provide suitable options for any questions in the questionnaire to quantify the importance of these factors in improving workers' productivity levels. The options are presented thus: 1 = Not important at all; 2 = Not important; 3 = Slightly important; 4 = Important; and 5 = Very important. The descriptive analysis of the data yielded some results for minimum scores, maximum scores, mean scores, standard deviation, variance scores, and rank.

5.4.1 Motivational incentives for workers' productivity

Items listed in Table 5.8. were carefully considered based on the literature studied as suitable factors for the respondents to provide relevant perceptions on the significance of motivational incentives in sustaining workers' productivity during project delivery. The data reliability test for the Likert scale questions was computed for motivational incentives, and Cronbach's Alpha coefficient was 0.84, which falls within the acceptable threshold of excellent internal reliability of the data (Ogundipe *et al.,* 2024; Tichá *et al.,* 2020). The result implies that the internal consistency test paves the way for further data analysis because of the reliability threshold above 0.70.

It is evident from Table 5.8 that the items (variables) assessed produced mean scores (MS) above 3.00, which signifies their significance in determining the factors contributing to the sustainable productivity of construction workers because of the high level of motivational incentives. The results presented in the table indicate that status or job title to workers'(BB15) is the highest ranked motivational incentive for workers' productivity, with an MS of 4.580 and an SD of 0.716. Also, 'profit sharing with workers after timely execution of projects,' (BB22) is the second highest ranked motivational incentive for workers' productivity, with an MS of 4.580 and an SD of 0.739. It is important to note that the MSs for the first two factors are the same, however, the SD was considered in this case to assist in terms of ranking the factors in a hierarchical order. Accoding to xyz, the the factor with the least SD is considered higher, hence the rule applies in this case. Furthermore, the results presented in the table specify that BB18 'Provision of canteen subsidy to workers,' is the third highest ranked motivational incentive for workers' productivity, with an MS of 4.570 and an SD of 0.662.

These findings underscore the importance of tangible, welfare-oriented, and performance-linked incentives in enhancing worker motivation and productivity. The low standard deviation associated with the high-ranking items further suggests a strong consensus among respondents on their motivational significance. Overall, the results point to a clear preference among workers for incentives that provide direct economic or social benefits, rather than those rooted in hierarchical recognition or long-term service progression.

Table 5.8: Motivational incentives for workers' productivity

	Descriptive statistics for motivational incentives								
Code	Item`	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Rank	Cronbach's Alpha Coefficient
BB15	Status or job title to workers	240	1	5	4.580	0.716	0.513	1	
BB22	Profit sharing with workers after timely execution of projects	240	1	5	4.580	0.739	0.547	2	
BB18	Provision of canteen subsidy to workers	240	1	5	4.570	0.662	0.438	3	
BB16	Provision of housing loans to workers	240	1	5	4.560	0.718	0.515	4	
BB19	Provision of transportation or travel stipends to workers	240	1	5	4.560	0.723	0.523	5	
BB14	Provision of gratuity to workers	240	1	5	4.540	0.684	0.467	6	
BB8	Overtime payment to workers	240	1	5	4.540	0.713	0.509	7	
BB20	Provision of rent subsidy or housing allowance to workers	240	1	5	4.500	0.685	0.469	8	
BB17	Provision of medical insurance to workers	240	1	5	4.470	0.684	0.468	9	
BB7	Workmen's compensation to workers	240	1	5	4.470	0.708	0.501	10	
BB6	Provision of social security to workers	240	1	5	2.983	0.818	0.669	11	0.843
BB3	Provision of first aid to workers	240	1	5	2.958	0.837	0.701	12	
BB11	Long service award to workers	240	1	5	2.958	0.891	0.793	13	
BB4	Provision of leave allowance to workers	240	1	5	2.929	0.813	0.660	14	
BB10	Bonus payment to workers	240	1	5	2.921	0.842	0.709	15	
BB1	Frequent annual salary increments for employees	240	1	5	2.917	0.766	0.587	16	
BB5	Employer's contribution to provident funds for workers	240	1	5	2.913	0.841	0.708	17	
BB12	Provision of death benefits to the family of deceased workers	240	1	5	2.896	0.824	0.679	18	
BB2	Promotion when due to workers	240	1	5	2.892	0.795	0.633	19	
BB13	Provision of insurance to workers	240	1	5	2.871	0.889	0.791	20	
BB9	Safety plans for workers	240	1	5	2.858	0.885	0.783	21	

*N = Number of respondents

Hence, it is noted that the perceptions of all the respondents specified that a regular increase in workers' salaries annually is the principal strategy that should be considered as a priority when motivating construction workers towards increased productivity. In addition, they also perceived that provision of gratuity to workers, overtime payment to workers, provision of rent subsidy or housing allowance to workers, provision of medical insurance to workers, workmen's compensation to workers and provision of social security to workers are crucial to motivate workers. Assessing the importance of these items will pave the way for the development of a bottom-up model as a path towards addressing the lack of an appropriate motivational framework for sustainable workers' productivity (Bangwal & Tiwari, 2018; Al Ahbabi et al., 2018).

5.4.2 Identifying underlying motivational incentives influencing workers' productivity

This section presents the results of the factors influencing workers' productivity (motivational incentives). The results were generated by applying exploratory factor analysis (EFA), a multivariate analysis technique used to actualise data reduction and assess relationships between the variables. This approach offers a greater understanding concerning the significant influence of one factor on another to establish exploratory conclusions. In this study, the purpose of applying this multivariate technique is to simplify the way of deducing the structural or path relationship between the observed and underlying variables. The reliability of the results derived is substantiated by computing the Kaiser-Meyer-Olkin (KMO) and Bartlett's test of Sphericity, combined with the communality estimates of the items, total variance explained and factor loading estimates. In this study, the KMO test is acceptable at a threshold score is > 0.50 and Bartlett's test of Sphericity at a threshold score of p<0.050 to ascertain the sufficiency threshold of items and the level of correlation within the data analysed (Civelek, 2018). KMO test scores > 0.70 are within the average threshold of sampling adequacy, test scores > 0.80 are within the good threshold, and test scores > 0.90 are within the excellent threshold (Yong & Pearce, 2013; Civelek, 2018). Also, factor loading threshold scores < 0.500 are categorised as unfit for the study (Andrew, 2016), while cross-loading variables with loading scores ≥ 0.500 are adequately significant for this study. Moreover, this study considers variables with many significant cross-loading scores unfit to deter unsubstantiated findings (Andrew, 2016; Civelek, 2018).

All the aforesaid criteria were duly observed to determine the underlying factors influencing the productivity threshold of construction workers in South Africa. Thus, based on the acceptable scales, all items are significantly correlated and suitable for this study as the dimensionality of the data is reduced (Yong & Pearce, 2013; Civelek, 2018).

5.4.2.1 KMO and Bartlett's Sphericity tests for motivational incentives

Table 5.9 presents the results obtained from the two tests conducted on motivational incentives to ascertain sampling adequacy and correlation threshold in the data. The KMO test score of 0.934 was obtained for motivational incentives, which falls within a threshold of good sampling adequacy of data (Yong & Pearce, 2013). On the other hand, Bartlett's test of Sphericity yielded a threshold of p=0.00, which substantiates the fitness threshold of the data for multivariate exploration (Andrew, 2016; Civelek, 2018).

Table 5.9: KMO and Bartlett's Sphericity test results for motivational incentives

KMO and Bartlett's test of Sphericity		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.934
Bartlett's Test of Sphericity	Approx. Chi-Square	1577.719
	df	91
	Sig.	<.001
Observations	Items are significant and adequate for multivariate analysis.	

5.4.2.2 Commonality analysis of motivational incentives

The commonality results obtained from the analysis of the motivational incentives are arrayed in Table 5.10. provides insight into how well each item contributes to the underlying factor structure. All items reported commonality values above the minimum acceptable threshold of 0.30, indicating that each variable retains a meaningful level of shared variance with the extracted factors (Yong & Pearce, 2013; Huang & Abdel-Aty, 2010). (Osman et al., 2022; Yong & Pearce, 2013). This establishes that better factor model performance would be attained due to substantial variance explained across all items (Yong & Pearce, 2013).

According to the results, several items demonstrated strong commonalities, with BB3 ("provision of first aid to workers") recording the highest extracted commonality (0.657), followed by BB5 (0.627), BB11 (0.601), BB2 (0.590), and BB10 (0.583). These results suggest that these variables are well represented within the factor model and strongly linked to the latent construct of motivational incentives. In contrast, items like BB16 ("provision of housing loans to workers") and BB18 ("provision of canteen subsidy to workers") reported relatively lower commonality values (0.265 and 0.400, respectively), indicating weaker associations with the overall factor structure and potential for limited explanatory contribution. Nonetheless, the overall pattern of commonalities supports the

adequacy and appropriateness of the factor model for further analysis of motivational incentives in the context of construction worker productivity.

Table 5.10: Commonality scores for items in motivational incentives

Commonality estimates of motivational incentives			
Code	Item	Initial	Extraction
BB1	Frequent annual salary increments for employees	0.543	0.569
BB2	Promotion when due to workers	0.561	0.590
BB3	Provision of first aid to workers	0.618	0.657
BB4	Provision of leave allowance to workers	0.473	0.474
BB5	Employer's contribution to provident funds for workers	0.617	0.627
BB6	Provision of social security to workers	0.454	0.458
BB9	Safety plans for workers	0.461	0.465
BB10	Bonus payment to workers	0.569	0.583
BB11	Long service award to workers	0.577	0.601
BB12	Provision of death benefits to the family of deceased workers	0.500	0.512
BB13	Provision of insurance to workers	0.427	0.417
BB16	Provision of housing loans to workers	0.234	0.265
BB18	Provision of canteen subsidy to workers	0.244	0.400
BB22	Profit sharing with workers after timely execution of projects	0.277	0.449

5.4.2.3 Total variance of motivational incentives

Table 5.11 presents the estimates of the total variance explained in the items grouped under motivational incentives. The results demonstrate the number of underlying factors that can be extracted from the total amount of variance explained (Yong & Pearce, 2013; Civelek, 2018). According to the results, only two factors meet the eigenvalue criterion of ≥ 1.00, suggesting that just two factors should be retained for further interpretation. This decision is also supported by the scree plot (not displayed here), which reveals a noticeable "elbow" after the second factor indicating diminishing returns in explanatory power beyond that point.

The initial eigenvalue indicated that the first factor accounts for the most substantial proportion of variance (45.724%) in the terms, with the second factor accounting for 12.347%. All subsequent factors display eigenvalues below 1.00 signifying limited individual contribution and justifying their exclusion from further analysis.

These findings emphasize the dominance of the first extracted factor and suggest that motivational incentives for construction workers can be effectively captured by a two-

factor structure. This result aids in simplifying the model for practical interpretation while retaining sufficient explanatory power to inform decision-making in construction workforce motivation strategies.

Table 5.11: Variance proportion for items explained in motivational incentives.

Factor	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total
1	6.401	45.724	45.724	5.951	42.509	42.509	5.947
2	1.729	12.347	58.071	1.114	7.96	50.469	1.241
3	0.804	5.741	63.811				
4	0.683	4.879	68.691				
5	0.651	4.652	73.343				
6	0.567	4.049	77.392				
7	0.51	3.641	81.033				
8	0.478	3.415	84.448				
9	0.463	3.31	87.758				
10	0.396	2.831	90.589				
11	0.364	2.598	93.187				
12	0.35	2.502	95.689				
13	0.314	2.242	97.93				
14	0.29	2.07	100				
Extraction Method: Principal Axis Factoring.							
When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.							
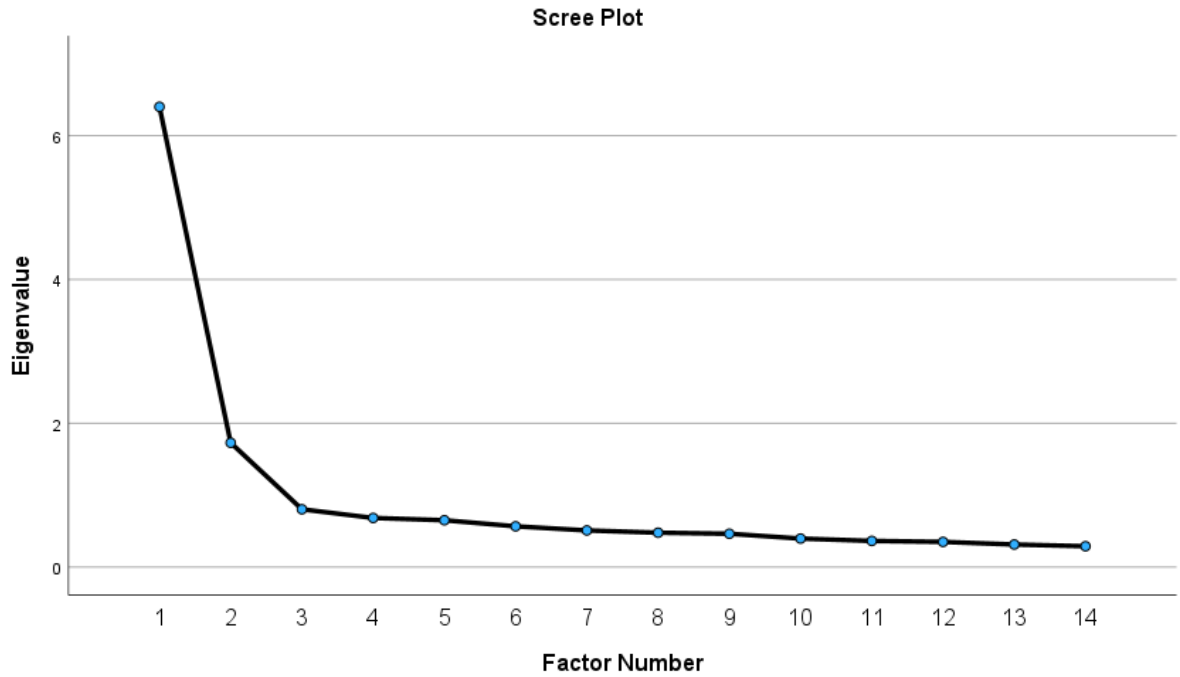
Figure 5.1: Scree plot for factor extraction in motivational incentives

To improve the interpretability and distribution of variance among the extracted components, a Promax rotation with Kaiser Normalization was applied to the factor analysis of motivational incentives (Osborne, 2015; Osman et al., 2022; Civelek, 2018). This oblique rotation method is suitable where some degree of correlation among factors is expected, as is often the case with workplace motivation variables. The rotation redistributed the variances more equitably between the two factors, as indicated by the minor reduction in Factor 1's contribution and a corresponding enhancement in Factor 2's variance (as shown in Table 5.11).

5.4.2.4 Factor loadings analysis of motivational incentives

The rotated solution presented in Table 5.12 shows a two-factor structure. Factor 1 comprises items with strong loadings, such as BB3 (0.798), BB5 (0.796), BB11 (0.782), BB2 (0.771), BB10 (0.765), BB1 (0.755), BB12 (0.715), BB9 (0.684), BB4 (0.684), BB6 (0.654), and BB13 (0.648). These items represent structured formed incentives that are typically embedded in organisational policy such as promotion, bonuses, leave allowance, social security, and death benefits.

Factor 2, on the other hand, is defined by BB22 (0.664), BB18 (0.632), and BB16 (0.519). These items represent supplementary or welfare-based motivational incentives, such as profit sharing, canteen subsidy, and housing loans, which are often performance-based or discretionary in nature.

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The strength and clarity of these loadings affirm the validity of the two-factor model, which provides a meaningful categorisation of motivational incentives into formal employment benefits and additional welfare-enhancing provisions. This structure supports subsequent modelling of how each incentive category may influence construction workers' sustainable productivity.

Table 5.12: Pattern and structure matrices showing factor loadings in motivational incentives.

Factor loading estimates for motivational empowerment			
Code	Item	Rotated loadings Pattern matrix Factor 1	Rotated loadings Pattern matrix Factor 2
BB3	Provision of first aid to workers	.798	
BB5	Employer's contribution to provident funds for workers	.796	
BB11	Long service award to workers	.782	
BB2	Promotion when due to workers	.771	
BB10	Bonus payment to workers	.765	
BB1	Frequent annual salary increments for employees	.755	
BB12	Provision of death benefits to the family of deceased workers	.715	
BB9	Safety plans for workers	.684	
BB4	Provision of leave allowance to workers	.684	
BB6	Provision of social security to workers	.654	
BB13	Provision of insurance to workers	.648	
BB22	Profit sharing with workers after timely execution of projects		.664
BB18	Provision of canteen subsidy to workers		.632
BB16	Provision of housing loans to workers		.519

Extraction Method: Principal Axis Factoring.
a. 1 factors extracted. 4 iterations required.

5.4.3 Motivational empowerment for workers' productivity

The results presented in Table 5.13 represent the motivational empowerment for workers' productivity enhancement to maximise opportunities and minimise threats (Andavar & Ali, 2020). The results showcase the perceptions of the respondents regarding the need for them to be empowered and supported to improve performance in the South African Construction Industry (SACI). From a literature indication, motivational empowerment is considered one of the predominant ways of handling or addressing uncertainty within construction organisations (Riyadi, 2020; Syamsir, 2020; Pancasila et al., 2020; Febrianti & Se, 2020). Similarly, an internal consistency of motivational empowerment was tested to determine the internal reliability threshold of the data. The result indicates a Cronbach's Alpha coefficient of 0.851, which falls above the range of good internal reliability of data. Therefore, the coefficient specifies that data concerning motivational empowerment are within an acceptable reliability threshold above 0.70 for this study.

Out of 20 empowerment items, the mean scores are predominantly high, signifying their perceived relevance. The most highly rated items include CC19 (Access to information – M = 4.67), CC13 (Trust and communication – M = 4.65), CC17 (Long-term career prospects – M = 4.60), and CC12 (Proper work scheduling – M = 4.59). These results underscore that empowerment is strongly associated with information access, trustful communication, and supportive career planning.

Conversely, items like CC1 (Good supervision – M = 2.72), CC3 (Job security – M = 2.67), and CC5 (Recognition by authority – M = 2.68) received lower, though still moderate, mean scores. This suggests that while these aspects are not perceived as unimportant, they may be less emphasised or less consistently practiced in the SACI context.

Overall, the findings highlight a bifocal structure of empowerment: one rooted in psychosocial and managerial support (e.g., trust, communication, and recognition), and the other in functional and logistical enablers (e.g., scheduling, access to resources, and facilities). Together, these elements form a comprehensive view of motivational empowerment essential for fostering productivity in the construction workforce.

Table 5.13: Motivational empowerment for workers' productivity

Code	Item	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Rank	Cronbach's Alpha Coefficient
	Descriptive statistics for motivational empowerment								
CC19	Access to information needed to perform job effectively	240	3	5	4.671	0.560	0.314	1	
CC13	Trust and communication with the management	240	2	5	4.650	0.595	0.354	2	
CC17	Pursue your long-term career prospects with the organization	240	2	5	4.596	0.646	0.418	3	
CC20	Access to resources needed to perform job effectively	240	1	5	4.588	0.660	0.436	4	
CC12	Proper work scheduling	240	1	5	4.588	0.679	0.461	4	
CC16	Systematic flow of work	240	2	5	4.579	0.622	0.387	6	
CC14	Adequate team spirit	240	2	5	4.567	0.617	0.380	7	
CC15	There are good working facilities	240	1	5	4.558	0.724	0.524	8	
CC18	Flexibility in work schedule to accommodate personal needs	240	1	5	4.483	0.702	0.493	9	0.851
CC8	Cooperation from other workers	240	1	5	2.742	0.843	0.711	10	
CC6	Taking part in decision making	240	1	4	2.738	0.824	0.680	11	
CC4	Challenging work e.g., (designing work with variety of tasks and responsibilities)	240	1	5	2.733	0.841	0.707	12	
CC11	Good work environment	240	1	5	2.733	0.917	0.841	12	
CC7	Opportunity for skill development	240	1	5	2.729	0.791	0.625	14	
CC1	Good supervision	240	1	5	2.717	0.810	0.656	15	
CC2	Growth opportunities in your carrier	240	1	5	2.717	0.870	0.756	16	

Descriptive statistics for motivational empowerment								
Code	Item	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Rank	Cronbach's Alpha Coefficient
CC9	Freedom for innovative thinking	240	1	5	2.713	0.908	0.511	17	
CC10	The satisfaction derived from work itself	240	1	5	2.700	0.864	0.437	18	
CC5	Recognition by authority by mentioning your name in the meeting	240	1	5	2.675	0.869	0.517	19	
CC3	Job security	240	1	5	2.667	0.866	0.750	20	

From all indications, it is observed that the perceptions of all the respondents revealed that good supervision could be crucial in empowering workers to attain improved productivity. The respondents also found access to information critical to performance improvement, including adequate trust and communication with the management, a conducive work environment, and job security are significant in empowering the workers' performance. Estimating the significance of these items will give leeway for further exploration of the development of the model.

5.4.4 Identifying underlying motivational empowerment influencing workers' productivity

This section presents the results of determining the underlying factors influencing workers' productivity in motivational empowerment. The results were derived from applying FA to realise data reduction and specifying the relationships between the variables grouped under motivational empowerment (Andrew, 2016; Civelek, 2018). In motivational empowerment, sampling adequacy and significance of items were performed to ensure adequate development of factor model performance and the exploration of the variance, explained, loading estimates, and path diagram as executed in subsection 5.4.2. All criteria required were carefully observed to determine the underlying factors impacting the productivity level of the construction workers regarding motivational empowerment in South Africa (Yong & Pearce, 2013; Civelek, 2018).

5.4.4.1 KMO and Bartlett's Sphericity tests for motivational empowerment

Table 5.14 presents the results concerning the determination of the item's sampling adequacy and the significance of assuring the use of FA to identify the underlying factors in motivational empowerment. A KMO test score of 0.946 was obtained for motivational empowerment, which specifies a threshold of excellent sampling adequacy of data (Yong & Pearce, 2013). Bartlett's test of Sphericity exhibited a test score of $p<0.001$, which demonstrates the fitness threshold of the data for FA (Andrew, 2016; Civelek, 2018).

Table 5.14: KMO and Bartlett's Sphericity test results for motivational empowerment

KMO and Bartlett's test of Sphericity		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.946
Bartlett's Test of Sphericity	Approx. Chi-Square	1458.306
	Df	55
	Sig.	<.001
Observations	Items are significant and adequate for multivariate analysis.	

5.4.4.1 Commonality analysis of motivational empowerment

Table 5.15: Commonality scores for items in motivational empowerment. From result all 11 listed items have extracted commonality values above 0.40, with the highest being CC4 (0.603), CC7 (0.606), CC8 (0.598), and CC1 (0.572). This indicates that these items are strongly represented by the factor structure and contribute significantly to the underlying constructs of motivational empowerment.

Following the guidelines of Yong and Pearce (2013) commonality values above 0.40 are generally considered acceptable, suggesting that these items possess adequate explanatory power within the model. In contrast, items such as CC5 (0.444) and CC11 (0.447), while still meeting the threshold, show relatively lower shared variance, potentially indicating weaker alignment with the extracted latent dimensions.

Overall, the commonality results support the retention of these empowerment items for subsequent multivariate analyses, such as factor rotation, model refinement, or confirmatory factor analysis, ensuring the robustness of any motivational empowerment framework aimed at improving worker productivity in the South African Construction Industry.

Table 5.15: Commonality scores for items in motivational empowerment

Commonality estimates of motivational empowerment			
Code	Items measured	Initial	Extraction
C_C1	Good supervision	.553	.572
C_C2	Access to information needed to perform the job effectively	.503	.513
C_C3	Trust and communication with the management	.529	.524
C_C4	Good work environment	.571	.603
C_C5	Job security	.423	.444
C_C6	Access to resources needed to perform the job effectively	.544	.567
C_C7	Pursue your long-term career prospects with the organisation	.575	.606
C_C8	Adequate team spirit	.589	.598
C_C9	Proper work scheduling	.504	.511
C_C10	Freedom for innovative thinking	.566	.516
C_C11	Systematic flow of work	.441	.447

Extraction Method: Principal Axis Factoring.

5.4.4.2 Total variance of motivational empowerment

The total variance explained for the 11 motivational empowerment items was assessed through Principal Axis Factoring to determine the dimensionality of the construct. As shown in Table 6.16, the analysis yielded one dominant factor with an initial eigenvalue of 6.359, accounting for 57.81% of the total variance. After extraction, this factor retained 53.64% of the variance, signifying a strong and coherent underlying dimension within the data.

None of the subsequent factors met the commonly accepted eigenvalue ≥ 1.00 criterion, with the second factor dropping to 0.714 and the remaining factors contributing progressively less. This sharp decline in eigenvalues and cumulative variance confirms the unidimensionality of the construct, as further supported by the scree plot (not shown), where an "elbow" would be expected after the first factor.

These results indicate that the motivational empowerment construct is best represented by a single latent factor, aligning with established retention criteria (Yong & Pearce, 2013). The strong explanatory power of this factor supports its use in subsequent factor rotation, structural equation modeling, or regression analysis to evaluate its influence on productivity among construction workers in South Africa.

Table 5.16: Variance proportion for items explained in motivational empowerment.

	Total variance explained in motivational empowerment					
	Initial eigenvalues			Extraction sums of squared loadings		
Factor	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	6.359	57.809	57.809	5.901	53.642	53.642
2	.714	6.490	64.300			
3	.608	5.524	69.824			
4	.533	4.843	74.666			
5	.507	4.605	79.271			
6	.476	4.323	83.595			
7	.433	3.936	87.530			
8	.402	3.650	91.181			
9	.378	3.439	94.620			
10	.341	3.098	97.717			
11	.251	2.283	100.000			

Extraction Method: Principal Axis Factoring.
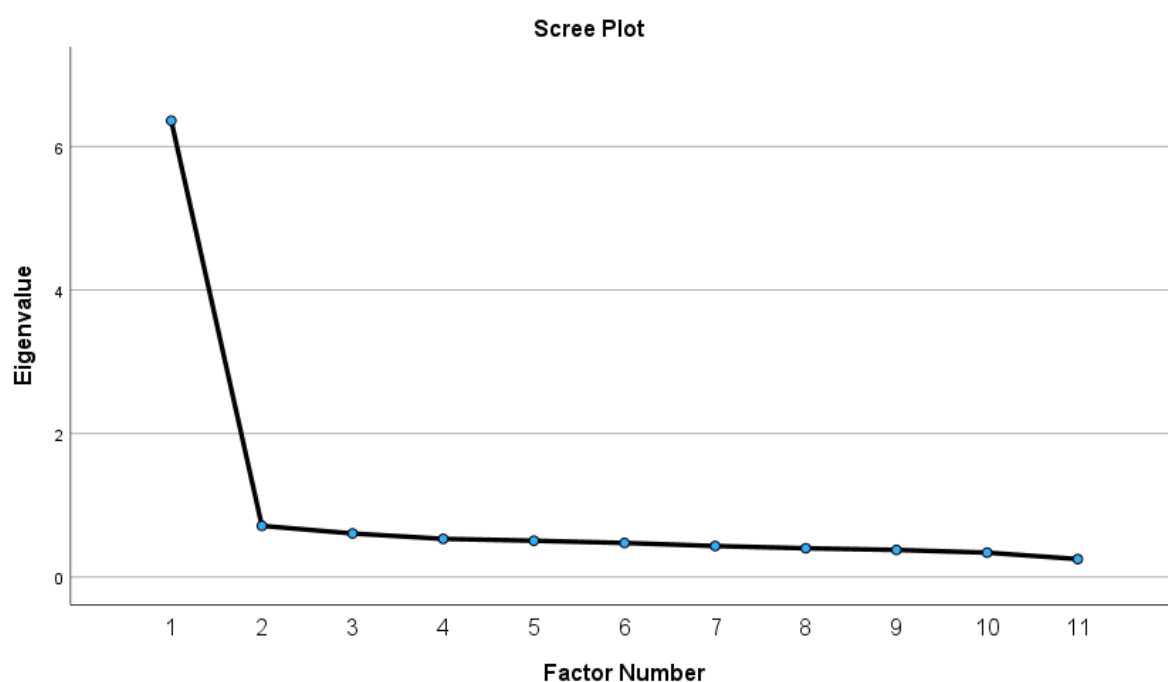
Figure 5.2: Scree plot for factor extraction in motivational empowerment

A further illustration is graphically presented in Figure 5.3, demonstrate the extraction point of the factors. It is denoted that the Scree plot offers a simplified way to understand the extraction of the factors. In addition, the distribution of the variance across the six items is weighted, which requires the rotation of the extraction sums of squared loadings to generate an improved distribution of the variance.

The weighted influences the convergence pattern of the items loading on each factor. In that case, the items were rotated to attain an unweighted distribution across the six factors using the Promax method with Kaiser Normalisation to obtain plausible findings. The results in the table demonstrate a better distribution of the items loading on each factor.

5.4.4.3 Factor loadings analysis of motivational empowerment

The factor loadings analysis for motivational empowerment, as presented in Table 5.17, confirms that all eleven items are strongly associated with a single underlying factor extracted using Principal Axis Factoring. The loadings demonstrate a high level of internal consistency among the items, indicating that they collectively represent a unified construct of motivational empowerment. The highest factor loading was recorded for item CC7 (0.778), followed closely by CC4 (0.777) and CC8 (0.773), suggesting that cooperation from other workers, challenging work, and adequate team spirit are the most influential components within this construct. Other significant loadings include CC1 at 0.756, CC6 at 0.753, and CC3 at 0.724, highlighting the importance of good supervision, participation in decision-making, and job security. Additional items such as CC10 (0.718), CC2 (0.716), CC9 (0.715), CC11 (0.669), and CC5 (0.666) also demonstrated strong associations with the factor, reinforcing their relevance in the context of worker empowerment. The consistently high loadings across all items provide solid empirical support for treating motivational empowerment as a single-factor structure in subsequent analyses related to productivity enhancement in the South African Construction Industry. However, all the items demonstrated strong association as principal underlying factors influencing workers' productivity in motivational empowerment.

Table 5.17: Pattern and structure matrices showing factor loadings in motivational empowerment.

Factor loading estimates for motivational empowerment		
		Rotated loadings
Code	Item	Pattern matrix
		Factor 1
C_C1	Good supervision	.756
CC2	Access to information needed to perform the job effectively	.716
CC3	Trust and communication with the management	.724
CC4	Good work environment	.777
CC5	Job security	.669
CC6	Access to resources needed to perform the job effectively	.753
CC7	Pursue your long-term career prospects with the organisation	.778
CC8	Adequate team spirit	.773
CC9	Proper work scheduling	.715
CC10	Freedom for innovative thinking	.718
CC11	Systematic flow of work	.669

Extraction Method: Principal Axis Factoring.
a. 1 factors extracted. 4 iterations required.

5.4.1 Psychological factors for workers' productivity

The analysis of psychological factors influencing workers' productivity, as presented in Table 5.18, highlights several critical variables that significantly contribute to the motivation and overall productivity of workers in the South African construction industry. The reliability of the dataset is confirmed by a Cronbach's Alpha coefficient of 0.739, indicating good internal consistency.

The mean scores (MS) for all seventeen items are above 3.00, demonstrating their importance in influencing productivity. Among the highest-rated factors, DD18 ("Assistance in terms of workers managing their finances") leads with an MS of 4.62, followed by DD9 ("Effective leadership skills in managing stress in the workplace") with an MS of 4.58, and DD8 ("Adequate restroom facilities and sanitation at the construction site ") with an MS of 4.58. These items highlight the importance of financial management support, leadership skills, and feedback in motivating workers and enhancing their productivity.

Other key psychological factors, such as DD12 ("Workers have autonomy") and DD14 ("Opportunities for social interaction and friendship among workers"), both with MS of 4.55, emphasize the significance of worker autonomy and social connections in fostering motivation. Similarly, DD15 ("Receiving training on psychological wellbeing at work") with an MS of 4.52 underscores the value of psychological wellbeing training in improving worker productivity.

Additionally, DD1 ("Availability of shade or shelter on the construction site influences productivity") received a relatively high rating (MS = 3.9), pointing to the impact of basic welfare needs, such as shelter, on worker motivation and overall productivity.

In conclusion, the findings underscore the critical role of psychological factors such as financial assistance, effective leadership, constructive feedback, autonomy, social interaction, and wellbeing training in enhancing worker motivation and sustaining high productivity levels. These factors should be prioritized to create a supportive environment that fosters optimal performance and wellbeing for construction workers.

Table 5.18: Psychological influence for workers' productivity

	Descriptive statistics for psychological influence								
Code	Items measured	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Rank	Cronbach's Alpha Coefficient
DD18	Assistance in terms of workers managing their finances	240	2	5	4.621	0.602	0.362	1	
DD9	Effective leadership skills in managing stress in the workplace	240	2	5	4.588	0.614	0.377	2	
DD8	Adequate restroom facilities and sanitation at the construction site	240	2	5	4.588	0.654	0.427	3	
DD7	Company honouring promises made to workers in terms of bonuses and rewards	240	1	5	4.588	0.691	0.478	4	
DD16	Maintain a positive mindset during long and physically demanding workdays	240	2	5	4.567	0.630	0.397	5	
DD10	Constructive criticism or corrective feedback impacts worker motivation	240	2	5	4.554	0.657	0.432	6	0.739
DD12	Workers have autonomy	240	1	5	4.533	0.725	0.526	7	
DD14	Opportunities for social interaction and friendship among workers	240	2	5	4.529	0.678	0.459	8	
DD11	Resolving conflicts or disputes within the team influences workers' motivation	240	1	5	4.513	0.781	0.611	9	
DD15	Receiving training on psychological wellbeing at work	240	1	5	4.500	0.749	0.561	10	
DD3	Good communication skills	240	1	5	3.925	0.898	0.806	11	
DD1	Availability of shade or shelter on the construction site influences productivity	240	1	5	3.904	0.830	0.690	12	

Descriptive statistics for psychological influence									
Code	Items measured	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Rank	Cronbach's Alpha Coefficient
DD4	Safety measures and protocols to ensure workers' psychological wellbeing	240	1	5	3.879	0.758	0.575	13	
DD6	Ability to consult workers onsite before effecting change	240	1	5	3.863	0.874	0.763	14	
DD2	Workers feeling valued and appreciated will influence their productivity	240	1	5	3.838	0.799	0.639	15	
DD5	Adequate fairness to all workers	240	1	5	3.821	0.909	0.826	16	
D_D17	The proximity of my workplace to my residence affects workers' willingness to go to a job	240	1	5	3.720	0.717	0.514	17	

*N = Number of respondents

Some past studies identified factors that could prompt workers' psychology due to different personalities, backgrounds, and communication styles. These attributes, if not managed properly, could cause conflicts, misconceptions, and difficulties among the workers in attaining effective execution of projects (Suleiman, 2022; Faris et al., 2022). Langdon and Sawang (2018) identified a lack of personal time, poor financial management, and poor safety measures as common causes of mental stress among workers. The two researchers suggested applicable strategies that could promote healthy and productive work environments.

5.4.2 Ascertaining underlying psychological factors influencing workers' productivity

This section discusses the FA of the underlying psychological factors influencing workers' productivity in the South African construction industry. The KMO (KMO >0.50) and Bartlett's test of Sphericity (p<0.50) were conducted as performed in the preceding sections to ascertain the adequacy of the items measured in psychological factors. The commonality analysis was performed to determine the items with a substantial amount of variance that can be explained. Also, the total variance explained by factors is analysed to demonstrate the extraction point for several factors. Thus, estimates of the factor loading and path diagram were produced to ascertain the underlying factors influencing workers' productivity through psychological factors.

5.4.2.1 KMO and Bartlett's Sphericity tests for psychological factors

The results were obtained from the KMO and Bartletts' Sphericity tests for psychological factors. The measure of sampling adequacy yielded a KMO=0.78, which is greater than the standard threshold of 0.50 (Yong & Pearce, 2013). On the other hand, Bartlett's Sphericity test substantiates the significance of the items at p<0.001. As shown in Table 6.19, the results specify that the data is fit for the application of FA (Andrew, 2016; Civelek, 2018).

Table 5.19: KMO and Bartlett's Sphericity test results for psychological factors

KMO and Bartlett's test of Sphericity		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.896
Bartlett's Test of Sphericity	Approx. Chi-Square	682.814
	Df	15
	Sig.	<.001
Observation	Items are significant and adequate for multivariate analysis.	

5.4.2.2 Commonality analysis of psychological factors

The communality analysis of psychological factors, presented in Table 5. 19, assess the variance explained by each item in the dataset. All items analysed show communality values above 0.40 threshold, indicating that each item contributes a meaningful amount of variance.

Item with the highest proportion of commonality, DD3 "Good communication skills" (0.651), DD5 "Adequate fairness to all workers" (0.619) and DD2 "Workers feeling valued and appreciated will influence their productivity" (0.582). These findings confirm the reliability of the psychological factor model, with all items contributing meaningful variance. However, the analysis also indicates that some items have a stronger influence on the model based on their higher commonalities, which should be considered in further investigations of workers' motivation and productivity (Osman et al., 2022; Yong & Pearce, 2013).

Table 5.20: Commonality scores for items in psychological factors

Commonality estimates of psychological factors			
Code	Item	Initial	Extraction
DD1	Availability of shade or shelter on the construction site influences productivity	.496	.548
DD2	Workers feeling valued and appreciated will influence their productivity	.519	.582
DD3	Good communication skills	.571	.651
DD4	Safety measures and protocols to ensure workers' psychological wellbeing	.451	.500
DD5	Adequate fairness to all workers	.539	.619
DD6	Ability to consult workers onsite before effecting change	.436	.475
	Extraction Method: Principal Axis Factoring.		

5.4.2.3 **Total variance of psychological factors**

The total variance explained by psychological factors, as shown in Table 5.21, reveals that a single factor is dominant in explaining the variance within the dataset. Factor 1, with an initial eigenvalue of 3.807, accounts for 63.449% of the total variance. After extraction, this factor retains 56.252% of the variance, reinforcing its significance in explaining the psychological factors influencing workers' productivity.

The remaining factors, with eigenvalues below 1.00, do not meaningfully contribute to explaining additional variance, confirming that Factor 1 is the primary factor driving the variance in psychological influences. The cumulative percentage of variance explained by Factor 1 is 56.252%, indicating its substantial impact on the dataset.

Further confirmation of this finding is provided by the Scree plot (Figure 5.5), which shows a distinct "flatline" after Factor 1, further supporting the conclusion that this factor is the dominant contributor to explaining the variance in the psychological factors that affect construction workers' productivity. The above illustration demonstrates that factor 1 explained most of the variation in the items pertaining to psychological factors (Osman et al., 2022; Yong & Pearce, 2013).

Table 5.21: Variance proportion for items explained in psychological factors

Total variance explained in psychological factors						
Factor	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	3.807	63.449	63.449	3.375	56.252	56.252
2	.576	9.605	73.054			
3	.511	8.517	81.571			
4	.408	6.795	88.366			
5	.368	6.140	94.506			
6	.330	5.494	100.000			

Extraction Method: Principal Axis Factoring.

The amount of variance in these factors is rotated to improve the plausibility of the data to achieve interpretable results. This is attained by using the Promax rotation method with Kaiser Normalisation (Yong & Pearce, 2013; Osborne, 2015).
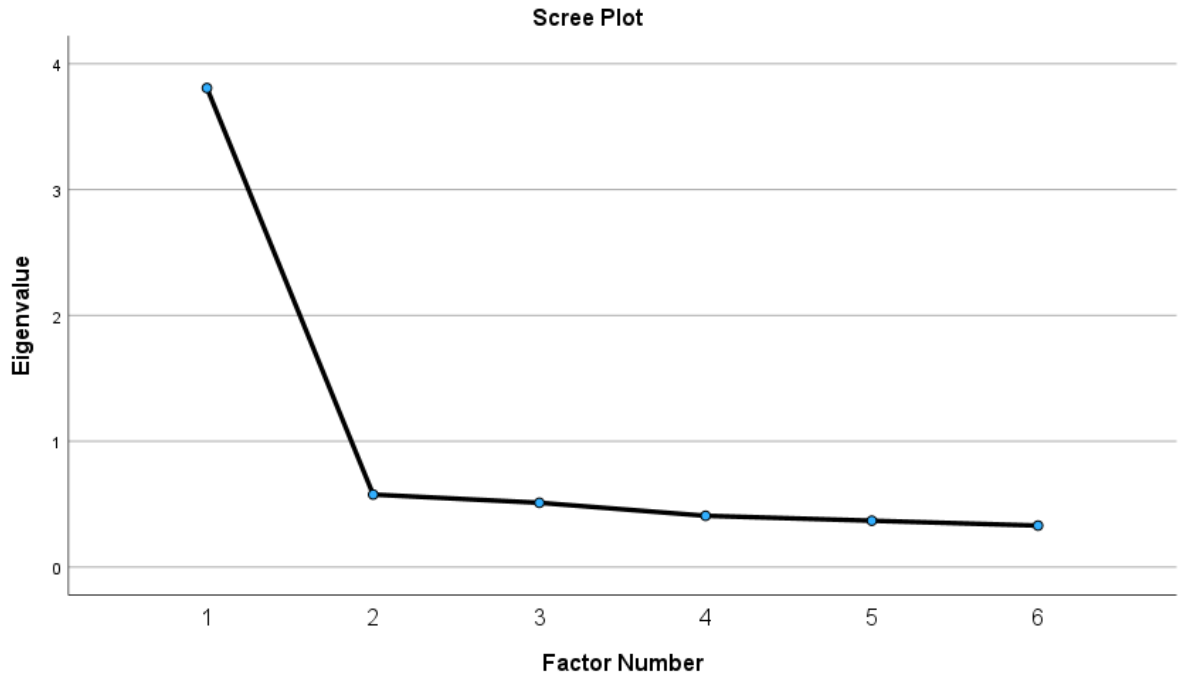
Figure 5.2: Scree plot for factor extraction in psychological factor

5.4.2.4 Factor loadings analysis of psychological factors

The factor loadings analysis of psychological factors, as shown in Table 5.22, reveals that six items converged on Factor 1 after 18 iterations. However, only three items were found to be significantly influential for improving workers' productivity.

The item with the highest loading was DD3 ("Good communication skills"), which had a coefficient of 0.807, making it the most influential item for Factor 1. This was followed by DD5 ("Adequate fairness to all workers") with a loading of 0.787, and DD2 ("Workers feeling valued and appreciated will influence their productivity") with a loading of 0.763. These three items are clearly the most significant in shaping the primary factor that influences workers' productivity through psychological factors.

Other items, such as DD1 ("Availability of shade or shelter on the construction site influences productivity") with a loading of 0.740, DD4 ("Safety measures and protocols to ensure workers' psychological wellbeing") with a loading of 0.707, and DD6 ("Ability to consult workers onsite before effecting change") with a loading of 0.689, showed moderate loadings. While these items are relevant, their influence is lower compared to the top three.

Finally, items with loadings below 0.500, such as DD18 ("Assistance in terms of workers managing their finances"), which showed cross-loadings with other factors, were considered insignificant for further analysis. This supports the view that the primary

psychological factors shaping workers' productivity are centered around fairness, shelter, and communication, underscoring their importance in enhancing worker motivation and performance.

Table 5.22 Pattern and structure matrices showing factor loadings in psychological factors

Factor loading estimates for motivational empowerment		Rotated loadings
Code	Item	Pattern matrix
		Factor 1
DD3	Good communication skills	.807
DD5	Adequate fairness to all workers	.787
DD2	Workers feeling valued and appreciated will influence their productivity	.763
DD1	Availability of shade or shelter on the construction site influences productivity	.740
DD4	Safety measures and protocols to ensure workers' psychological wellbeing	.707
DD6	Ability to consult workers onsite before effecting change	.689

Extraction Method: Principal Axis Factoring.

a. 1 factors extracted. 4 iterations required.

5.4.3 Organisation Motivational Policies for workers' productivity

Table 5.23 presents 19 items measured under organisational motivational policies. Descriptive statistics were computed to demonstrate the significance of these items based on the perceptions of the respondents. This set of items constitutes the policies followed by SACI to ensure that contracts or projects are executed accordingly without any impediments. Also, these are related policies that propel contracts or project execution with the involvement of all construction stakeholders. The dataset demonstrated good internal consistency, with a Cronbach's Alpha coefficient of 0.731, indicating reliability. Fakhri et al. (2020) supported those policies on promotion, contract management, environment, policy on planning and scheduling, policy on salary and wage, policy on health and safety practices, policy on training and development, and employment policy.

Among the 19 items analyzed, all had Mean Scores (MS) above 3.00, signifying their importance in motivating workers. The highest-rated policies were EE9 "Policy on health and safety practices" with an MS of 4.671 and an SD of 0.610. The second was EE18 "Policy related to work environment/culture" with a mean of 4.670 and an SD of 0.651. The third was EE13 "Equipment maintenance policy to ensure equipment is in good working condition to prevent downtime" with an MS of 4.642 and an SD of 0.670. The respondents highlighted that policies centered on equality, environmental sustainability, and effective project management are pivotal in motivating construction workers. Although policies fostering worker recognition and social engagement are also beneficial, they are considered less critical compared to structural policies that directly enhance productivity. These findings suggest that organisations should prioritize policies that focus on fairness, sustainability, and project management to maximize worker motivation and productivity.

Table 5.23: Organisational motivational policies for workers' productivity

Descriptive statistics for organisational motivational policies								
Code	Item	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Rank	Cronbach's Alpha Coefficient
EE9	Policy on health and safety practices	240	2	5	4.671	0.610	0.372	1	
EE18	Policy related to work environment/culture	240	1	5	4.670	0.651	0.424	2	
EE13	Equipment maintenance policy to ensure equipment is in good working condition to prevent downtime	240	1	5	4.642	0.670	0.448	3	
EE19	Policy related to social opportunities	240	2	5	4.638	0.591	0.349	4	
EE14	Policy related to work structure	240	1	5	4.638	0.619	0.383	5	
EE16	Job rotation policy	240	2	5	4.625	0.628	0.394	6	
EE11	Employee retention policy	240	1	5	4.625	0.673	0.453	7	
EE17	Policy related to celebrating the performance of deserving workers	240	3	5	4.613	0.575	0.330	8	
EE12	Policy on equality in terms of reward regardless of gender, race, or background	240	2	5	4.573	0.643	0.414	9	
EE10	Training and development policy that improves workers' skills to stay updated with industry best practices	240	2	5	4.563	0.610	0.373	10	0.704
EE15	Policy on Leadership Style	240	1	5	4.540	0.737	0.544	11	
EE8	Materials procurement to ensure that materials are available when needed, reducing project delays und	240	1	5	4.500	0.709	0.502	12	
EE7	Policy on equality in terms of bonuses regardless of gender, race, or background	240	1	5	4.417	0.804	0.646	13	
EE1	Policy on equality in terms of promotion regardless of gender, race, or background	240	1	5	3.142	0.940	0.884	14	
EE6	Project planning and scheduling policy to optimise resource allocation and avoid delays	240	1	5	3.121	0.881	0.776	15	
EE4	Continuous improvement policy on feedback from workers is valued and refined over time	240	1	5	3.121	0.918	0.843	16	
EE5	Environmental sustainability policy responsible for construction practices to promote sustainability	240	1	5	3.104	0.916	0.838	17	

Descriptive statistics for organisational motivational policies									
Code	Item	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Rank	Cronbach's Alpha Coefficient
EE2	Subcontractor management policy to ensure they align with project goals	240	1	5	3.050	0.832	0.692	18	
EE3	Environmental sustainability policy responsible for construction practices to reduce waste	240	1	5	3.029	0.875	0.765	19	

*N = Number of respondents

5.4.4 Ascertaining underlying organisational motivational policies influencing workers' productivity

This section discusses identifying the organisational motivational policies influencing workers' productivity. The KMO and Bartlett's Sphericity tests were conducted to measure the sampling adequacy and significance of the items for FA. Following this, the commonality analysis of the items was also computed to ascertain the amount of variance that can be explained in each item. The results obtained from the commonality were confirmed by the outcomes of the analysis of the variance explained in items for factor extraction purposes. Analysis of the total variance demonstrates the importance of utilising pattern and structure matrices to substantiate the loading convergence of the items on each factor.

5.4.4.1 KMO and Bartlett's Sphericity tests for organisational motivational policies

Table 5.24 presents the results of the KMO and Bartlett's Sphericity tests for items in organisational motivational policies. The table presents a KMO test score of 0.899, which specifies a strong threshold of item adequacy. Bartlett's test of Sphericity also demonstrates $p < 0.001$, which signifies the acceptable significance of items. These test results substantiate the suitability of the data for multivariate analysis.

Table 5.24: KMO and Bartlett's Sphericity test results for OMP

KMO and Bartlett's test of Sphericity		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.899
Bartlett's Test of Sphericity	Approx. Chi-Square	723.716
	Df	21
	Sig.	<.001
Observation	Items are significant and adequate for multivariate analysis.	

5.4.4.2 Commonality analysis of organisational motivational policies

The commonality scores presented in Table 5.25 provide insight into how much variance in each organisational motivational policy (OMP) item is explained by the extracted factor(s) during the factor analysis. All six items listed have commonality values above the generally acceptable threshold of 0.40, confirming their relevance and adequacy for inclusion in the factor model.

The item "Environmental sustainability policy responsible for construction practices to reduce waste" (EE3) had the highest commonality score of 0.688, suggesting that a significant portion of its variance is explained by the underlying factor and highlighting its central role in the factor structure. This was followed by "Continuous improvement

policy" (EE4) with a commonality of 0.618, and "Project planning and scheduling policy" (EE6) at 0.549, both indicating a strong contribution to the factor model.

Moderate commonalities were observed for "Policy on equality in terms of promotion" (EE1) at 0.533 and "Subcontractor management policy" (EE2) at 0.495, which still demonstrate a meaningful level of variance explained by the factor. The item with the lowest communality was "Environmental sustainability policy to promote sustainability" (EE5) at 0.449, which, although lower, remains above the minimum threshold, confirming its continued relevance to the model.

Overall, the commonality analysis validates the inclusion of these six OMP items in the factor model. Their explained variance supports the reliability of using these indicators to understand how organisational policies influence worker motivation and productivity in the construction sector.

Table 5.25: Communality scores for items in OMP

Communality estimates of organisational motivational policies			
Code	Item	Initial	Extraction
EE1	Policy on equality in terms of promotion regardless of gender, race, or background	.464	.533
EE2	Subcontractor management policy to ensure they align with project goals	.446	.495
EE3	Environmental sustainability policy responsible for construction practices to reduce waste	.596	.688
EE4	Continuous improvement policy on feedback from workers is valued and refined over time	.540	.618
EE5	Environmental sustainability policy responsible for construction practices to promote sustainability	.409	.449
EE6	Project planning and scheduling policy to optimise resource allocation and avoid delays	.488	.549

Extraction Method: Principal Axis Factoring.

5.4.4.3 Total variance of organisational motivational policies

The analysis of total variance for organisational motivational policies (OMP), as presented in Table 5.26, highlights the explanatory power of the factors extracted through Principal Axis Factoring. The results reveal that only Factor 1 had an eigenvalue greater than 1.00 (3.768), accounting for 62.802% of the total variance in the initial solution. This indicates that Factor 1 captures a substantial portion of the underlying data structure, making it the most dominant factor influencing organisational motivational policies in the dataset.

Following the extraction process, Factor 1 retains a significant eigenvalue of 3.333, which translates to 55.545% of the variance being explained. This confirms that even after extraction, a single factor remains strongly representative of the data and is sufficient for explaining over half of the total variance.

Table 5.26: Variance explained in OMP.

Factor	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.768	62.802	62.802	3.333	55.545	55.545
2	.580	9.670	72.472			
3	.488	8.135	80.607			
4	.462	7.699	88.306			
5	.386	6.430	94.735			
6	.316	5.265	100.000			
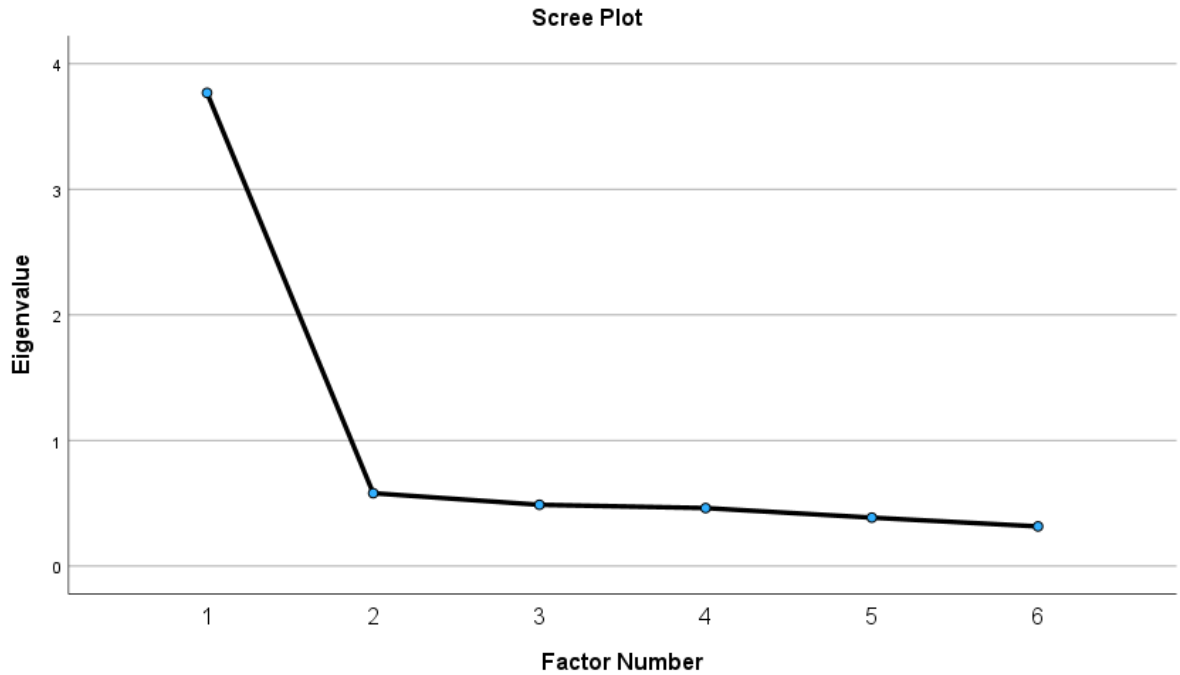
Scree Plot

Figure 5.4: Scree plot for factor extraction in extraction in OMP

The extraction of the dominant factor is visually supported by the Scree plot (Figure 5.4), which displays a sharp decline after Factor 1, forming a distinct "elbow" shape. This visual cue confirms the statistical result that only one factor should be retained, as it is the only one with an eigenvalue greater than 1.00. The subsequent factors drop below this critical threshold and thus do not meet the criteria for retention under the Kaiser rule.

Factor 1 recorded an eigenvalue of 3.768, explaining 62.802% of the total variance initially. After extraction, it retained an eigenvalue of 3.333, accounting for 55.545% of the total variance (Table 5.26). This strong variance explanation indicates a well-defined underlying structure among the organisational motivational policy items.

Because only one factor was extracted, factor rotation was neither necessary nor appropriate, as rotation is used to clarify structure when multiple factors are retained. The unidimensional nature of the extracted factor suggests that the measured OMP items are closely interrelated and strongly influenced by a single latent construct, likely reflecting an overarching theme of organisational efforts to enhance worker motivation and productivity.

This cohesive factor structure supports the validity and reliability of the measurement instrument, reinforcing the idea that organisational motivational policies function as an integrated system in shaping worker outcomes in the South African construction industry.

5.4.4.4 Factor loadings analysis of organisational motivational policies

The factor loadings analysis for organisational motivational policies, as shown in Table 5.27, was conducted using Principal Axis Factoring. The analysis converged after five iterations and extracted a single dominant factor, suggesting a strong unidimensional structure underlying the items assessed. This one-dimensionality implies that the various policies measured are conceptually and statistically aligned, reflecting a unified motivational strategy within organisations that influence worker productivity.

All six items presented in the factor matrix exhibited loading coefficients greater than the recommended threshold of 0.500, confirming their significance in contributing to the extracted factor. The item with the highest factor loading was EE3, which relates to the environmental sustainability policy responsible for reducing waste, with a coefficient of 0.829. This indicates that policies promoting environmental responsibility are perceived as key drivers of motivation and productivity in the construction industry.

Following closely was EE4, the continuous improvement policy based on worker feedback, which recorded a loading of 0.786, emphasizing the motivational impact of dynamic, feedback-driven improvement processes. The project planning and scheduling policy (EE6) loaded at 0.741, underscoring the importance of effective resource and time management in enhancing worker morale and efficiency. Similarly, EE1, which pertains to equality in promotions regardless of gender, race, or background, demonstrated a strong loading of 0.730, highlighting the perceived motivational value of fair and inclusive advancement policies.

Other items also showed substantial contributions. The subcontractor management policy (EE2) recorded a loading of 0.704, reflecting the role of subcontractor alignment in motivating the workforce. Lastly, EE5, which focuses on promoting sustainability in construction practices, showed a factor loading of 0.670, further emphasizing the positive perception of environmentally responsible policies.

In summary, the high factor loadings across all six items validate their importance in defining the latent construct of organisational motivational policies. The results suggest that these policies collectively represent a coherent framework for motivating construction workers and enhancing their productivity. The extraction of a single factor further supports the consistency and internal reliability of the scale used to assess organisational strategies in this domain.

Table 5.27: Pattern and structure matrices showing factor loadings in OMP.

Factor loading estimates for organisational motivational policies		
Code	Item	Rotated loadings
		Pattern matrix
		Factor 1
EE3	Environmental sustainability policy responsible for construction practices to reduce waste	.829
EE4	Continuous improvement policy on feedback from workers is valued and refined over time	.786
EE6	Project planning and scheduling policy to optimise resource allocation and avoid delays	.741
EE1	Policy on equality in terms of promotion regardless of gender, race, or background	.730
EE2	Subcontractor management policy to ensure they align with project goals	.704
EE5	Environmental sustainability policy responsible for construction practices to promote sustainability	.670

Extraction Method: Principal Axis Factoring.
a. 1 factors extracted. 5 iterations required.

5.4.5 Governmental motivational policies for workers' productivity

Items categorised under government policies for workers' productivity were quantified to the motivational impact of the government policies on the workers in the SACI. The results were presented in Table 5.28 to illustrate the perceptions of the significance of government policies in the SACI. In some research claims, it is said that the work environment for construction workers is significantly shaped by labour laws and regulations, which, as asserted, directly affect their motivation and output (Johari and Jha, 2020; Vanesa et al., 2019). The reliability test for the nineteen (19) items under government policies was performed to demonstrate the internal consistency of the data. The test yielded a Cronbach's Alpha coefficient of 0.81, which falls within the excellent threshold of internal consistency. Thus, data concerning the governmental motivational policies show an adequate reliability threshold above 0.70 for this study.

Descriptive findings reveal that all 19 items recorded mean scores above 2.60, indicating moderate to high levels of agreement among respondents. The most highly rated item was FF19 – "Government policies contribute to a sense of empowerment", with a mean score of 4.671, suggesting that workers strongly believe in the empowering potential of government interventions. Closely following were FF16 – "Government initiatives contribute to a sense of stability and predictability" (MS = 4.583), and FF18 – "It promotes healthy work environment that boosts worker productivity" (MS = 4.571). These high scores highlight that government policies are perceived as especially effective in fostering inclusivity, promoting technological innovation, and enhancing the image and morale of the construction workforce.

Overall, the results suggest that while construction workers generally hold a positive view of governmental motivational policies, especially in areas such as empowerment, public image, and innovation, there remains room for improvement in the implementation and communication of policies related to skill development, direct motivation, and workplace conditions. These insights underscore the need for more targeted and actionable policy efforts by governments to fully realise their potential in driving worker productivity in the construction sector.

Table 5.28: Governmental motivational policies for workers' productivity

Code	Item	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Rank	Cronbach's Alpha Coefficient
	Descriptive statistics for governmental motivational policies								
FF19	Government policies contribute to a sense of empowerment	240	1	5	4.671	0.617	0.381	1	
FF16	Government initiatives contribute to a sense of stability and predictability	240	1	5	4.583	0.692	0.478	2	
FF18	It promotes healthy work environment that boosts worker productivity.	240	1	5	4.571	0.717	0.514	3	
FF15	Government initiatives lead to a reduction in workplace stress	240	1	5	4.567	0.705	0.498	4	
FF17	Policies encourage a long-term commitment to the construction profession	240	2	5	4.558	0.624	0.390	5	
FF6	Government policy protects job security among construction workers.	240	1	5	2.867	0.862	0.744	6	
FF5	Adequately address issues related to wages and benefits	240	1	5	2.867	0.872	0.760	7	
FF13	Create a positive public image of the construction profession	240	1	5	2.854	0.896	0.803	8	
FF3	Government policy that creates a favorable work environment	240	1	5	2.850	0.888	0.789	9	
FF12	Effectively address issues related to harassment at workplace	240	1	5	2.842	0.823	0.678	10	0.81
FF7	Adequately address issues relating to the mental and physical well-being of employees	240	1	5	2.829	0.843	0.711	11	
FF14	Promotes positive attitude towards adapting new construction technologies	240	1	5	2.821	0.801	0.641	12	
FF11	Effectively address issues related to discrimination at workplace	240	1	5	2.800	0.824	0.679	13	
FF1	The current government policies positively influence my motivation at work.	240	1	5	2.796	0.846	0.715	14	
FF2	Government initiatives support of workers' skill development	240	1	5	2.792	0.862	0.743	15	
FF10	Government policies enhance overall morale of construction workers	240	1	5	2.783	0.815	0.664	16	
FF4	Align with the safety standards in the construction industry	240	1	5	2.783	0.840	0.706	17	
FF9	Minimize the negative impact of economic fluctuations on workers	240	1	5	2.779	0.866	0.750	18	

Descriptive statistics for governmental motivational policies									
Code	Item	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Rank	Cronbach's Alpha Coefficient
FF8	Government initiatives lead to inclusive and diverse construction workforce.	240	1	5	2.771	0.878	0.772	19	

*N = Number of respondents

5.4.6 Ascertaining underlying governmental motivational policies influencing workers' productivity

This section discusses the multivariate analysis of ascertaining the underlying governmental motivational policies influencing workers' productivity. The process, as conducted in the preceding sections, includes the KMO and Bartlett's Sphericity tests to validate the sufficiency and significance of the data grouped under governmental motivational policies. The commonality analysis of the data was conducted to ascertain the amount of variance that can be explained in the items. In addition, the total variance explained was measured to identify the number of underlying factors that can be extracted to determine the pattern and structure matrices by applying the Promax rotation method to rotate the factor loadings for better understanding.

5.4.6.1 KMO and Bartlett's Sphericity tests for governmental motivational policies

Table 5.29 presents the KMO and Bartlett's test of Sphericity results for governmental motivational policies. The sampling adequacy test yielded a KMO score of 0.971, which specifies the adequacy threshold of the data to use FA (Yong & Pearce, 2013; Andrew, 2016; Civelek, 2018). On the other hand, Bartlett's test of Sphericity yielded $p<0.001$, which specifies the significance of the items towards identifying the underlying factors that influence the productivity of the construction workers.

Table 5.29: KMO and Bartlett's Sphericity test results for governmental motivational policies

KMO and Bartlett's test of Sphericity		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.971
Bartlett's Test of Sphericity	Approx. Chi-Square	2051.513
	Df	91
	Sig.	<.001
Observation	Items are significant and adequate for multivariate analysis.	

5.4.6.2 Commonality analysis of governmental motivational policies

The commonality analysis presented in Table 5.30 evaluates how well each item measuring governmental motivational policies is represented within the factor model derived through Principal Axis Factoring. Commonality values reflect the proportion of each item's variance explained by the extracted factor(s), with values above 0.40 typically considered acceptable for inclusion in factor analysis.

The item FF5 – "Adequately address issues related to wages and benefits" showed the highest commonality value of 0.631, indicating that more than 63% of its variance is

explained by the underlying factor structure. This result suggests that policies concerning fair compensation are perceived as a central element of governmental efforts to motivate construction workers. Likewise, FF9 – "Minimize the negative impact of economic fluctuations on workers" (0.663) and FF11 – "Effectively address issues related to discrimination at workplace" (0.622) also demonstrated strong commonalities, reflecting workers' recognition of economic security and workplace equity as critical motivational factors influenced by government policy.

Several other items recorded moderately high commonalities, including FF7 – "Government initiatives support of workers' skill development" (0.563), FF4 – "Align with the safety standards in the construction industry" (0.565), and FF6 – "Adequately address issues relating to the mental and physical well-being of employees" (0.546). These values suggest that health, safety, and skill development are also well integrated within the latent construct and are viewed by workers as meaningful contributors to their productivity and motivation.

Items such as FF2 – "Government policy that creates a favorable work environment" (0.541) and FF3 – "Government initiatives lead to inclusive and diverse construction workforce" (0.533) showed acceptable, though slightly lower commonalities. These still demonstrate a solid representation in the model but may indicate slightly more varied worker perceptions on how these aspects are experienced across the industry.

On the lower end, FF1 – "The current government policies positively influence my motivation at work" had a communality of 0.370, which is marginally below the recommended threshold. This suggests that while the item is conceptually relevant, its variance is not as strongly explained by the extracted factor, possibly reflecting a more general or variable perception of policy effectiveness. Nonetheless, it remains a noteworthy inclusion due to its thematic importance.

The commonality scores support the robustness of most governmental motivational policy items in the factor model, confirming their statistical relevance and conceptual coherence. These results affirm the influential role of government interventions particularly in areas like wages, safety, discrimination, and economic stability in shaping a productive and motivated construction workforce in the Southern African context.

Table 5.30: Commonality scores for items in governmental motivational policies

Code	Item	Initial	Extraction
	Commonality scores for items in governmental motivational policies		
FF1	The current government policies positively influence my motivation at work.	.375	.370
FF2	Government initiatives support of workers' skill development	.532	.541
FF3	Government policy that creates a favorable work environment	.523	.533
FF4	Align with the safety standards in the construction industry	.562	.565
FF5	Adequately address issues related to wages and benefits	.617	.631
FF6	Government policy protects job security among construction workers.	.531	.546
FF7	Adequately address issues relating to the mental and physical well-being of employees	.550	.563
FF8	Government initiatives lead to inclusive and diverse construction workforce.	.495	.492
FF9	Minimize the negative impact of economic fluctuations on workers	.644	.663
FF10	Government policies enhance overall morale of construction workers	.569	.577
FF11	Effectively address issues related to discrimination at workplace	.600	.622
FF12	Effectively address issues related to harassment at workplace	.571	.590
FF13	Create a positive public image of the construction profession	.539	.549
FF14	Promotes positive attitude towards adapting new construction technologies	.496	.501

Extraction Method: Principal Axis Factoring.

5.4.6.3 Total variance of governmental motivational policies

Table The total variance results for governmental motivational policies, as displayed in Table 5.31, provide insight into the factor structure of the items under this construct. The analysis, conducted using Principal Axis Factoring, reveals that only one factor meets the Kaiser criterion (eigenvalue ≥ 1.00), with Factor 1 exhibiting an eigenvalue of 8.182, which accounts for 58.45% of the total variance in the dataset. This suggests that the first factor represents a strong, unified underlying dimension of governmental motivational policies as perceived by construction workers (Yong & Pearce, 2013; Osborne, 2015; Civelek, 2018). After the factor extraction process, Factor 1 retains an eigenvalue of 7.743, explaining 55.31% of the total variance. This indicates that even after extraction, the factor remains highly dominant and continues to encapsulate the central themes across the items. The extraction sums of squared loadings confirm the robustness of this single-factor model, pointing to the coherence of the measurement scale used for governmental motivational policies.

In essence, the results of this factor analysis indicate that governmental motivational policy items coalesce around a single, dominant latent factor. This unidimensional structure suggests that construction workers perceive government policies influencing motivation such as those related to empowerment, workplace safety, equity, and

industry standards as part of a cohesive and impactful framework. Consequently, the findings support the internal validity of the scale and underscore the central role of government policy as a unified construct in enhancing workforce productivity in the South African Construction Industry (SACI).

Table 5.31: Variance proportion for items explained in governmental motivational policies.

Total variance explained in governmental motivational policies						
Factor	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	8.182	58.445	58.445	7.743	55.309	55.309
2	.694	4.955	63.400			
3	.592	4.227	67.627			
4	.566	4.044	71.671			
5	.528	3.773	75.444			
6	.490	3.498	78.942			
7	.456	3.259	82.200			
8	.421	3.008	85.208			
9	.390	2.788	87.997			
10	.375	2.679	90.676			
11	.364	2.597	93.273			
12	.349	2.490	95.763			
13	.325	2.322	98.085			
14	.268	1.915	100.000			

Extraction Method: Principal Axis Factoring.

Scree Plot

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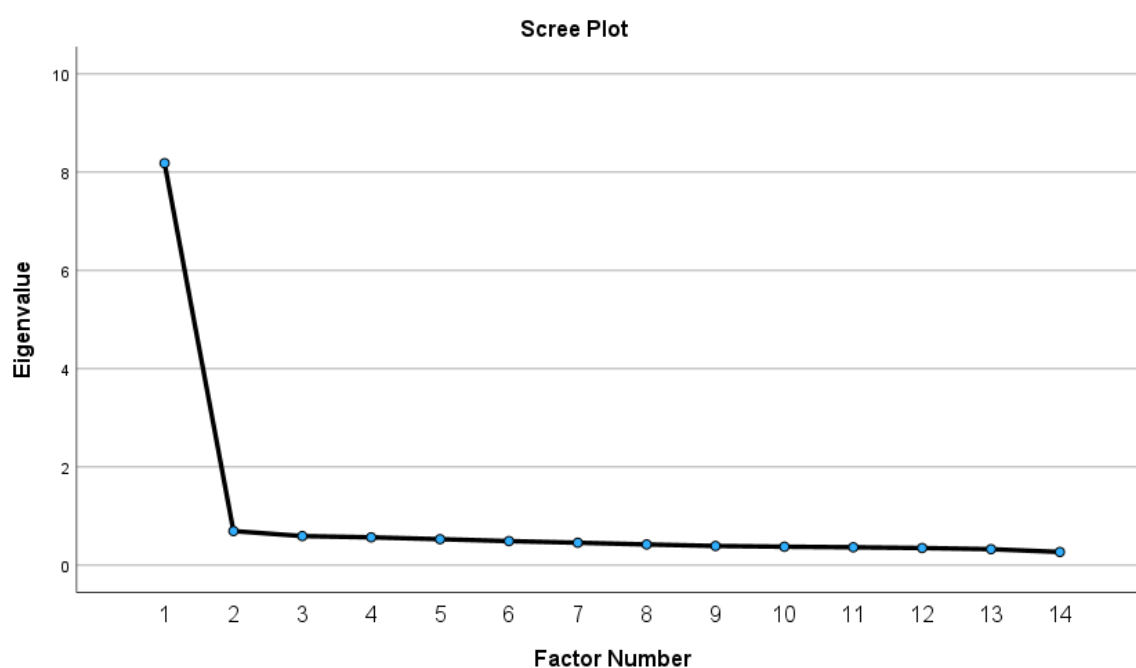
The distribution of the variance throughout the latent factors is perceived to be weighted. Thus, applying the Promax rotation method with Kaiser normalisation was adopted to redistribute the variance by rotating the data among the six factors (Osborne, 2015).

5.4.6.4 Factor loadings analysis of governmental motivational policies

The factor loading analysis of governmental motivational policies, presented in Table 6.32, offers critical insights into how individual policy items cluster around a dominant underlying dimension influencing construction workers' motivation and productivity. Using Principal Axis Factoring, the analysis extracted a single, strong factor structure, with convergence achieved after three iterations. The results reveal that all 14 items displayed strong loading coefficients, all exceeding the conventional threshold of 0.500, which signifies their substantive contribution to the common latent construct.

The items with the highest loading values include "Minimize the negative impact of economic fluctuations on workers" (FF9, loading = 0.814), "Adequately address issues related to wages and benefits" (FF5, loading = 0.795), and "Effectively address issues related to discrimination at workplace" (FF11, loading = 0.789). These items point to a strong worker emphasis on financial stability, equitable treatment, and resilience against macroeconomic pressures. Other notable loadings include "Effectively address issues related to harassment at workplace" (FF12, loading = 0.768), "Government policies enhance overall morale of construction workers" (FF10, loading = 0.760), and "Align with the safety standards in the construction industry" (FF4, loading = 0.751), all of which further underscore the importance of psychological safety and physical well-being.

Additional items such as "Adequately address issues relating to the mental and physical well-being of employees" (FF7, loading = 0.750), "Create a positive public image of the construction profession" (FF13, loading = 0.741), "Government policy protects job security among construction workers" (FF6, loading = 0.739), and "Government initiatives support of workers' skill development" (FF2, loading = 0.736) also load strongly, reflecting the breadth of factors workers consider crucial to a motivating environment. Items like "Government policy that creates a favorable work environment" (FF3, loading = 0.730), "Promotes positive attitude towards adopting new construction technologies" (FF14, loading = 0.708), and "Government initiatives lead to inclusive and diverse construction workforce" (FF8, loading = 0.701) continue this pattern by emphasizing innovation, inclusivity, and conducive working conditions.

The item with the lowest loading, "The current government policies positively influence my motivation at work" (FF1, loading = 0.608), still surpasses the acceptable threshold,

confirming its relevance to the factor despite being relatively less dominant. Altogether, these high factor loadings affirm that workers perceive governmental motivational policies as a coherent and impactful construct, with diverse yet interrelated components that collectively support worker motivation and productivity.

This unidimensional structure not only strengthens the internal consistency and construct validity of the measurement tool but also highlights those effective governmental interventions ranging from legal protections to proactive development policies—play a central role in shaping a positive and productive work climate in the South African Construction Industry (SACI).

Table 5.32: Pattern and structure matrices showing factor loadings in OMP.

Factor loading estimates for organisational motivational policies		
Code	Item	Rotated loadings
		Pattern matrix
		Factor 1
FF9	Minimize the negative impact of economic fluctuations on workers	.814
FF5	Adequately address issues related to wages and benefits	.795
FF11	Effectively address issues related to discrimination at workplace	.789
FF12	Effectively address issues related to harassment at workplace	.768
FF10	Government policies enhance overall morale of construction workers	.760
FF4	Align with the safety standards in the construction industry	.751
FF7	Adequately address issues relating to the mental and physical well-being of employees	.750
FF13	Create a positive public image of the construction profession	.741
FF6	Government policy protects job security among construction workers.	.739
FF2	Government initiatives support of workers' skill development	.736
FF3	Government policy that creates a favorable work environment	.730
FF14	Promotes positive attitude towards adapting new construction technologies	.708

Extraction Method: Principal Axis Factoring.
a. 1 factors extracted. 5 iterations required.

5.4.7 Sustainable productivity of workers

This section discusses the items classified under sustainable productivity of construction workers in the SACI. The section presents six (6) items measured to demonstrate the need for fair and equitable working conditions. This can be achieved by ensuring that workers are paid reasonable wages, provided appropriate benefits, and treated with respect and dignity. The internal reliability test was conducted to ascertain the internal consistency of the data. The test indicated a Cronbach's Alpha coefficient of 0.791, which falls within the average threshold of internal consistency. This value indicates that data about sustainable productivity show an acceptable reliability threshold above 0.70. This prepares the data for further analysis.

This section examines the elements that underpin sustainable productivity among workers in the South African Construction Industry (SACI). The analysis focused on six critical items reflecting the essential attributes of productive and sustainable construction performance. These include adherence to budget and time constraints, quality delivery, on-site safety, customer satisfaction, and profitability—each contributing to the overall sustainability of worker output.

The reliability of the scale was confirmed through Cronbach's Alpha, yielding a strong coefficient of 0.842. This high score indicates excellent internal consistency across the six items and supports the robustness of the data in reflecting a unified construct of sustainable productivity. Each item therefore contributes meaningfully to the overall measurement, validating the dependability of the responses obtained from construction workers.

Descriptive results reveal that all six items received mean scores slightly above 2.60, indicating moderate agreement among respondents regarding their importance. The highest-rated item was GG5— "Customer satisfaction to indicate that the worker provided efficient and effective service"—with a mean score of 2.867. This suggests that workers strongly associate sustainable productivity with meeting client expectations and delivering effective services. Similarly, items GG4— "Free from hazards onsite during project delivery" (MS = 2.850)—and GG3— "Delivery of quality project within the specification of the contract" (MS = 2.846)—were also highly rated, underscoring the importance of safety and quality in productivity.

Conversely, GG6— "Profit generated during project delivery"—had the lowest mean score of 2.629, accompanied by the highest standard deviation (1.293). This implies that while profitability is a component of productivity, workers may perceive it as less directly tied to their day-to-day performance or as a variable influenced more by external project

or organizational factors than by individual effort. Items GG1 and GG2, which address budget and time compliance respectively, received moderate ratings (MS = 2.825 and MS = 2.796), suggesting that workers recognize these as important, though potentially more management-driven metrics.

In summary, the findings emphasize that sustainable productivity in SACI hinges on multiple interrelated factors, with value placed on client satisfaction, safety, and quality performance. Although profit remains a relevant dimension, workers appear to prioritize productivity measures more closely tied to service delivery and working conditions. These insights support the development of worker-centric strategies that foster long-term efficiency and effectiveness in the construction industry.

Table 5.32: Sustainable productivity of construction workers

Code	Item	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Rank	Cronbach's Alpha Coefficient
	Descriptive statistics for sustainable productivity								
GG5	Customer satisfaction to indicate that the worker provided efficient and effective service	240	1	5	2.867	0.896	0.802	1	
GG4	Free from hazards onsite during project delivery	240	1	5	2.850	0.921	0.848	2	
GG3	Delivery of quality project within the specification of the contract	240	1	5	2.846	0.895	0.800	3	0.791
GG1	Completion of project within the budgeted cost	240	1	5	2.825	0.898	0.806	4	
GG2	Completion of project within the timeframe	240	1	5	2.796	0.831	0.690	5	
GG6	Profit generated during project delivery	240	1	5	2.629	1.293	1.672	6	

*N = Number of respondents

5.4.7.1 KMO and Bartlett's Sphericity tests for sustainable productivity

Table 5.34 presents the KMO and Bartlett's test of Sphericity results sustainable productivity. The sampling adequacy test yielded a KMO score of 0.888, which specifies the adequacy threshold of the data to use FA (Yong & Pearce, 2013; Andrew, 2016; Civelek, 2018). On the other hand, Bartlett's test of Sphericity yielded $p < 0.001$, which specifies the significance of the items towards identifying the underlying factors that influence sustainable productivity of the construction workers.

Table 5.33: KMO and Bartlett's Sphericity test results for sustainable productivity

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.888
Bartlett's Test of Sphericity	Approx. Chi-Square	706.952
	Df	10
	Sig.	<.001

5.4.7.2 Commonality analysis of sustainable productivity

The commonality analysis for sustainable productivity, based on Principal Axis Factoring, evaluates how well each item is explained by the underlying factor(s). Higher commonality values suggest that an item is well-represented by the factor solution, which in turn indicates a stronger contribution to the overall factor structure of sustainable productivity.

Among the items, "Delivery of quality project within the specification of the contract" (GG3) shows the highest commonality, with an initial value of 0.586 and an extraction value of 0.652. This indicates that quality delivery is a highly significant factor in explaining sustainable productivity within the construction industry. Similarly, "Free from hazards onsite during project delivery" (GG4) also demonstrates strong commonality values, with an initial commonality of 0.533 and an extraction value of 0.592. These findings highlight that safety on-site plays an essential role in sustaining productivity.

On the other hand, items such as "Completion of project within the budgeted cost" (GG1) and "Completion of project within the timeframe" (GG2) have lower commonality scores. For example, GG1 has an initial commonality of 0.616, which decreases slightly to 0.688 after extraction. Similarly, GG5— "Customer satisfaction to indicate that the worker provided efficient and effective service"—also shows moderate commonality values, starting with an initial score of 0.598 and ending with 0.674 after extraction. This suggests that while cost control, time management, and customer satisfaction are

relevant to sustainable productivity, they are not as strongly represented by the underlying solution as quality and safety.

Lastly, "Profit generated during project delivery" (GG6) has an initial commonality of 0.407 and an extraction value of 0.483, indicating a moderate representation within the factor structure. This reflects that while profitability is an important aspect, it plays a secondary role in explaining sustainable productivity compared to quality and safety.

The commonality analysis suggests that factors like quality delivery, safety, and profitability are more strongly defined in the factor model of sustainable productivity. Items related to time management, cost control, and customer satisfaction, although important, appear to contribute less to the overall explanatory power of the model. These insights can inform future strategies aimed at enhancing the sustainability of productivity in construction, particularly by focusing on quality and safety measures.

Table 5.34: Commonality scores for items in sustainable productivity

	Communalities		
		Initial	Extraction
GG1	Completion of project within the budgeted cost	0.616	0.688
GG2	Completion of project within the timeframe	0.584	0.658
GG3	Delivery of quality project within the specification of the contract	0.586	0.652
GG4	Free from hazards onsite during project delivery	0.533	0.592
GG5	Customer satisfaction to indicate that the worker provided efficient and effective service	0.598	0.674
	Extraction Method: Principal Axis Factoring.		

5.4.7.3 Total Variance Explained

The total variance explained for sustainable productivity reveals that a single dominant factor accounts for most of the variability in the data. Factor 1, with an initial eigenvalue of 3.610, explains 72.20% of the total variance. After extraction, this factor continues to explain 65.28% of the variance, signifying that it is the primary factor underlying the observed variance across the six measured items.

The other factors, with eigenvalues below 1.00, do not significantly contribute to the model, as confirmed by Kaiser's rule for factor retention. The Scree plot further supports this conclusion, showing a clear "elbow" after Factor 1, which reinforces the idea that only this factor should be considered for further analysis.

The data suggest that the items categorized under sustainable productivity are well-represented by a single latent factor, simplifying interpretation and providing a clear understanding of the construct that drives productivity outcomes within the SACI

framework. This factor encapsulates the main aspects influencing sustainable productivity in the construction industry.

Table 5.35: Variance proportion for items explained in sustainable productivity.

Total variance explained in governmental motivational policies						
Factor	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	3.610	72.204	72.204	3.264	65.277	65.277
2	.412	8.232	80.435			
3	.378	7.563	87.998			
4	.321	6.429	94.427			
5	.279	5.573	100.000			

Extraction Method: Principal Axis Factoring.
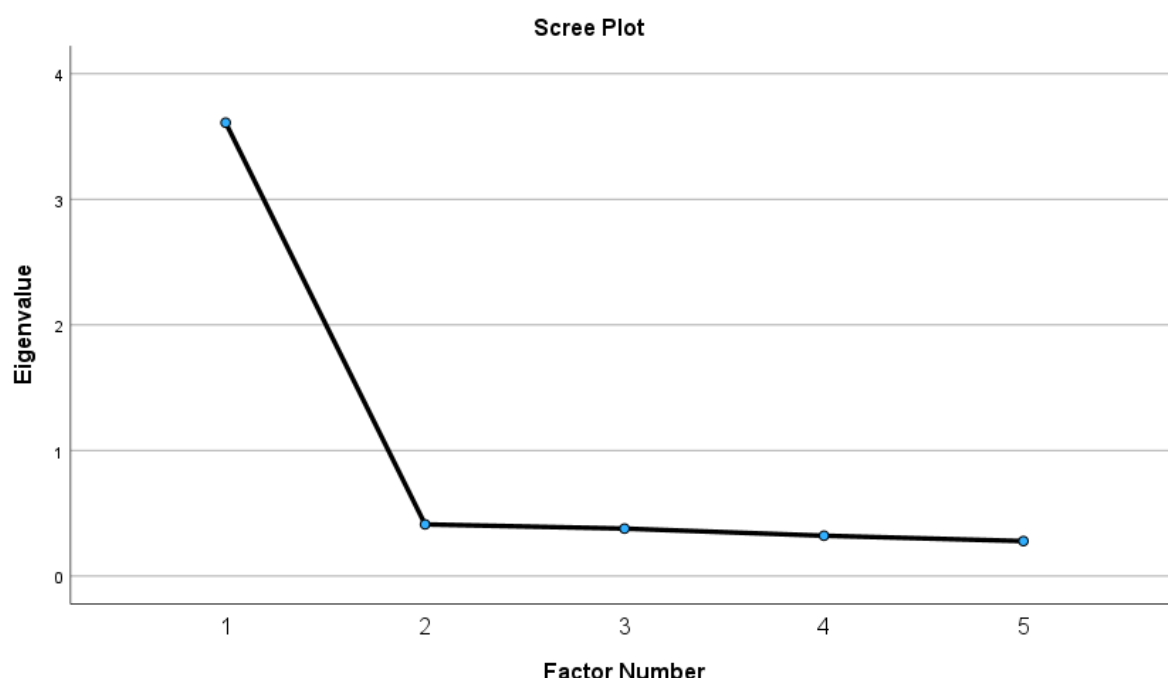
Figure 5.6 Scree plot for factor extraction in for items in sustainable productivity

5.4.7.4 Factor loadings analysis in sustainable productivity

The factor loading analysis for sustainable productivity reveals the strong alignment of each item with the single underlying factor extracted through principal axis factoring. This factor represents the latent construct of sustainable productivity within the construction industry. The item "Delivery of quality project within the specification of the contract" (GG1) recorded the highest factor loading of 0.829, indicating its critical role in defining sustainable productivity. This was closely followed by "Free from hazards onsite during project delivery" (GG2) with a loading of 0.821, highlighting the importance of safety in su5staining productive outcomes. The item "Profit generated during project

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delivery" (GG3) also had a substantial loading of 0.811, reflecting the financial dimension of productivity. Other items such as "Customer satisfaction to indicate that the worker provided efficient and effective service" (GG4) with a loading of 0.807, "Completion of project within the budgeted cost" (GG5) at 0.769, and "Completion of project within the timeframe" (GG6) at 0.601, also demonstrated strong loadings, suggesting that cost-efficiency, time management, and client satisfaction are integral to the broader concept of sustainable productivity. These strong loadings collectively validate that all measured aspects quality, safety, cost, time, satisfaction, and profitability are closely interrelated and contribute meaningfully to a unified factor representing sustainable productivity. This supports the conclusion that a single-factor solution is effective in assessing the sustainable performance of construction workers within the SACI framework.

Table 5.36: Pattern and structure matrices showing factor loadings in sustainable productivity

	Factor Matrix	
		Factor 1
GG1	Delivery of quality project within the specification of the contract	0.829
GG2	Free from hazards onsite during project delivery	0.821
GG3	Profit generated during project delivery	0.811
GG4	Customer satisfaction to indicate that the worker provided efficient and effective service	0.807
GG5	Completion of project within the budgeted cost	0.769
	Extraction Method: Principal Axis Factoring.	
	a one factor extracted. Five iterations required.	

5.5   Evaluation of Findings About Research Construct

5.5.1   Summary of findings on motivational incentives

From the descriptive analysis of motivational incentives, a reliability analysis of the data assembled for motivational incentives yielded an acceptable threshold of excellent internal consistency, confirming the dependability of the data for further analysis. Additionally, all the factors significantly influence the productivity threshold of construction workers in the South African context. Following the descriptive analysis, the EFA was applied to actualise data reduction and assessed correlations between the variables about motivational incentives. The results demonstrated that the data used exhibited acceptable KMO and Bartlett's test of Sphericity scores, showcasing the data's adequacy and significance.

Two underlying factors were identified, where factor 1 was determined to have a huge influence on the motivation of the workers' productivity through the frequent annual

salary, I bonus payment, long service award, Overtime payment, promotion, and safety plans from their organisations because of service rendered. Also, workmen's compensation, provision funds, social security and leave allowance are inclusive to motivate worker. Factor 2 was identified to strongly influence motivation by profit sharing, provision of canteen subsidy and housing loans to workers.

The intercorrelation between the identified underlying factors indicated that the relationship between factor 1 and factor 2 generated the strongest positive correlation. These findings align with the views of Meyer et al. (2025), Al-Abbadi & AgyekumMensah, (2022), Funso *et al.* 2016).

5.5.2 Summary of findings on motivational empowerment

Descriptive analysis was computed to examine how motivational empowerment is important in influencing construction workers towards attaining improved performance in the SACI. The internal reliability test of the data was carried out to ascertain the reliability threshold of the data. The result showed that data reliability of the motivational empowerment yielded an acceptable threshold of good internal consistency, confirming the steadiness of the data for further analysis. Further analysis of the importance of the data demonstrated that all the items are significant in determining the factors contributing to the sustainable productivity of the construction workers because of adequate motivational empowerment.

Subsequently, the EFA was performed to achieve data reduction and specify the relationships between the variables in motivational empowerment. The KMO and Batlett's Sphericity tests were conducted to demonstrate the adequacy of the data for EFA. Factor has a huge influence on the ability of the workers having access to information needed, trust, and communication, good work environment, job security, and access to resources and long-term career prospects within the organisation. Studies by Wahlin and Winston (2023), Ryan and Deci (2019) and Kuvaas et al. (2017) confirmed that motivational empowerment is crucial in the lifespan of an organisation.

5.5.3 Summary of findings on psychological factors for Workers' Productivity

Regarding psychological factors in descriptive analysis, the reliability of the data was tested and confirmed to produce an acceptable threshold of good internal reliability for performing further analysis. The descriptive analysis quantifies the significance of the data (items) in determining the best psychological technique for improving the workers' productivity. The descriptive results indicate that all the items have great significance in attaining a reliable factor model performance. These results were perceived to offer little understanding of the determination of the underlying factors. Therefore, FA was

employed to determine the underlying factors by performing the KMO and Bartlett's test of Sphericity. The test results confirmed the adequacy and significance of the data to apply FA.

The FA produced the extraction of a factor with their corresponding items. These underlying items were identified are availability of shelter, workers feeling valued and appreciated, good communication skills, safety measures and protocols, adequate fairness to all workers and consulting workers onsite before effecting change as the principal psychological factors affecting workers' productivity in the construction industry in SACI. Several studies by Dodanwala *et al.* (2023), Kamardeen and Hasan (2022), Abukhashabah *et al. (*2020), Umar and Egbu, (2020) ascertain that stress increases the number of accidents in the work environment, which causes reworks and unexpected costs to be imposed on the project as well as productivity being exaggerated.

5.5.4 Summary of findings on organisational motivational policies for worker productivity

Initially, the reliability of the data was conducted to determine the dependability of the data. Findings revealed that the data exhibited an acceptable level of average internal consistency, which sanctioned the data for further analysis. Descriptive analysis was performed on organisational motivational policies to demonstrate the significance of the items based on the respondents' perceptions. Findings indicated that all the items about organisational motivational policies are significant to the improvement of the workers' productivity.

Application of FA was affirmed through the test scores obtained from the KMO and Bartlett's test of Sphericity, which signified that the data used was adequate and significant for multivariate analysis. The total variance explained led to the extraction of seven factors identified as principal underlying factors affecting the efficient implementation of the organisational motivational policies towards raising workers' productivity. These OMP variables that influences workers motivation are employee retention policy, work environment/culture, job rotation policy, policy related to work structure, policy on health and safety practices and policies on celebrating workers performance. Therefore, it is notable for organisation to create policies that would be favorable to enhance worker motivation towards achieving sustainable productivity (Ichsan *et al.,* 2021; Purnomo, 2020; Wen *et al.,* 2019).

5.5.5 Summary of findings on governmental motivational policies for workers' productivity

Data concerning governmental motivational policies were analysed by examining their internal consistency. Findings indicated that the internal reliability of the data was within an excellent threshold, which shows that the data used is dependable. In addition, the descriptive analysis conducted on this data demonstrated that all items grouped under governmental motivational policies are deemed significant in determining the underlying factors affecting workers' performance due to governmental motivational policies. The FA application considered the conduction of KMO and Bartlett's test Sphericity critical to the determination of the data adequacy and significance. The test scores are within the acceptable threshold for both KMO and Bartlett's Sphericity tests.

The total variance explained in the items generated with their corresponding indicators (items). The Factor consist of current government policies that is favourable at workplace, safety standards, wages and benefits, job security, mental and wellbeing, inclusive and diverse, economic fluctuations, worker morale and discrimination at workplace are significant to motivation workers for a sustainable productivity. Labour laws and regulations significantly shape the work environment for construction workers as supported by Johari and Jha (2020) and Vanesa *et al.* (2019). These laws and regulations directly affect their motivation and output productively.

5.5.6 Summary of findings on sustainable productivity of workers

A descriptive analysis of sustainable productivity was performed to demonstrate the essentiality of fair and equitable working conditions in ensuring that workers are paid reasonable wages, provided appropriate benefits, and treated with esteem. The reliability test of the data categorised under sustainable productivity was conducted. Findings indicated an average threshold of internal consistency of the data, demonstrating that data concerning sustainable productivity are dependable for the study. The descriptive analysis of the data indicated that all items are significant for identifying the best sustainable strategy for workers' productivity. Application of FA was affirmed through the test scores obtained from the KMO and Bartlett's test of Sphericity, which signified that the data used was adequate and significant for multivariate analysis.

5.6 Chapter summary

This chapter discussed and presented the quantitative analysis of the research findings through descriptive as well as inferential statistical analysis. Results have been presented graphically to find out that sustainable productivity of the South African construction industry, from the viewpoint of motivational incentives, empowerment, and psychological drivers, really affected by organisational and governmental policies. Also, the research confirms that while the motivational strategies of the workers in the industry are there, they are not sustainable. Nonetheless, the research confirms that there are also phases of demotivation among the workers in the SACI, which is not conducive to productivity in the long term. In addition, evidence confirms that management will need to take very seriously a sequence of motivational problems such as higher wages, skill advancement, social security, and safe campaigns that will enhance sustainable productivity. These factors should be prioritise as being a more crucial to support long-term productivity goals. Chapter 6 allow further findings that will provides a more detailed analysis of the findings in this research, thereby closing the research gaps.

CHAPTER 6

QUALITATIVE DATA ANALYSIS, FINDINGS AND DISCUSSION

6.1   Introduction

This section discusses the qualitative research analysis and findings of the open-ended interview involving five interviewees who were purposively selected (Blaxter *et al.,* 2010; Shava *et al.,* 2021). The interviewees were selected based on their vast construction experiences and have been involved in several project executions under construction firms registered with CIDB South Africa. The interview questions were formulated in coherence with the objectives of the study and to confirm the conclusions to support the quantitative findings presented in Chapter 6. Also, the interview guide offers a simplified understanding of the qualitative research analysis through reliable selections of the interviewees, content analysis, and adequate interpretation of the findings (Shava *et al.,* 2021). The responses to the interview questions were collected as audio and transcribed reports; a set of data gathered was organised into applicable contents that could validate the significance of the objectives of the study (Creswell, 1999; Creswell & Poth 2017).

6.2   Selection of Participants and Interview Arrangement

As earlier indicated in section 7.1, the participants were selected based on their vast level of experience in construction projects with organisations registered under CIDB grade level 4-9. Five participants with considerable project execution experience were selected from five different organisations located in the three major cities in South Africa. Among these selected participants, two were considered from two different construction organisations in Cape Town and Johannesburg, respectively, and the interview was conducted according to their specified available time. In addition, the remaining participant was selected in Durban, and a convenient time for the interview was also indicated.

The decision to select these professionals is based on their involvement in various tasks that require workers' motivation to enhance productivity. The preparation for the interview was carried out to aid the identification and classification of the participants towards comprehensible analysis and interpretation of the data. For the two participants in Cape Town, the first respondent is a construction manager (Respondent A), and the second is a project manager (Respondent B). The two participants in Johannesburg were identified as Respondent C (site manager) and Respondent D (quantity surveyor). The last respondent in Durban was identified as supervising builder-foreman (Respondent E). As part of the approaches to data processing, an audio voice recorder

was carefully utilised to secure adequate information during the interview for a quality transcription of the audio voice into the applicable dataset.

6.3   Collation of Responses

As described in section 7.2, the interview guide was segmentally designed to offer a comprehensive understanding to the participants and to acquire the right responses to all the questions. The interview guide was designed with adequate instructions to guide the participants' knowledge about the research content and the time specified for each question. This process strengthens the probability of achieving a standard approach to conceptual research through responses to each question. The responses (data) gathered were carefully transcribed and explored using a content analysis approach to underscore the relevant statements relevant to the research objectives (Shava *et al.,* 2021; Blaxter *et al.,* 2010).

After 317 responses were received at the end of the quantitative survey. Five respondents from across South Africa expressed interest in taking part in the interview. Dates for individual interviews were set up with each of the five respondents when they were reached. Of the 263 responses from the quantitative survey, five respondents with head offices in Cape Town, Johannesburg, and Durban and smaller offices across other parts of South Africa showed interest in participating in the interview. In this regard, each respondent was contacted for an individual interview. The first interview was conducted on May 8, 2024, at 16:00, at the office of a construction manager with a Construction Industry Development Board (CIBD) registration (Grade 4 GB and CE) in Cape Town. This discussion lasted 45 minutes. The second interview was conducted with a Project Manager holding a CIBD (Grade 6 GB and CE) on May 16, 2024, at 15.00. It was conducted at a location close to one of the project sites, Cape Town and the interview took 45 minutes. On May 31, 2024, at 19:00, an online interview with a Site Engineer operating mainly in Gauteng Province and registered as a CIBD (Grade 1 GB and CE) was held for 50 minutes. The fourth interview with a Quantity Surveyor, a practising CIBD (Grade 2 GB and CE) principally operating in Gauteng Province, was conducted on June 6, 2024, at 19:00 hours. The online session lasted 40 minutes. Another Quantity Surveyor, registered as a CIBD (Grade 2 GB and CE) and principally operating in KwaZulu-Natal Province, was interviewed online at 19:00 hours; the last session lasted 35 minutes. To record the interview using a digital voice recorder, the researcher asked each of the five people interviewed for their consent. The researcher was given permission.

6.4 Case Study Evaluation

6.4.1 Respondent A

6.4.1.1 Theme 1: Motivational incentives influencing workers' productivity.

Theme one (1) clearly explains Respondent A's perceptions of whether motivational incentives are in place to enhance workers' productivity within the construction company. The construction manager, with vast experience in civil project execution, responded by affirming that the company has incentives in place to propel the workers' productivity in the form of annual salary increments. The respondent further confirmed through his statement that:

> "Annual salary increase for the workers is considered as the most principled approach to workers' productivity improvement because the workers' morale would be amplified to deliver quality work within the given time and cost. It is also applied to keep them happier and maintain cordial relationship between the employer and employees."

The respondent also mentioned that employees are motivated through the provision of housing loans and rent subsidies to provide emotional security, enhance work-life balance, and decrease the cost and time it takes them to get to work. Respondent A also claimed that his company has efficient motivational programmes that offer workers a sense of belonging and energise them to reciprocate the benefits to the organisation through improved performance. This finding is akin to the literature and supported by the following authors (Jacobo-Galicia *et al.,* 2021; Hopper, 2020; Bratton *et al.,* 2007). The construction manager responded to the sub question in the interview by stating the significant incentives that could enhance sustainable productivity in the construction industry. Thus, providing reliable insurance coverage is paramount to the sustainability of the workers' handiness because they will feel more secure and relaxed against unforeseen circumstances, thereby raising their self-confidence and concentration level (Ștefan *et al.,* 2020; Khan & Wajidi, 2019; Hitka *et al.,* 2017).

Table 6.1: Background details of the respondents

Respondents	Position Occupied	Geographical Area of Operation	Essential Operations	CIDB Grade Level	CIDB Class of Works	Years of Experience
Respondent A	Construction Manager	Works mainly in the Western Cape Province of South Africa	Roads & Bridges Construction	Grade 9	General Building (GB)	13
Respondent B	Project Manager	Works largely in the Western Cape Province of South Africa and works on specific projects in the Eastern Cape Province of South Africa	Roads & Bridges Construction	Grade 8	Civil Engineering (CE)	10
Respondent C	Civil Engineer (Site Manager)	Works largely in Gauteng Province of South Africa, and works on a few projects in KwaZulu Natal of South Africa	Buildings Construction	Grade 6	General Building (GB)	8
Respondent D	Quantity Surveyor	Works mainly in the Gauteng Province of South Africa	Buildings Construction	Grade 9	General Building (GB)	12
Respondent E	Architect	Works mainly in Kwa-Zulu Natal Province of South Africa	Sustainable Buildings Construction	Grade 7	General Building (GB)	8

6.4.1.2 Theme 2: Motivational empowerment influencing workers' productivity.

Respondent A also understood the questions about motivational empowerment influencing workers' productivity. The respondent was asked if he thinks that motivational empowerment influences job satisfaction. The construction manager gave an in-depth explanation of the above question by stating that as an employer, he provided workers with development to raise their confidence and improve their skills through available training sponsored by the company. The respondent further declared the importance of providing workers with motivational empowerment to keep them updated with global industrial trends and strengthen their ability to deliver quality output. He stated that:

> "Motivational empowerment can only be sustainable within an effective system, where organisational management is considered accessible to every personnel. Workers' morales are improved based on the forms of motivational empowerment initiatives adopted by the management to improve workers' productivity."

Respondent A, based on his project delivery experience, claimed that motivational empowerment has a positive influence on sustainable productivity by allowing the workers to work autonomously to promote individual contributions towards acquiring more fulfilling technical savvy. The respondents further elucidated that motivational empowerment also contributes to the development of workers by fostering their sense of purpose and accountability. This buttresses the empowerment strategies that could be employed to improve workers' productivity. Similarly, knowledge and tools accessibility could raise workers' production level through confident performance and success realisation in project execution, where there is trust in communication between management and workers, which could go a long way to promote a conducive work environment. Therefore, knowledge and skills sharing are encouraged to achieve effective production.

6.4.1.3 Theme 3: Psychological factors influencing construction workers' productivity.

From a similar approach, three questions were asked concerning the psychological influence on workers' job satisfaction. Respondent A responded to the first question by affirming that one's personal goals are influenced by psychological factors regardless of where he/she works. The respondent further claimed that work stresses can undeniably have a huge influence on workers' motivation. Tijani *et al.* (2020) supported the idea that stress critically demotivates a worker by affecting performance and decreasing morale. On the sub-question, emotional intelligence and a positive mindset are crucial in

enabling a worker to perform better within allocated tasks and decipher the impact of psychological situations to motivate their performance. Respondent A further cited that:

> "Both workers and employers should be informed that the impact of a well-managed psychological influence would stimulate a productive work environment, in which workers will be keen to collaborate with their teammates and also be able to identify the best approach to their tasks."

Therefore, understanding the impact level of a psychological factor on workers could strengthen conflict resolution, team efforts, relationship management, and adequate communication (Hasan *et al.,* 2018). This approach is expected to influence the sustainability of workers' productivity in project delivery because when workers are motivated through personal satisfaction or external rewards, they tend to be more focused, satisfied, and committed and offer greater effort in ensuring that quality work is delivered (Suleiman, 2022).

In the last subquestion, the manager identified psychological factors that significantly enhance workers' productivity in the firm. Concerning this question, the respondent asserted that various psychological factors significantly enhance the workers' productivity. However, the construction manager identified rewards and recognition, personal satisfaction, autonomy, job meaningfulness, interpersonal relationships and a conducive work environment as the significant factors that enhance workers' productivity. Respondent A explained further that these factors improve workers' state of mind, commitment level, decision-making ability, sense of accountability, and the quality effort required to sustain consistency during project delivery. The above statement is buttressed by the findings on the psychological influence on workers' productivity.

6.4.1.4 Theme 4: Organisational motivational policies influencing construction workers' productivity.

Respondent A also answered the three questions about the organisational motivational policies in theme 4. The first question was whether organisational motivational policies are provided to enhance workers' productivity. The response was that organisational motivational policies strongly influence construction timelines and project delivery. The construction manager stated the importance of motivating workers to attain project efficiency from time to time to achieve timely delivery of projects. He further emphasised that organisationally motivated workers tend to exhibit adequate commitment and reliability towards accomplishing project milestones. The manager cited that:

"Motivated workers are more dedicated and adequately focused on their allocated tasks as a result influences the overall productivity of the workers. This could only be possible within a conducive and supportive organisational environment, where workers are allowed to collaborate and establish interpersonal relationships towards increased productivity."

Respondent A's affirmative response to the next question specifies that OMP greatly impact workers' productivity. The construction manager claimed that a motivational policy system implemented by the organisation is established to reward the workforce for their exceptional performance and propels them to endeavour for quality work. Studies by Andavar and Ali (2020) and Chandrawaty and Widodo (2020) supported the idea that organisations need to put more effort into ensuring that workers' recognition and acknowledgement are adequately considered as part of the motivational strategies that could enhance performance. Career development and teamwork could foster adequate communication of project objectives, and regular feedback and training opportunities will ensure roles/tasks are understood by the workers, thereby encouraging them to invest all efforts into their professions. Concerning the last question on adopting the organisational motivational policies, the respondent mentioned that a strong policy on equality is promoted within the company to actualise productivity improvement. He further stated that the policy is implemented to aid the efficient motivation of the workers by fairly recompensing them with promotions and compensations and creating opportunities for them irrespective of their gender, race, or background. For any company that stands firmly on meritocracy for workers to grow professionally, this policy is a reliable approach towards consistently realising the organisational objectives. This will avoid delays in project planning and optimise resource allocation.

6.4.1.5 Theme 5: Governmental motivational policies influencing construction workers' productivity.

Respondent A was also asked if the government's motivational policies were structured to enhance workers' productivity. Following this question, the respondent mentioned that governmental motivational policies are established but not adequately implemented to propel workers' productivity within the organisation. The construction manager stated that adequate implementation of the governmental motivational policies in all project activities involving construction workers does not have a consistent impact on the operations performed. The respondent further cited that:

"Government-supported training programmes could have a huge impact on the construction workers' skill level by raising their performance efficiency across all allocated tasks. Another option to consider is financial incentives for the firm's tax credits, which involve investing in employees' training or bonuses. This can offer direct motivation to workers through project achievements."

Respondent A affirmed that governmental motivational policies have a direct impact on the workers' productivity towards attaining completion of project timelines. The respondent once again highlighted the significance of financial incentives, training programmes, regulatory reforms, and infrastructure investments in raising the conducive conditions of their company's work environment in terms of skills development, employment creation, safety and security, and project delivery to influence the workers' ability to augment their performance level. All these are considered crucial to the sustainable growth of the construction industry in South Africa.

The respondent also responded to the last question on how government regulations addressed issues concerning fair wages, workplace safety, benefits and environmental sustainability that could enhance the sustainable productivity of the workers during project delivery. The construction manager claimed that government regulations influence workplace safety, fair wages, environmental sustainability, and other essential welfare required to improve sustainable productivity during project execution. The manager described that regulations motivate unalloyed compensations for workers in terms of their wages, work environments, healthcare benefits, safety and security welfare.

Respondent A further described that fair wage regulations could guarantee workers' consistent remuneration, disparity reduction and promote economic stability. He added that workplace safety regulations would safeguard workers from hazards, injuries, and illnesses to make the work environment safe and deter any possible downtime due to unplanned events, such as accidents and health-related issues. The manager clarified that essential welfare, such as healthcare coverage and a retirement savings plan, would ensure adequate well-being of the workers, including job satisfaction, turnover reduction, and adequate workforce. Girdwichai and Sriviboon (2020) and Vanesa *et al.* (2019) asserted that environmental sustainability would ensure standard usage of construction resources, appropriate management of wastes, adequate regulation of pollution, and cultivating an eco-friendly environment to encourage proper mitigation of the environmental impact as well as support long-term project viability.

From the above deliberations, one can understand the significance of these regulations in enabling appropriate handling of compliance and accountability to cultivate a conducive environment that would guarantee efficient performance of the workers towards successful delivery of projects and overall industrial growth.

6.4.1.6 Theme 6: Model development for sustainable workers' productivity

Respondent A also provided insight into developing the model for sustainable workers' productivity. The respondent stipulated the need to develop a model that could enhance the workers' ability to attain motivated performance. He said the model will foster an efficient approach to workers' welfare, promoting equity, skill development, financial stability, health and job security.

6.4.2 Respondent B

6.4.2.1 Theme 1: Motivational incentives influencing workers' productivity.

Respondent B, a project manager, responded to the first question concerning the influence of motivational incentives on the workers' productivity by affirming that the company he works for provides adequate incentives that would enhance the contentment and performance of the construction workers. The respondent highlighted annual pay rises, promotions for a well-defined career path, overtime compensation for overtime performance, bonuses for exceptional performance, and long service awards for unwavering dedication as incentives to motivate workers in the company. The project manager further mentioned that a food subsidy was implemented by the company management to support the financial capacity of the workers. In support of this, a food cafeteria was provided at an affordable cost so that the workers could eat conveniently at lunchtime.

In addition, Respondent B identified profit sharing to workers after the timely delivery of projects as the most motivating incentive by the company. According to a statement made by the respondent:

> "Incentives are critical to the performance of the construction workers, although these incentives motivate them and offer them a sense of pride and ownership in their various work-related achievements. In other words, incentives offer workers supports that are beyond their reach during production, but they surge up their productivity."

Other essential incentives claimed to be provided by the company are gratuity—to ensure that workers' life after retirement is well-handled, provision for car loans and transportation stipends to ease the difficulty of getting to work on time. The company also provides social security and compensation for affected workers during production.

In affirmative to the first question, Respondent B responded to the sub-question by mentioning the most crucial incentives for enhancing sustainable productivity within the company. Studies by Funso *et al.* (2016) and Jarkas *et al.* (2014) pinpointed that adequate insurance coverage, healthcare incentives, adequate safety practices, and performance compensation are crucial motivational incentives adopted by the organisation to motivate workers' productivity. Therefore, when organisations provide all these incentives, it will reduce absenteeism, increase the sense of belonging, ensure a conducive working system, and establish healthy competition among workers. The main merit of consistently practising all the incentives within the company is to improve the productivity of the workers.

6.4.2.2 Theme 2: Motivational empowerment influencing workers' productivity.

Respondent B further stressed that the impact of motivational empowerment could be experienced in the improved capacity of the workers to ensure sustainable productivity towards project completion. He also highlighted motivational empowerment strategies implemented by the organisation to enhance sustainable productivity during project delivery. The strategies were identified as access to technical tools, provision for a career path, promoting trust among workers, and provision for a conducive workspace. Thus, it is suggested that implementing these strategies will uphold productivity standards, strengthen the technical experience, and stimulate teamwork among workers, reducing uneasiness during project execution.

6.4.2.3 Theme 3: Psychological factors influencing construction workers' productivity.

Respondent B mentioned that psychological factors influence construction workers' productivity levels due to their mental state in their workplace. The respondent identified work autonomy, work applicability, acknowledgement, and interpersonal relationships as drivers of the psychological well-being of the workers at their workplace. The project manager emphasised the impact of achieving individual objectives as a psychological way of motivating oneself towards increasing one's input during production. For a company to attain objectives and goals, it must align with the importance of ensuring a conducive workplace for workers. A work environment with poor management would lead workers to demotivation and reduce sustainable productivity.

The drivers of psychological well-being significantly influence workers' job satisfaction because they are connected to our emotional state concerning how we perceive our work environment, association with colleagues and job aspiration fulfilment. Also, the respondent described lack of support, work stress, and workplace inequality as other psychological factors that greatly influence workers' job satisfaction. Additional questions were asked of the respondents concerning psychological factors that significantly influence sustainable productivity. He declared that emotional intelligence is one of the psychological factors that affect workers' approach to tasks. The project manager also suggested the importance of comprehending and controlling psychological influences to strengthen a satisfying and productive work environment for the workers to cultivate a higher productivity effect towards project delivery.

6.4.2.4 Theme 4: Organisational motivational policies influencing construction workers' productivity.

Respondent B primarily stated that implementing organisational motivational policies in the company influences the workers' productivity. In other words, the project manager cited that implementing organisational policies enhances workers' dedication to providing appropriate incentives towards attaining the project delivery schedule. The policies established by the company motivate the workers to be diligent and excellent at work. He claimed that the company recently presented an organisational policy that could guide workers about career path acquisition within their assigned specialities. He said the company's management considered this approach suitable for workers' skills development, which is expected to motivate workers to deliver quality output during project execution. The respondent also stated that:

> "Based on the related policies implemented by the management of the organisation, workers are greatly motivated to offer their decent efforts on/off the work as a return for the incentives provided to them. In essence, motivational policies enacted by the organisation provide valuable rewards and recognition for the workers' efforts to continually consolidate their dedication and efficiency towards achieving adequate project delivery."

Respondent B responded to the question on the forms of organisational policies adopted by the company. The project manager claimed that the policy on equality about promotion is one of the adopted organisational policies used to motivate workers' productivity levels. This amplifies the desire of the workers to work harder for promotion and leadership rewards. Also, gender discrimination is prohibited amongst the workers to stimulate value and work interactions. In that case, one can understand the efficacy

of the organisation's policy in ensuring that uniform and unbiased conditions are highly favoured and continually enforced to cultivate coherence and commitment amongst the workers. The respondent also mentioned that the company management uses the same approach regarding position appointments.

6.4.2.5 Theme 5: Governmental motivational policies influencing construction workers' productivity.

Respondent B also answered all three questions on the influence of governmental motivational policies concerning the productivity of the workers within the company. The respondent stated that government policies potentially have a huge influence on the workers' productivity. He further mentioned that the impact of government policies on the production activities performed by the workers could be experienced in government-supported construction schemes, such as management training programmes, town planning initiatives, and employment development programmes. The project manager expressed the satisfaction of the workers towards the government policies because they perceived the incentives as opportunities that could empower their career path. He also presented his opinion on the impact of safety and environmental policies implemented by the government. He mentioned the importance of upholding the safety and operational aspects of our environment during construction production. This could assist the construction stakeholders in deterring any delays that could result from environmental mishandling. The respondent categorically stated that:

> "Government contribution to civil infrastructure across South Africa cannot be overemphasised. The industrial sector of South Africa knows the significance of the civil infrastructure in the economy of the nation, wherein regulations involving job creation, work safety, job security, skills and financial empowerment are considered paramount to the commitment, development, and productivity of the workers."

Respondent B also responded to the last question in theme five by indicating that government regulations adequately impact the issues surrounding fair wages, workplace safety, benefits, and environmental sustainability to attain sustainable productivity of workers during project delivery in South Africa. The project manager specified that by offering or paying the workers' wages that equal their level of work or task capacity, they become more motivated and dedicated towards their given tasks. He also mentioned that many construction companies and their respective workers welcome governmental regulations in such areas as security, safety, and environment. Observation shows that regulations on industrial safety are perceived as crucial in

keeping workers away from risks and casualties. In other words, safety regulations alleviate industrial accidents by ensuring that workers are in good physical shape to avoid downtime.

6.4.2.6 Theme 6: Model development for sustainable workers' productivity

Concerning the model development for sustainable workers' productivity, Respondent B suggested a need for the development of a predictive model that can adequately observe, govern, and predict the significant impact of motivational incentives on workers' productivity. Respondent B expects the model to predict the influence of the key variables across various areas of construction as concerns the performance of the workers.

6.4.3 Respondent C

6.4.3.1 Theme 1: Motivational incentives influencing workers' productivity.

Respondent C, a site engineer with vast experience in construction works, responded to the questions on motivational incentives implemented to enhance workers' productivity in the company for which they work. The respondent declared that motivational incentives are also implemented like other respondents' organisations to enhance workers' performance and promote long-term commitment towards organisational growth. He further claimed that despite the implementation of the motivational incentives scheme in the company, other growing essentials could strengthen workers' productivity towards adequate project delivery. One of the cogent areas pinpointed for improvement is communication, which he perceived could stimulate awareness of the availability of empowerment resources within the organisation.

The site engineer also identified salary increments as one of the primary incentives implemented by the organisation to motivate workers for adequate delivery. Another incentive mentioned was promotion, which has been a regular factor among all the incentives identified by the respondents. Respondent C described promotion as a way of evaluating workers' efforts towards achieving the appropriate completion of projects. In this organisation, however, promotion is used to complement the payment of annual leave allowance as another essential incentive for workers' performance improvement. The engineer also claimed that the organisation found housing loans important in workers' performance improvement. It is also noted that housing loans could serve as motivation for workers' timely arrival at work. This implies that workers' prompt arrival to work could increase production and foster timely delivery of projects.

The respondents also mentioned the death benefits package. This motivation factor is considered critical in consolidating workers' commitment to assuring the workers of better welfare for their families after death. The respondent stressed that:

> "Many workers have died on the job without being adequately compensated; we can imagine how the deceased's family will cope after his /her death. Thus, this influences the commitment of the workers considering the inability of the company to provide a considerable death benefits package."

In sequence with the death benefits package, Respondent C identified the provision of medical aid incentives to workers as a first-hand treatment to deter downtime that may occur from unplanned incidents, particularly from the operations of the heavy machines and equipment.

6.4.3.2 Theme 2: Motivational empowerment influencing workers' productivity.

Respondent C declared in the affirmative that workers' productivity is adequately influenced by the motivational empowerment implemented within the company. He claimed that worker empowerment strengthens task execution by cultivating proficiency, skills sharing, skill development, interrelationship, and autonomy. This set of empowerments promotes the significance of the company's management in establishing workers' skill development programs, achievements and credibility in task execution. The respondent further provided a clear explanation of how motivational empowerment influenced sustainable workers' productivity during project delivery. The site engineer mentioned that many workers are satisfied with the motivational provisions that are accessible to them within the company. He said further that their satisfaction with the motivational provisions has helped them be adequately dedicated to their assigned assignments. In addition, the workers' skill development and task participation are secured due to the empowerment provisions at their disposal.

Respondent C also declared that the company adopted several critical strategies that can guarantee long-term performance from the workers. One of the strategies is providing an operating environment for sustainable productivity enhancement across all areas of construction production. A collaborative setting for idea sharing and development is another strategy that was identified. This strategy evolves from the trust between management and workers, making workers feel more engaged and valued within a conducive work scheduling environment. Job security was also mentioned as one of the motivational strategies adopted to consolidate the productivity of the workers continually. This motivational factor empowers workers in stress reduction and focuses enhancement on productivity.

6.4.3.3   Theme 3: Psychological factors influencing construction workers' productivity.

Respondent C affirmed that psychological influence has an impact on job satisfaction within their organisation. He explained this by mentioning that excessive workplace stress has a significant impact on the motivation and productivity of the workers. The respondent explained further by stating that excessive stress drains the energy and enthusiasm of the workers. He further declared in the affirmative that individual psychological factors significantly influence sustainable productivity during project delivery at the workplace. The site engineer stated that some workers have poor coping mechanisms for stress management towards work performance sustenance. This specific challenge impeded the ability of the workers to perform allocated tasks effectively. In other words, it means that workers demonstrate a slow approach to task accomplishment during civil project delivery. They become highly sensitive to their work environment, particularly their coworkers. Respondent C identified psychological factors that contribute significantly towards workers' productivity enhancement. The respondent mentioned that identifying the psychological factors affecting workers' productivity could aid the performance sustainability of the workers. Performance-based achievements of the workers could be improved by subjecting them to a conducive work environment that fosters workers' autonomy, rewards workers' efforts, and prioritises workers' safety and health benefits. The engineer elaborated that a conducive work environment could serve as an avenue for workers' personal development.

6.4.3.4   Theme 4: Organisational motivational policies influencing construction workers' productivity.

Following the discussion on psychological factors, Respondent C also provided an understanding of the organisational motivational policies that influence construction workers' productivity within the organisation. The respondent stressed that motivational policies help organisations to enhance their project timelines. He gave a clear view of resource availability, project complexity, and job satisfaction as other vital determinants in project timelines. It is understood that organisations should prioritise and promote adequate implementation of motivational policies that could drive workers' performance to attain reliable outcomes. One should not forget the importance of individual needs and preferences in determining the appropriate strategies or policies that organisations could adopt to achieve effective performance across production departments. Following the affirmative response to the question on the influence of the organisational motivational policies on the construction workers' productivity. Respondent C also mentioned that motivational policies applied by the organisation have a significant impact on the productivity of the workers towards attaining complete project timelines.

He clarified the above statement by saying that implementing organisational policies will enhance workers' dedication to project timelines through excellent performance due to a supportive environment, clear project objectives, and career development path. The respondent then identified adequate training and development policy as one of the organisational policies adopted by the company to improve the skills of the workers during project delivery. The site engineer further claimed that the company practices a robust policy system that strengthens workers' abilities and skill levels through adequate training and development. He added that:

> "All employees in our company, as it concerns construction activities, are effectively trained and retrained to keep updated with the current technology and innovative trends in the country. In addition, workers in our company are well-drilled and adequately sponsored to improve their skill level through workshops, seminars, and conferences. These skill opportunities strengthen our internal proficiency and enable us to be strongly competitive in every aspect of civil infrastructure projects."

6.4.3.5 Theme 5: Governmental motivational policies influencing construction workers' productivity.

Based on the first question asked concerning the governmental motivational policies influencing the construction workers' productivity, Respondent C asserted that government-provided policies have a huge motivating impact on the performance of workers in such areas as general wages reform—in determining the living wages paid to the workers. Labour principles are another governmental incentive that could motivate or serve as a source of empowerment for workers. Subject to this, the government is expected to regulate labour principles to attain improved labour welfare that could benefit the construction workers. The site engineer expatiated this by stating that:

> "Government is the main regulator of the wage standard in every sector, from public sector to private sector. The administration is always in the best position to ensure adequate implementation of the standard form of workers' wages. Adequate implementation of the government policy strengthens workers' morale."

He said that these policies have been effective in enhancing workers' salaries, job security, career development, and performance reward initiatives. In other words, government policy is a principal driver of the incentives benefited by construction workers. Respondent C also mentioned that adequate implementation of all government policies would stabilise the workforce in other areas, such as healthcare and retirement

schemes, and foster a conducive atmosphere in both the public and private sectors. Therefore, a conducive atmosphere increases workers' productivity and encourages project success to prevent the occurrence of risky contractual claims.

6.4.3.6 Theme 6: Model development for sustainable workers' productivity

Respondent C suggested the imperative of developing a model that could predict the impact of government policies on the productivity of construction companies and their workforce. The predictive model is expected to demonstrate the quantitative and qualitative impacts of government policies on project success.

6.4.4 Respondent D

6.4.4.1 Theme 1: Motivational incentives influencing workers' productivity.

Respondent D is a quantity surveyor with robust experience in the cost of construction works related to the cost management of several projects. The respondent showed a clear understanding of the motivational impact of the workers' performance across their assigned tasks. According to the respondent's response to the first question, the company has different strategies for motivating their workers. He continued by saying that the company ensured workers were comfortable in their work environment. For instance:

> "Many times, the management of the company always provided room for dialogue on where and how workers' welfare can be improved. Relatively, the management ensures that all the requests by the employees are duly met to avoid downtime during production."

The quantity surveyor highlighted the incentives prioritised by the company's management to motivate the workers towards attaining enhanced productivity. One of these incentives is identified as a meticulous award for workers' long service—for performance consistency and individual dedication all through their time in the company. Another incentive mentioned by the respondent was profit sharing—compensation for the timely completion of projects. Gratuity is also identified as an incentive to motivate workers within their organisation—to prepare workers for retirement. He also mentioned that transportation allowance is critically observed by the organisation's management— car loans and adequate stipends were made available to sustain their adequate presence and performance at work. Other motivational incentives considered by the organisation towards the workers are social security and salary increases—to keep the workers focused and committed and cater for their well-being in case of any incidence.

Therefore, these incentives are crucial to how workers are inspired towards achieving some specific goals as well as cultivating a sense of pride and ownership in the work achieved. The incentives can also help the workers propel their performance abilities. According to Respondent D, among the aforesaid incentives, the workers are more satisfied with the provision of social security because they believe that it offers them adequate protection against unforeseen circumstances.

6.4.4.2   Theme 2: Motivational empowerment influencing workers' productivity.

Respondent D also provided an opinion on the impact of motivational empowerment on the productivity of workers as a crucial stimulator in job satisfaction. The respondent explained that the provision of empowerment initiatives by the organisation indicates that workers' contributions are duly recognised. Therefore, the availability of motivational empowerment initiatives impacts workers' job satisfaction by providing a self-sufficient environment where workers are sanctioned to partake in the organisation's decision-making process. In addition, the respondent further declared that performance recognition promotes a supportive environment that raises workers' task morale and satisfaction within the organisation. The quantity surveyor expatiated further that:

> "a worker feels a sense of belonging in a company that empowers him/her; that is, a company that offers him/her task autonomy, freedom of decision, effective communication system, and many other empowerment benefits. All these benefits make workers feel involved and more motivated to perform allocated tasks with dedication."

Observations indicate that all kinds of empowerment motivations employed by any company are expected to transform workers' commitment into a higher level of commitment to attaining improved problem-solving skills, increased efficiency, and project outcomes in task execution during construction production. Most importantly, empowered workers will always feel secure in a company that offers more in terms of skill development and task collaboration. Thus, a company that cultivates an empowerment culture across all its departments is expected to derive enhanced workers' productivity towards upholding a long-term sustainability system.

Respondent D also responded to the last question by identifying a conducive work environment, availability of resources—required to carry out tasks effectively, skill development, innovative thinking, and work autonomy as motivational empowerment strategies adopted by the organisation to enhance productivity during project delivery. Amongst these, a conducive work environment is considered the most paramount empowerment strategy implemented by the company. The respondent claimed that

workers are provided with the necessary tools or facilities required to perform a particular task productively within a conducive environment. He also claimed that workers experienced skills development through organisational sponsorships for workshops and conferences for skills empowerment. Workers are also subjected to free innovative training initiatives to enhance their innovative thinking and strengthen their ability to devise the best approach to solving any persisting work-related challenges. This strategy is particularly appreciated by the workers because it helps them to develop a habit of challenging obstinate ways of doing things in the organisation.

6.4.4.3 Theme 3: Psychological factors influencing construction workers' productivity.

Respondent D was also asked to provide an opinion on the psychological factors impacting workers' productivity. The respondent affirmed that psychological factors have a huge effect on the sustainability of the workers' productivity during project delivery. The impact of such factors as resilience, emotional intelligence, mindset, and motivation was considered significant to task execution, workers' integration, and workers coping mechanisms during project development. The quantity surveyor also claimed that motivated individuals have the potential to promote adequate teamwork to enhance productivity. He said in support of the aforesaid citation that:

> "Mental attitude plays a pivotal role in ensuring that workers are motivated towards their daily task because it helps them to cope under pressure but still deliver quality outcome. This is supported by strong mental strength, which significantly encourages high motivation during task challenges. In that case, effective communication and adequate feedback can be employed to provide a sense of direction and purpose for a progressive work environment. Improve the psychological influence on the workers."

Thus, an optimistic mental attitude and resilience help individuals maintain momentum, minimise disruptions, and adapt to changes and delays. Further understanding demonstrates that high emotional intelligence encourages better communication, conflict resolution, and relationship management. These attributes are quite essential to teamwork and project success. The above responses indicate that handling individual psychological factors is critical to sustaining productivity and attaining optimal results during project execution. Based on this discussion, Respondent D highlighted the psychological factors significantly enhancing workers' productivity within the organisation. These factors include personal satisfaction, a friendly work environment, task autonomy, management recognition, adequate communication, a stress

management scheme, and a work-life balance scheme. The respondent believes the aforementioned factors could improve workers' productivity during project execution.

6.4.4.4 Theme 4: Organisational motivational policies influencing construction workers' productivity.

Respondent D was asked to provide an opinion on the motivational policies influencing workers' productivity within the organisation. The respondent affirmed the availability of applicable motivational policies that impact the workforce's performance across construction departments. The quantity surveyor declared a policy on equality—aiding the implementation of a policy that checks parity among workers of different backgrounds, genders, and races. He further declared that this policy has a huge influence on the existence of inequality among their colleagues. Nonetheless, our company has implemented an equality policy that accommodates all employees and positions them for equal goals, rewards, and promotions.

Respondent D has also inquired if the implementation of the motivational policies has a direct impact on the workers' productivity. The respondent responded in the affirmative by stating that the policy was implemented to reward the dedicated performance of the workers as an approach towards enhancing their morale. The respondent also claimed that the impact of the training and development policy implemented by the organisation has been remarkable in terms of the workers' personal development. He further disclosed that implementing the skill development policy helped many workers fulfil their career goals. Regardless, the management perceived this development policy as an opportunity for many senior workers to attend some training and developmental courses while the junior workers could also attend developmental training workshops. Another organisational policy adopted is employee gratitude—to prevent the lackadaisical attitude of the workers towards their respective obligations.

6.4.4.5 Theme 5: Governmental motivational policies influencing construction workers' productivity.

Respondent D was asked if governmental motivational policies were established within the company to enhance workers' productivity. The respondent disclosed that the organisation implemented governmental motivational policies to guide and improve operations across all departments. He specified that the policies are not actively strengthening the workers' performance within the organisation but are critical to achieving improved productivity. The quantity surveyor proclaimed that government incentive schemes can be utilised to raise workers' productivity. He also added that government policies promoted stan implementation of safety regulations at workplaces

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to curb accident occurrence. Understanding shows that most motivational empowerment allocated to workers by the company management is claimed to be a derivative of the government's motivational policies. These derivatives are experienced in work scheduling challenges, incentive packages and work environment issues. It is also mentioned that governmental motivational policies stimulated a healthy work environment, wherein issues such as unfair wages, unsafe workplaces, environmental instability, and lack of adequate benefits are resolved. Other construction site activities and facilities managed by the government policies are workplace abuse, overlabour, stress-free workplace, exploitative tendencies by employers, design standards, standard code for scaffolding, site hoarding and availability of first aid facility. Health and safety checks of these workers are highly considered paramount to the employers and government. Thus, all these are termed empowerment, wellness, and relief packages, ultimately affecting workers' performance levels.

6.4.4.6 Theme 6: Model development for sustainable workers' productivity

Respondent D suggested the need to develop a model that would investigate the policies enacted by organisations and governments on the company's production activities to ascertain their effectiveness in ensuring a productive work environment for the workers.

6.4.5 Respondent E

6.4.5.1 Theme 1: Motivational incentives influencing workers' productivity.

Respondent E responded to the question of whether the company he works for have motivational incentives in place to enhance workers' productivity. The architect responded in the affirmative by asserting that motivational incentives are available for workers' productivity. The respondent claimed that the company had motivated its workers through an annual salary increase, a major incentive to make workers contented and dedicated. He also claimed that the company always offers promotions to workers at an appropriate time as a way of appreciating dedicated workers. A housing loan is another motivational incentive by the company to encourage the workers to show up at work on time. This is a huge relief for the workers because many of them struggled to get to work on time and struggled to improve their family's well-being. The company also supports the workers' efforts by providing medical insurance as a motivational incentive to encourage them to raise their productivity levels. He mentioned the importance of first aid provided by the organisation as a basic but crucial motivational incentive for workers in the lower cadre, as they believed they would receive primary treatment quickly in case

of an emergency at work. The abovementioned motivational incentives strengthen workers' concentration at work and increase their productivity.

6.4.5.2 Theme 2: Motivational empowerment influencing workers' productivity.

Like every other interviewee, Respondent E was also asked if motivational empowerment initiatives provided in the company influence job satisfaction. The respondent stated that motivational empowerment initiatives positively influence job satisfaction in the company because workers are provided with initiatives that strengthen their abilities to accomplish an effective project delivery. He further stressed that motivational empowerment is perceived as a positive correlation between innovation and work performed within the organisation. Implementing motivational empowerment is believed to enhance workers' enthusiasm towards the task performed. The supervising builder-foreman explained in his personal experience that:

> "Workers are more motivated when they are provided with adequate empowerment initiatives that could contribute to their skill improvement. So, the adoption of such initiatives would offer workers the confidence to produce the best of their abilities. I must tell you that empowerment initiatives have, in many ways, raised the ability of a worker to be more involved in complex project discussions, particularly in challenging obstinate problems and proffering applicable solutions to them by deterring the consultation of external experts."

Respondent E also provided an opinion on the motivational empowerment strategies adopted by the company to enhance sustainable productivity during project delivery. The respondent mentioned the empowerment strategies considered by the company as the applicable approaches for workers' productivity improvement. The respondent underscored appropriate work scheduling as one of the applicable strategies adopted by the company, followed by team spirit, skill development opportunities, innovative initiatives, and information accessibility. The respondent perceives adequate work scheduling could make workers productive across their allocated tasks. Workers are more productive when planned tasks are appropriately briefed and specified before execution.

According to Respondent E, organisations with poor work schedules would experience excessive overtime that could demotivate the workers from achieving efficient productivity. The respondent expatiated further that a proper work schedule is a good motivational approach within an organisation. The general foreman declared that team spirit among the workers had solidified their relationship, wherein they all take blame or praise together for work done. This attribute, especially, helps these workers to achieve

collective results. All workers are delighted to be empowered through skills development schemes employed by the company, including the workers' ability to surpass the management's expectations regarding project delivery through the application of available innovation initiatives. The respondent also elucidated the importance of giving workers access to information and resources required to aid their ability to perform tasks according to the organisation's specifications. The availability of these empowerment strategies has, in many ways, raised workers' confidence in task execution.

6.4.5.3 Theme 3: Psychological factors influencing construction workers' productivity.

Respondent E was also asked about the psychological influence on job satisfaction within the organisation. The architect stated in the affirmative that psychological influences impact job satisfaction during production activities in the company. The respondent said that workers' mindsets and attitudes could directly impact workers' productivity. A positive attitude toward work through enthusiasm, interpersonal relationships, regular check-ups, and feedback motivates workers' understanding of work expectations and specifications. Respondent E also affirmed the influence of individual psychological factors on sustainable productivity during project delivery. He stated that organisations need to be more aware of their workers' mental conditions to avoid its effect on project delivery. Further understanding shows that such factors as job recognition, job meaningfulness, job autonomy, job satisfaction, and interpersonal relationships are highly affected by the psychological situations of many personnel. Organizations prioritize creating supportive work environments that monitor and promote employee well-being, as this enhances productivity. This focus also encourages governments to implement policies that improve both worker performance and economic growth. The respondent also mentioned the need for the organisation's management to provide an environment that promotes effective stress control by strengthening workers' productivity.

6.4.5.4 Theme 4: Organisational motivational policies influencing construction workers' productivity.

Respondent E affirmed that OMP are applied to enhance workers' productivity within the country. The respondent claimed that the organisation enacts policies to bolster the coordination of the approaches applied to perform tasks. He also claimed that enacting these policies improved the organisation's production quality and capacity, project performance efficiency, and successful project delivery. He pinpointed that the motivational policies implemented by the organisation subject the workforce to equal opportunities towards attaining enhanced sustainable productivity during project

delivery. In that case, every worker has equal benefits regardless of his/her background, as indicated in the policies. Respondent E also mentioned that the organisational policies offer adequate training and development opportunities. According to the respondent, workers are trained to gain new skills to be productive and competitive with each other to acquire better performance. The supervising builder-foreman emphasised that the company's tradition is to ensure their workers are well-trained and developed through a series of developmental workshop courses to obtain promotions. Many of our workers perceive this as a huge opportunity to improve their skill levels and challenge obstinate approaches to task execution. The respondent also highlighted that implementing the policies significantly influences the waste management system adopted by the organisation. This also includes the development of appropriate sustainable building techniques to promote environmental sustainability.

6.4.5.5 Theme 5: Governmental motivational policies influencing construction workers' productivity.

Respondent E affirmed that government policies are also in place to enhance workers' productivity within their company. The respondent responded by stating that the impact of governmental motivational policies on the performance of construction workers is often experienced in the number of projects executed by the company. The potential effect of government policies is that they complement the organisation's policies to coordinate or dictate the approaches used for project execution. Governmental motivational policies are applied across production departments within the company. These policies influence significant incentive factors within the organisation, such as finance, training and development, safety and security, and health. Considering the finance aspect, the supervising builder-foreman confirmed that the governmental motivational policies offer financial incentives in terms of tax credits to the company because of bonuses given to the workers based on projects delivered within the stipulated period. Another aspect considered is training and development initiatives supported by government policies to raise workers' skill and efficiency levels. According to Respondent E, the advantages of training and development are skill augmentation, project quality, project achievements, and equality.

The respondent also highlighted his experience of how government regulations could address issues relating to wages, workplace safety, benefits, and environmental sustainability. He mentioned that government policies are implemented to promote labour laws in inclusiveness. Workers' performances are improved by initiatives supported by governmental motivational policies, such as government-approved industrial environmental design, which encourages a resourceful, safe, and secure work

environment. The government policies also enhance the workers' morale, promote the development of a conducive work environment, ensure standard implementation of new wages, and advise annexe construction of a medical hub. All the highlighted benefits of government policies for the organisation greatly influence workers' performance. The availability of these benefits will lessen workplace stress, deter overuse of workers, and motivate workers through timely payment of wages.

6.4.5.6   Theme 6: Model development for sustainable workers' productivity

Respondent E suggested developing a model that would investigate the importance of the policies enacted by the organisation and government to strengthen and monitor industrial operations in South Africa. The investigation is expected to demonstrate the degree of impact.

Table 6.2: Tabularised synopsis of the qualitative interviews performed with the participants from five different organisations about the case analyses.

Case study	Motivational incentives influencing workers' productivity	Motivational empowerment influencing workers' productivity	Psychological factors influencing construction workers' productivity	Organisational motivational policies influencing construction workers' productivity	Governmental motivational policies Influencing construction workers' productivity	Model Development for sustainable workers' productivity
Respondent A	Annual salary increase for the workers is considered the principal approach to workers' productivity improvement because the workers' morale would be amplified to deliver quality	Motivational empowerment can only be sustainable within an effective system, where organisational management is considered accessible to every personnel. Workers' morale is improved based on the	Both workers and employers should be informed that the impact of a well-managed psychological influence would stimulate a productive work environment, in which workers will be keen to collaborate with their teammates	Motivated workers are more dedicated and adequately focused on their allocated tasks as a result influences the overall productivity of the workers. This could only be possible within a conducive and supportive	Government-supported training programmes could have a huge impact on the construction workers' skill level by raising their performance efficiency across all allocated tasks. Another option to consider is financial	A model can be developed to enhance the ability of the workers towards attaining motivated performance. The model will foster an efficient approach to workers' welfare.

Case study	Motivational incentives influencing workers' productivity	Motivational empowerment influencing workers' productivity	Psychological factors influencing construction workers' productivity	Organisational motivational policies influencing construction workers' productivity	Governmental motivational policies Influencing construction workers' productivity	Model Development for sustainable workers' productivity
	work within the given time and cost. It is also applied to keep them happier and maintain cordial relationships between the employer and employees.	forms of motivational empowerment initiatives adopted by the management to improve workers' productivity.	and also be able to identify the best approach to their tasks.	organisational environment, where workers are given the opportunity to collaborate and establish interpersonal relationships towards increased productivity.	incentives about the firm's tax credits involving investing in employees' training or bonuses. This can offer direct motivation to workers through project achievements.	
Respondent B	Incentives are critical to the performance of construction	The impact of motivational empowerment could be	Work autonomy, work applicability, acknowledgement, and	Based on the related policies implemented by the management	Government contribution to civil infrastructure across South	A need for the development of a predictive model that can

Case study	Motivational incentives influencing workers' productivity	Motivational empowerment influencing workers' productivity	Psychological factors influencing construction workers' productivity	Organisational motivational policies influencing construction workers' productivity	Governmental motivational policies Influencing construction workers' productivity	Model Development for sustainable workers' productivity
	workers; these incentives not only motivate them but also offer them a sense of pride and ownership in their various work-related achievements. In other words, incentives offer workers support that is beyond their reach during production, but	experienced in the improved capacity of the workers to ensure sustainable productivity towards project completion. Additionally, some essential strategies were implemented by the company to improve workers' technical ability.	interpersonal relationships are identified as drivers of the psychological well-being of the workers at their workplace. The impact of achieving individual objectives as a psychological way of motivating oneself towards increasing	of the organisation, workers are greatly motivated to offer their decent efforts on/off the work in return for the incentives provided to them. In essence, motivational policies enacted by the organisation provide valuable	Africa cannot be overemphasised. The industrial sector of South Africa knows the significance of the civil infrastructure in the economy of the nation, wherein regulations involving job creation, work safety, job security, skills and finances.	adequately observe, govern, and predict the significant impact of motivational incentives on workers' productivity. The model is expected to predict the influence of the key variables across various areas of construction.

Case study	Motivational incentives influencing workers' productivity	Motivational empowerment influencing workers' productivity	Psychological factors influencing construction workers' productivity	Organisational motivational policies influencing construction workers' productivity	Governmental motivational policies Influencing construction workers' productivity	Model Development for sustainable workers' productivity
				rewards and recognition for the		
	They surge their productivity.	Towards project completion.	One's input during production.	Workers' efforts to continually consolidate their dedication and efficiency towards achieving adequate project delivery.	Empowerment is considered paramount to the commitment, development, and productivity of the workers.	
Respondent C	Many workers have died on the job without being adequately compensated; we can imagine how	Worker empowerment produces strength in task execution by cultivating proficiency, skills	Some workers have poor coping mechanism for stress management towards work	All employees in our company, as it concerns construction activities are effectively trained	The government is the main regulator of the wage standard in every sector, from the public sector	Develop a model that could predict the impact of government policies on the productivity of

Case study	Motivational incentives influencing workers' productivity	Motivational empowerment influencing workers' productivity	Psychological factors influencing construction workers' productivity	Organisational motivational policies influencing construction workers' productivity	Governmental motivational policies Influencing construction workers' productivity	Model Development for sustainable workers' productivity
	the deceased's family will cope after his /her death. Thus, this influences the commitment of the workers to the inability of the company to provide a considerable death benefits package.	sharing, skill development, interrelationship, and autonomy. This set of empowerments promotes the significance of the company's management in establishing workers' skill development programs, achievements	performance sustenance. This specific challenge impeded the ability of the workers to perform allocated tasks effectively, which means that workers demonstrate a slow approach to task accomplishment during civil project delivery.	and retrained to keep updated with the current technology and innovative trends in the country. In addition, workers in our company are well-drilled and adequately sponsored to improve their skill level through workshops, seminars, and conferences.	to the private sector. The administration is always in the best position to ensure adequate implementation of the standard form of workers' wages. Adequate implementation of the government policy strengthens workers' morale.	construction companies and their workforce. The predictive model is expected to demonstrate the quantitative and qualitative impacts of government policies on project success.

Case study	Motivational incentives influencing workers' productivity	Motivational empowerment influencing workers' productivity	Psychological factors influencing construction workers' productivity	Organisational motivational policies influencing construction workers' productivity	Governmental motivational policies Influencing construction workers' productivity	Model Development for sustainable workers' productivity
		and credibility in task execution.		These skill opportunities strengthen our internal proficiency and enable us to be strongly competitive in every aspect of civil infrastructure projects.		
Respondent D	Many times, the management of the company always provided room for dialogue	A worker feels a sense of belonging in a company that empowers	Mental attitude plays a pivotal role in ensuring that workers are motivated	Policy on equality—aiding the implementation of a policy that	Government incentive schemes can be utilised to raise workers'	There is a need to develop a model that would investigate the policies enacted

Case study	Motivational incentives influencing workers' productivity	Motivational empowerment influencing workers' productivity	Psychological factors influencing construction workers' productivity	Organisational motivational policies influencing construction workers' productivity	Governmental motivational policies Influencing construction workers' productivity	Model Development for sustainable workers' productivity
	on where and how workers' welfare can be improved. Relatively, the management ensures that all the requests by the employees are duly met to avoid downtime during production.	him/her; that is, a company that offers him/her task autonomy, freedom of decision, an effective communication system, and many other empowerment benefits. All these benefits make workers feel involved and more motivated to	towards their daily tasks because it helps them to cope under pressure, but still deliver quality outcomes. This is supported by strong mental strength, which significantly encourages high motivation during task challenges. In that case, effective	checks parity among workers of different backgrounds, gender, and race. This policy has a huge influence on the existence of inequality among their colleagues. Also, the impact of the training and development policy implemented by the organisation	productivity. Also, government policies promoted stan implementation of safety regulations at workplaces to curb accident occurrence. Governmental motivational policies stimulate a healthy work environment, wherein issues such as unfair	by organisations and governments on the company's production activities to ascertain their effectiveness in ensuring a productive work environment for the workers.

Case study	Motivational incentives influencing workers' productivity	Motivational empowerment influencing workers' productivity	Psychological factors influencing construction workers' productivity	Organisational motivational policies influencing construction workers' productivity	Governmental motivational policies Influencing construction workers' productivity	Model Development for sustainable workers' productivity
		perform allocated tasks with dedication.	communication and adequate feedback can be employed to provide a sense of direction and purpose for a progressive work environment. Improve the psychological influence on the workers.	has been remarkable towards the workers' personal development.	wages, unsafe workplaces, environmental instability, and lack of adequate benefits are resolved.	
Respondent E	Workers are motivated through annual salary	Workers are more motivated when they are provided	Workers' mindsets and attitudes could	The organisation enacts policies to bolster the	The potential effect of the government	Development of a model that will investigate the

Case study	Motivational incentives influencing workers' productivity	Motivational empowerment influencing workers' productivity	Psychological factors influencing construction workers' productivity	Organisational motivational policies influencing construction workers' productivity	Governmental motivational policies Influencing construction workers' productivity	Model Development for sustainable workers' productivity
	increases, which serves as a major approach to make workers contented and dedicated. In addition, workers are also motivated by offering them promotions at an appropriate time as a way of appreciating dedicated workers. Housing	with adequate empowerment initiatives that could contribute to their skill improvement. So, the adoption of such initiatives would offer workers confidence to produce the best of their abilities. I must tell you that empowerment.	have a huge direct impact on workers' productivity. Positive attitude to work through enthusiasm, interpersonal relationships, regular check-ups and feedback motivate workers' understanding of work expectations and specifications.	coordination of the approaches applied to perform tasks. The enactment of these policies fosters improved organisation's production quality and capacity, project performance efficiency, and successful project delivery. Motivational	policies complements the organisational policies implemented to coordinate or dictate the approaches used for project execution. Governmental motivational policies are applied across production departments	importance of the policies enacted by the organisation and government to strengthen and monitor industrial operations in South Africa. The investigation is expected to demonstrate the degree of impact of these policies on the

Case study	Motivational incentives influencing workers' productivity	Motivational empowerment influencing workers' productivity	Psychological factors influencing construction workers' productivity	Organisational motivational policies influencing construction workers' productivity	Governmental motivational policies Influencing construction workers' productivity	Model Development for sustainable workers' productivity
	loans are another motivation.				within the company.	
	Incentives put in place by the company to encourage the workers to show up at work on time.	Initiatives have in many ways raised the ability of a worker to be more involved in complex project discussions, particularly, in the aspect of challenging obstinate problems and proferring applicable		Policies implemented by the organisation subject the workforce to equal opportunities towards attaining enhanced sustainable productivity during project delivery.		Production growth of a company. This study should incorporate estimates of the workers' performance and the motivational initiatives relating to these policies.

Case study	Motivational incentives influencing workers' productivity	Motivational empowerment influencing workers' productivity	Psychological factors influencing construction workers' productivity	Organisational motivational policies influencing construction workers' productivity	Governmental motivational policies Influencing construction workers' productivity	Model Development for sustainable workers' productivity
		solutions to them by deterring the consultation of external experts.				

Table 6.3: The summarised, indicating the main and sub- themes and compared with the survey responses.

Main Theme	Sub-Theme	Qualitative Insight (Quotes)	SURVEY
Motivational incentives	• Annual salary compensation, • Job title • bonus • long service awards	"Had a particular job title and it made me feel proud and accepted. It verifies the company values my work." "Being aware that my salary is good and paid on time yearly simply makes me feel secure. It motivates me to work hard every day because I know that my work is valued, and I can plan my life better.	78% agree that job tittle and annual salary increment is crucial to motivate workers
Motivational empowerment	• Access to information • Trust and communication • long-term career	"When I have the information I need, I feel more confident and able to do my job better. It enables me to make decisions and exercise initiative." "If they don't tell us, then it's like working in the dark. But if management tells us, it gets me working harder." "I am motivated if the management talks to us honestly. It is more of a question of communicating to us the rationale behind things rather than just ordering us around."	82% ranked access to information and trust and communication as essential to empower workers.
Psychological factors	• Managing finances • Leadership skills • Consult workers onsite • Workers feeling valued and appreciated	"When supervisors tell us what they need from us clearly and keep us apprised of changes, it makes me feel like part of the team and less stressed out. "Equal treatment is what encourages me to be faithful to the company. But where a few special people are treated specially, it extinguishes my morale." "I am motivated when I am appreciated. It indicates that the company cares for what I do."	75% believe managing finances, leadership skills and workers feeling valued and appreciated could enhance workers productivity.

Organisational motivational policies	• Safety policies • ensuring trust, • work culture create engagement, and • equipment maintenance assures efficiency	*"Having the company listen to our safety is what counts—it keeps me safe and makes me work even harder."* *"When others are polite to each other and nature is pleasant, it feels like home, and that is what motivates me to work to the best every day."* *Automatically, when the machines are well functioning, we do not waste much time on fixing them, and it makes the work less infuriating."*	73% agree that safety policies, ensuring trust, work culture create engagement, and equipment maintenance assures efficiency are critical to improve motivation.
Governmental motivational policies	• Economic security, • equitable remuneration, • safe and healthy working conditions, • health and well-being, and • protection	*"By providing equal opportunities and training chances, the government gives me a feeling of faith that I can grow and go further."* *"Having a signed contract and being on the same level makes me feel safe and more concentration towards work."* *"When the government is imposing security standards, we feel that there is someone who cares for us and that makes us work."*	76% agree that economic security, equitable remuneration, safe and healthy working conditions, health and well-being, and protection will improve motivation of workers towards sustainable productivity

These policies affect the company's production growth. This study should incorporate estimates of the workers' performance and the motivational initiatives relating to these policies.

6.5 DISCUSSION OF FINDINGS FROM QUANTITATIVE AND QUALITATIVE DATA ANALYSIS

The mixed methods strategy employed in this study was to determine the motivational determinants that are hindering employees' sustainable productivity and determine key determinants that will enhance employees' motivation towards sustainable productivity in the construction sector of South Africa by combining the findings arising from both the quantitative and qualitative phase. The subsequent subsection, therefore, examines how the two streams converged or diverged based on the themes.

6.5.1 Motivational incentives influencing workers' productivity in the South African construction industry

The quantitative analaysis indicated that there are important factors that can be adopted in influencing workers' productivity in the South African construction industry. The descriptive analysis revealed that the top ranked motivational incentives influencing workers' productivity were status or job title to workers, profit sharing with workers after timely execution of projects, and provision of canteen subsidy to workers.

Most significantly, the power and importance of status or job title in the workplace to worker morale and motivation is something widely recognized globally as evidenced in this current study. According to Uchiyama *et al.* (2022), good-type job titles and perceived status are promises of high involvement and identity and thus mitigate demotivation and improve worker morale. In the same vein, Kolberg *et al.* (2019) add that career development is crucial to enable status and title, hence making workers feelings successful in their job. Chinyio *et al.* (2018) also agree that in construction projects, identification of incentives such as job titles provide relief from job ambiguity as well as ease coordination, which is critical in meeting deadlines in project delivery.

Profit sharing with workers after timely execution of projects was ranked second. Empirical evidence revealed that sharing of profits based on workers performance is good motivator for enhancing productivity towards completion of task within a required timeframe. This is supported by Flammer *et al.* (2019) and Barkai (2019), that profit-sharing plans are a guaranteed way of aligning the company's interests with those of the workers, and this creates ownership as well as incentive. Nilsson and Stardfelt Nilsson (2021) and Chinyio *et al.* (2018) also put across the fact that profit sharing boosts team spirit, morale, as well as spirit, mostly in construction where it is crucial during

project delivery. Darko *et al.* (2018) affirm that securing reward to milestones of a project compels labour to meet deadlines, leading to quality and reduces cost.

Provision of canteen subsidy to workers was adjudged to be the third ranked factor and akin to the normative literature. Uchiyama *et al.* (2022) demonstrate that canteen subsidies as welfare policies enhance workers' welfare and work productivity in the workplace through reduction of economic burdens. Nilsson and Nilsson (2021) also suggest that on-site welfare facilities would be most beneficial workers loyalty, while Chinyio *et al*. (2018) and Darko *et al*. (2018) suggest on-site welfare facilities in the construction sector is crucial where workers can afford cheap food. Asimakopulos (2020) attributes the success of subsidisation of canteens to the evidence of a tangible demonstration of concern for the welfare of workers by the management, thereby upholding the psychological contract between worker and management.

The quantitative analysis based on the EFA further indicated that motivational incentives influencing workers' productivity in the South African context can be categorised into two groups namely: welfare-enhancing provisions and formal employment benefits. Welfare-enhancing benefits includes profit sharing, canteen subsidies, and housing loans are still crucial in motivating workers productivity. Flammer *et al.* (2019) and Barkai (2019) describe that profit sharing promotes ownership and collaboration, while Uchiyama et al. (2022), Chinyio *et al.* (2018), and Darko *et al.* (2018) stated that canteen subsidies promote well-being and stress relief. Asimakopulos (2020) opines that housing loans promote economic security and organizational commitment.

On the other hand, formal employee benefits include yearly salary increments, bonus payments, first aid, provident funds, long service awards, promotion, death benefit, safety schemes, leave allowance, social security, and insurance. These motivational incentives are of utmost concern to worker wellness and manpower retention for successful completion of project. Uchiyama *et al.* (2022) and Nilsson and Nilsson (2021) also claim these benefits give a worker a feeling of stability and trust to the organisational goal and objectives. Chinyio *et al.* (2018) and Darko *et al.* (2018) stated they are most important in directing to safety and sustaining morale, while Asimakopulos (2020), Flammer *et al.* (2019), and Barkai (2019) stated reward forms of remunerative and appreciation are most important in productivity and commitment of workers in discharging their responsibilities.

Triangulation of quantitative and qualitative findings validated that there existed a very high level of similarity between the top three factors influencing worker productivity and motivation. For instance, the quantitative data revealed how title and status are

important in enhacing morale and identity of workers in the construction industry. Similar findings emerged regarding the qualitative findings wherein one interviewee stated:

"I had a particular job title, and it made me feel proud and accepted. It verifies the company values my work."

This supports Uchiyama *et al.* (2022) and Kolberg *et al.* (2019) sentiments who were of the view that incentives in terms of job status and sense of belonging would enhance worker's productivity during project execution.

6.5.2 Motivational empowerment influencing workers' productivity in the South African construction industry

There are three uppermost descriptive analysis in motivational empowerment influencing sustainable productivity of workers originated from this study: access to information needed to perform job effectively, trust and communication with the management and pursue your long-term career prospects with the organization.

Most significantly, access to information needed to perform job effectively to workers is crucial to motivation workers globally as shown in this study. Andavar and Ali (2020) believe that workers can do the job better by having the correct information, reducing uncertainty and developing confidence. Chandrawaty and Widodo (2020) also confirm the fact that exchange of information assists in creating trust and feelings of belongingness in the work environment. Anwar and Abd Zebari (2015) also add that where workers are exposed to work information, they are in the best position to make better decisions, hence leading to greater job satisfaction and productivity.

Similarly, communication and trust with the management were the second most dominant motivational empowerment factor. Paais and Pattiruhu (2020) clarify that transparency in communication can be a trigger to build transparency, which assists in building trust and thereby helping towards the workers' motivation towards disengagement. Syamsir (2020) suggested that communication can act as a motive for trust since it promotes cooperation and minimizes uncertainty in managerial decisions. Anwar *et al.* (2017) mentioned that trust is at the centre of successful leadership and maintains employees' loyalty and performance in mind. Pancasila *et al.* (2020) also discover that managerial communication stimulates trust, which strengthens organisational commitment and reduces stress.

Thirdly, career development opportunities are an empowering driving force towards achieving a sustainable productivity of workers. A study by Riyadi (2020) found that opportunities for career development in the long run enhance workers' sense of

belonging and organisational commitment. Similarly, Chandrawaty and Widodo (2020) further found that open career paths empower workers to invest in themselves and they feel productive and motivated. Irabor and Okolie (2019) stated that organisations where career development is the primary focus are bound to maintain high performance and competent workers. Paais and Pattiruhu (2020) also affirm that motivation is boosted through career development by aligning personal goals and organizational goals.

The factor analysis in this research identified some of the major drivers that impacts on motivational empowerment of construction workers. These includes good supervision, access to information needed to perform the job effectively, trust and communication with the management, good work environment, job security, access to resources needed to perform the job effectively, pursue your long-term career prospects with the organisation, adequate team spirit, proper work scheduling, freedom for innovative thinking and systematic flow of work as they all enhance sustainable productivity of worker. According to Andavar and Ali (2020) believe that effective supervision stimulates workers' self-respect and sense of responsibility, hence their motivation. Chandrawaty and Widodo (2020) also argue that supportive supervision decreases work-related stress and increases job satisfaction, hence productivity. Anwar and Abd Zebari (2015) mentioned that access to information enables the employee to perform work efficiently and take correct decisions during project execution. Paais and Pattiruhu (2020) argue that access to information reduces uncertainty, enhances trust, and gives a sense of empowerment. Syamsir (2020) is of the opinion that open communication results in greater trust and cooperation levels, thus greater morale and performance. Pancasila *et al.* (2020) contend employee and management trust as a foundation for organizational commitment and loyalty.

Job stress is reduced, and job satisfaction is increased by a good and healthy working environment, Anwar *et al.* (2017) continues. Good work environment is also found by Irabor and Okolie (2019) to facilitate worker retention apart from productivity. Job security was also one of the leading reasons that were achieved. Riyadi (2020) explains job security provides the workers with a sense of security, and therefore they work hard in the workplace and remain in the company. Anwar and Abd Zebari (2015) also achieve that perceived job security results in less stress and contributes to positive attitude in the workplace. Availability of resources is a very significant factor in enhancing the workers' motivation. Chandrawaty and Widodo (2020) explain that availability of resources can ensure that the workers can meet the job demands and, in this sense, prevent stress and frustration. Pancasila *et al*. (2020) are of the view that adequate resources enhance performance as well as organisational success. Opportunities for

career development were discovered to be the highest source of motivation. Riyadi (2020) and Paais and Pattiruhu (2020) also state that career development opportunities in the future lead to commitment and motivate workers to enhance their competencies. Irabor and Okolie (2019) also state that there is more worker satisfaction and hold-on where a company has career development opportunities.

Triangulation of quantitative and qualitative findings validated shows a very high level of similarity between the top three factors influencing sustainable productivity and worker motivation. For instance, the quantitative data revealed how access to information needed to perform job effectively, trust and communication with the management are significant in improving morale of workers in the construction sector. Similar findings emerged regarding the qualitative findings wherein one interviewee stated:

"*When I have the information I need, I feel more confident and able to do my job better. It enables me to make decisions and exercise initiative.*"

This quotation highlights indicated that access to information is a problem for effective productivity of worker. According to Paais and Pattiruhu (2020) explains that open communication forms trust, which is a prerequisite of motivation and engagement. Syamsir (2020) and Pancasila *et al.* (2020) confirm, also, that trust forms cooperation and commitment and reduces stress and uncertainty.

6.5.3 Psychological Factors Affecting Sustainable Productivity of Workers

There are three topmost descriptive analysis in psychological influence on sustainable productivity of workers as originated from this research: assistance in terms of workers managing their finances, effective leadership skills in managing stress in the workplace and adequate restroom facilities and sanitation at the construction site.

Financial management support emerged as the most important psychological factor influencing worker motivation and productivity. Therefore, workers who receive assistance in managing their finances are better equipped to handle economic pressures, reducing stress and improving focus on job tasks. Dodanwala *et al.* (2023) highlight that financial literacy programs and support systems at workplaces significantly enhance workers' overall well-being and reduce absenteeism. Similarly, Kamardeen and Hasan (2022) opined that financial assistance and counseling contribute to improved job satisfaction, as workers feel more secure and valued. Moreover, Franceschini *et al.* (2020) emphasise that when organisations provide financial management support, workers demonstrate increased commitment and willingness to stay at their workplace. Bowers *et al.* (2018) also argue that financial assistance initiatives build trust and loyalty,

which are key motivational drivers. These studies align with the current findings, underscoring that helping workers manage their finances is not just a welfare measure but a strategic approach to sustaining productivity during project delivery.

Secondly, descriptive analysis indicated that effective leadership plays a critical role in mitigating workplace stress, thereby enhancing employee motivation and performance. Nauman *et al.* (2019) found that leaders who actively recognise and manage stress factors contribute to a healthier work environment, which in turn improves worker resilience and productivity. Naseer and Raja (2021) assert that transformational leadership styles that focus on empathy, support, and clear communication are particularly effective in reducing stress levels among workers. Abukhashabah *et al.* (2020) further emphasise that leaders equipped with stress management skills promote psychological safety, enabling workers to perform confidently without fear of burnout. Umar and Egbu (2020) point out that leadership development programs focusing on emotional intelligence and conflict resolution contribute to better stress management at construction sites. These insights strongly support the current study's conclusion that leadership's role in stress management is essential for motivating workers and sustaining high performance.

Thirdly, proper sanitation and restroom facilities accessibility in the workplace is among the fundamental aspects that affect workers' motivation and health. Dodanwala *et al.* (2023) mentioned that poor sanitation conditions existing in the workplace have negative effects on the health and morale of the workers, resulting in poor productivity and increased levels of absenteeism. Kamardeen and Hasan (2022) contend that offering clean and accessible toilet facilities is not merely a matter of compliance but also an efficient strategy to motivate workers who believe they are valued by organisations. According to Franceschini *et al.* (2020) note that workers' exposure to a clean and safe physical work environment in term of sanitation facilities, enhances dignity and worker satisfaction. Bowers *et al. (*2018) discovered construction workers who received good sanitation reported higher worker participation and fewer health-related complaints. Similarly, Zhang *et al. (*2017) confirm that sanitation facilities play a role in maintaining health standards, incidence of sickness resulting in absence is reduced, and positive company culture is enhanced. Therefore, these studies confirm the necessities of financial management support, quality leadership for stress reduction, and adequate sanitation facilities as key drivers of worker motivation and productivity. They are validating the current findings where the organisation should focus to enable construction worker productivity.

The factor analysis in this research ascertained the major drivers that influences on workers psychology towards sustainable productivity. These includes good communication skills, adequate fairness to all workers, workers feeling valued and appreciated will influence their productivity, availability of shade or shelter on the construction site influences productivity, safety measures and protocols to ensure workers' psychological wellbeing and ability to consult workers onsite before effecting change. These key factors aligned with descriptive statistics analysis, and extension to previous research on workers psychological drivers. Therefore, effective communication as revealed from factor analysis is the main factor on worker productivity. Open, clear, and frequent communication reduces uncertainty, creates trust, and fosters collaboration within the workplace. Paais and Pattiruhu, (2020), Syamsir, (2020) showed that effective communication between workers and management can enhance commitment and engagement. Studies by Anwar and Abd Zebari (2015) and Pancasila *et al.* (2020) supported that fairness shows the organisational justice, and organisational justice is closely linked to job satisfaction and commitment. Fairness in the workplace is thus critical for increased motivation.

Appreciation of achievement and effort enhances self-concept and leads employees to maximise or enhance performance. Chandrawaty and Widodo (2020) portray that appreciation gains psychological empowerment, which translates into increased productivity. Nauman *et al.* (2019) also argued that positive feedback and appreciation are significant predictors that considerably reduce construction workers' intention to quit. Therefore, the creation of a company culture that provides the workers with the sense of being appreciated can sustain motivation. The provision of a facility of good shelter or shade at the workplace was revealed to have direct effects on workers' productivity. Conducting activities under poor climatic conditions such as heavy rainfall or sun, leads to fatigue, discomfort, and inefficiency. Dodanwala *et al.* (2023) and Kamardeen and Hasan (2022) validate that the availability of proper physical protection enhances workers' comfort, reduces health risks, and enables prevention of downtime as a possibility. The practical step proves the employer cares about workers' well-being, a factor which has a supporting role towards motivation.

Proper safety policies and interventions are important stakeholders in workers mental health in addition to affecting productivity. Workers whose physical safety is not endangered are less fearful and more focused on work to provide quality work. Studies by Anwar *et al.* (2017) and Franceschini *et al.* (2020) ascertain that safety does not necessarily imply physical protection but psychological protection that instills trust and is less fearful. Cross-disciplinary safety practices are a sense of safety that provides

confidence to the workers to perform at their best. Additionally, ability to consult before altering procedures on site was also counted as the main encouraging factors. workers have greater ownership, passion, and morale when they are involved in decisions that affect their operation. Syamsir (2020) and Paais and Pattiruhu (2020) mention that participative decision-making is fostering collaboration and lessening resistance to change. Being consulted in construction environments helps in synchronizing management action with the condition of staff, so it is easy to adopt and perform effectively.

Triangulation of qualitative and quantitative findings validated that there has high level of comparison between the top three factors affecting worker productivity and motivation. For example, the quantitative data revealed that assistance in terms of effective leadership skills in managing stress in the workplace, in the construction sector. Similar findings emerged regarding the qualitative findings, wherein one interviewee stated

"When supervisors tell us what they need from us clearly and keep us apprised of changes, it makes me feel like part of the team and less stressed out".

This confirms literature Paais and Pattiruhu (2020) and Syamsir (2020) for communication; Anwar and Abd Zebari (2015) and Pancasila *et al.* (2020) for fairness; and Chandrawaty and Widodo (2020) and Nauman *et al.* (2019) for appreciation. Therefore, open communication builds trust and reduces stress; fairness builds respect and cooperation; and appreciation boosts morale and commitment. They all point out that workers respond not only to organisational controls in measurable terms but also enjoy the psychological and social implications of the same without which long-term productivity is not possible along with motivation.

6.5.4 Organisation Motivational Policies:

The descriptive statistics revealed that workers' productivity and motivation were most impacted by work environment/culture, health and safety practice, and equipment maintenance policy as the most important organizational motivational policies. Dignified work culture was ranked number one high in quantitative outcomes. This research validates Maqsood *et al.* (2020) and Ichsan *et al.* (2021), which explains that good working conditions equate to better morale and productivity. Secondly, occupational health and safety policies preceded them, a reflection of their preeminence. This is justified in workers' testament of gratitude and safety when safety takes precedence. Baoguo and Xiaobing (2025) and Krishnan and Rathakrishnan (2025), who assert that successful policies for safety reduce stress and increase trust, which affects motivation

and productivity. Thirdly, equipment maintenance policy is considered to employee-friendly, less stressful for workplaces, and efficient with time. Baoguo and Xiaobing (2025) and Al-Bayati (2021), who also concur that effective machinery enhances efficiency through minimized downtime.

The quantitative analysis based on the EFA further indicated that motivational organization policy influencing workers' productivity in the South African context are namely: environmental sustainability policy responsible for construction practices to reduce waste, continuous improvement policy on feedback from workers is valued and refined over time, Project planning and scheduling policy to optimise resource allocation and avoid delays. Also, policy on equality in terms of promotion regardless of gender, race, or background, subcontractor management policy to ensure they align with project goals, environmental sustainability policy responsible for construction practices to promote sustainability are still crucial in motivating workers productivity. Organisational motivational policies as evidenced in construction behaviors remain of utmost significance to influencing employee motivation and sustainable productivity. Environmental sustainability policy ranks among the fundamental areas that are enabled through literature. Baoguo and Xiaobing (2025) and Wen *et al.* (2019) indicate that the employees are more intrinsically motivated if workers' agendas converge with the agendas of the organization, such as environmental agendas. This is especially helpful for those industries where quantifiable environmental effects are prevalent, for example, the construction industry. Paul and Gracious Kazaara (2023) and Ichsan *et al.* (2021) also affirm that ecologically conscious organisations are more likely to promote increased emotional commitment by employees, with subsequent benefit in terms of performance and retention.

Similarly, policies promoting improvement by continued improvement through feedback mechanisms significantly boost morale among employees. Maqsood *et al.* (2020) and Nikoloutsopoulos et al. (2021) and indicates that the workers would be more efficient and productive if they believe their voices are heard. Relkar (2021) also adds that the policies enable firm-level debate and are in a cycle of feedback in support of continuous improvement and encouragement of employees.

Al-Bayati (2021) argues that effective scheduling maximizes readability and reduces job stress, whereas Krishnan and Rathakrishnan (2025) argue that a sequential project schedule enhances confidence levels among the team members and thus motivates them to work more efficiently. Manikandan *et al.* (2018), whose report claimed that

predictability and structure in workflow energize employees by removing conflict and uncertainty.

Purnomo (2020) and confirmed by Paul and Gracious Kazaara (2023), which states that inclusive policies generate loyalty and increase collaboration. Baoguo and Xiaobing (2025) believe that open and fair promotion systems stigmatize distrust and foster competitive yet respectful work culture. Krishnan and Rathakrishnan (2025) and Maqsoom et al. (2020) believe that if internal and external personnel operate off the same standards of expectations, coordination becomes better and supports employee motivation by reducing friction and confusion in the workplace.

Ichsan *et al.* (2021) and Wen *et al.* (2019) also mention that if organisations commence efforts in such a way that they do so on the trajectory of sustainability, the employees become more inclined towards the same. Nikoloutsopoulos *et al.* (2021) also say that if such a correlation between business responsibility and employee values exists, the employees are inwardly motivated as well as the business's reputation, which leads to a better productive as well as committed staff.

Triangulation of quantitative and qualitative findings validated ascertained similarity level between the top three factors influencing worker productivity and motivation. For example, the quantitative data revealed how health and safety practice is important in enhancing workers morale in the construction industry. Similar outcome emerged in the qualitative findings wherein one interviewee stated:

"Having the company listen to our safety is what counts—it keeps me safe and makes me work even harder."

Construction motivation can generally be obtained by effectively written firm policies in the major operating departments. Literature supports the fact that sustainability policy, equity policy, consistency in planning, feedback incorporation, and homogenous subcontractor alignment significantly enhance a culture where workers are valued, motivated, and encouraged to work to their highest potential (Baoguo & Xiaobing, 2025; Al-Bayati, 2021; Krishnan & Rathakrishnan, 2025; Nikoloutsopoulos *et al.,* 2021; Maqsoom *et al.,* 2020; Paul & Gracious Kazaara, 2023; Ichsan *et al.,* 2021; Purnomo, 2020; Wen *et al.,* 2019; Manikandan *et al.,* 2018; Relkar, 2021).

6.5.5 Government Motivational Policies toward Sustainable Productivity of Workers

The descriptive statistics also represented the critical government motivational policy with indirect and direct effects on the motivation and productivity of workers in the construction sector. These includes empowerment policies, stability and predictability policies and health policies for the working environment. The results were complemented with the qualitative findings displaying the intervening mechanisms by workers experience in those policies. Studies by Johari and Jha (2020) and Gropas (2021) argued that empowerment-key policies trigger motivation through assured participation and ownership during construction. According to Ali & Anwar (2021) and Adil *et al*. (2022), who assume that regulatory stability is most important in relation to mitigating low productivity and maximising worker loyalty. Hence, governments policies that promote a good working culture that entails health and safety policies, fair compensation, and the welfare of the workers. Vanesa *et al.* (2019) and Othman & Elwazer (2023), who explained that government imposition of security and well-being standards has the benefit of enhancing workers' motivation and organisational productivity.

Factor analysis revealed that government motivational policy factors with comprehensive coverage of workers' motivation and productivity. They are minimising the negative impact of economic fluctuations on workers, adequately address issues related to wages and benefits, effectively address issues related to discrimination at workplace, effectively address issues related to harassment at workplace, government policies enhance overall morale of construction workers, align with the safety standards in the construction industry, adequately address issues relating to the mental and physical well-being of employees, create a positive public image of the construction profession, government policy protects job security among construction workers, government initiatives support of workers' skill development, government policy that creates a favorable work environment and promotes positive attitude towards adapting new construction technologies. Managing the negative impacts of economic volatility, workers closely linked government interventions with protecting their incomes and workplace security when faced with economic recession. Johari and Jha (2020), Vanesa *et al.* (2019), and Ali and Anwar (2021) also conclude that discrimination protection policy, fairness in wages policy, and economic stability policy significantly affect organizational motivation. Additionally, Adil *et al.* (2022) and Irabor and Okolie (2019) indicate that the workers report for duty as soon as they become economically settled and valued by their companies, particularly during the years of macroeconomic adversity.

Harassment, workplace safety, and morale are as important to employees, Hwang *et al.* (2017) and Kazaz and Acikara (2015) contend, as compliance with safety law and psychological safety being the most critical if motivation is to be maintained where risk is inherent, i.e., in the construction industry. Aung *et al.* (2023) also verify that policy encouragement of employees' well-being and morale will result in more productive workers and active involvement.

Besides that, body and health care assistance, professional image in front of the masses, protection against job loss, and skill improvement programmes were offered with greater importance, as elucidated in the research articles of Van Tam *et al.* (2018), Adil *et al.* (2022), and Irabor and Okolie (2019). As our researchers educated us, two of the most prevalent reasons for work happiness and inspiration are mutual well-being and growth potential.

Besides, state provision of an enabling work environment, technology deployment, and diversity and inclusion adheres to Paais and Pattiruhu (2020) and Othman and Elwazer (2023) research findings that state inclusive, progressive, and coordinated policy environments are most essential in driving building construction workers' performance and motivation.

Triangulation of quantitative and qualitative findings validated ascertained similarity level between the top three factors influencing worker productivity and motivation. For example, the quantitative data revealed how empowerment policies are important in enhancing workers morale in the construction industry. Similar outcome emerged in the qualitative findings wherein one interviewee stated:

By providing equal opportunities and training chances, the government gives me a feeling of faith that I can grow and go further."

These factors includes economic security, equitable remuneration, safe and healthy working conditions, health and well-being, and protection from employment capture the role of supporting the importance of a humane regulatory regime within the construction context (Johari & Jha, 2020; Vanesa *et al.,* 2019; Othman & Elwazer, 2023; Akhmad & Santoso, 2023; Gropas, 2021; Greer & Carden, 2021; Ali & Anwar, 2021; Adil *et al.,* 2022; Irabor & Okolie, 2019) corroborating the government initiative to uplift the inspired, efficient construction workers.

6.6 Chapter Summary

This chapter discussed the case analyses of the qualitative interview conducted with five respondents working with construction companies in three major cities in South Africa. Two respondents were administered in Cape Town and Johannesburg, respectively, while the last respondent was administered in Durban. The interview sections were carefully conducted to access the respondents during their free hours at work. Required information was collected from each respondent to ascertain the relevance of the quantitative findings discussed in Chapter 6. The five respondents also participated in the quantitative survey in the initial phase of data collation. The findings discussed in this chapter provide additional knowledge on the results discussed in the quantitative assessment of all the latent factors and observed variables as required in the objectives. The combination of the two findings were used to formulate the SEM required for the model design and presented in Chapter 7 of the study.

CHAPTER 7

THE DEVELOPMENT OF THE MOTIVATIONAL MODEL FOR THE SUSTAINABLE PRODUCTIVITY

7.1   Introduction

In Chapters 5and 6, the research data were explained and described through descriptive and inferential statistics and ultimately interpreted and inferred. Based on the study's conceptual framework, there are identified measurement variables that align with latent variables. Structural Equation Modeling (SEM) has proven to be a robust analytical tool, particularly in organisational and behavioral research, for assessing complex relationships (Zhang *et al.,* 2021). SEM's strength lies in its ability to simultaneously analyze multiple independent and dependent variables, making it well-suited for understanding motivational dynamics in contexts like the SACI. Unlike traditional statistical methods, SEM effectively identifies and measures key motivational factors such as empowerment, incentives, psychological, and the interplay of organisational, and governmental policies. By leveraging SEM's capacity to handle complex constructs, a comprehensive motivational model was developed to accurately captures relevant variables and their relationships (Howard *et al.,* 2020).

The Structural Equation Modeling (SEM) process involves two key phases: evaluating the structural model and assessing the measurement model. The measurement model explores the connections between observed variables and their underlying latent constructs, whereas the structural model examines the relationships between these latent factors. Path coefficients are then calculated to identify the model's predictive influence and validate its structure.

7.2 Structural Equation Modeling (SEM)

SEM is a second-generation multivariate technique that combines features of traditional methods like Principal Component Analysis (PCA) and linear regression (Sarstedt *et al.,* 2021). This allows researchers to test complex theoretical frameworks through modeling relationships between variables (Magno *et al.,* 2024). There are two main types of SEM: Covariance-Based SEM (CB-SEM) and Partial Least Squares SEM (PLS-SEM). CB-SEM is theory-driven, focusing on minimizing the difference between estimated covariance and observed matrices (Henseler et al., 2014). Whileas, PLS-SEM prioritizes prediction, aiming to maximize explained variance in target constructs, which are measured through R^2 values (Sarstedt *et al.,* 2021; Henseler *et al.,* 2014). This study specifically employs PLS-SEM.

The PLS-SEM is employed in this study. Following SmartPLS (2025) perceptions, SEM modelling methodology can be seen through the eyes of two perspectives – either through the eyes of a covariance-based structural equation model (CB-SEM) or a variance-based partial least square structural equation model (PLS-SEM) viewpoint because both enable diverse research objectives to be attained. Following SmartPLS (2025), CB-SEM is used when:

✓ theory testing, theory confirmation or comparison of alternative theories; the structural model includes circular relationships; and

✓ the study requires a global goodness-of-fit criterion; and PLS-SEM is used when:

✓ the research objective is to predict important target constructs or to identify key driver constructs.

✓ the structural model is complex (numerous constructs and numerous indicators).

✓ the sample size is small, or the data are non-normally distributed; and

✓ it is planned to use latent variable scores for further analysis.

This choice is justified by its strength in modeling complex relationships and refining theoretical models, an essential aim of this research (Magno *et al,* 2024).

7.3 Model Fitting and Analysis Using PLS-SEM

PLS-SEM is often recommended for developing new theoretical models, especially in fields focused on prediction and exploratory analysis (Magno *et al.,* 2024; Elbanna *et al.,* 2013). The guideline suggesting that the minimum sample size should be ten times the number of structural paths leading to any endogenous construct was followed to ensure methodological rigour. With elen such paths identified, this study required a minimum of 110 data points.

The purpose of applying PLS-SEM here is to evaluate how motivational factors influence worker productivity in the South African construction industry. The analysis aims to uncover the strength, direction, and predictive relevance of these relationships, ultimately contributing to developing a model that supports long-term improvements in workforce productivity.

7.3.1 Selection of Variables for the Motivational Productivity Model

The variables used in developing the motivational model were derived from a detailed analysis of the data presented in Chapters Five and Six. Only the most influential indicators within each construct were selected, based on their statistical relevance and contribution to explaining the underlying factors. The first latent variable considers the motivational incentives influencing construction workers' productivity. Ten (10) measurement variables correspond to the first latent variable were selected. The second

latent variable considered was motivational empowerment influencing workers' productivity SACI. This latent variable is comprised of six variables that enhance sustainable productivity of workers. Thirdly, latent variables considered is psychological influence on construction workers productivity, which has five measurement variables. The fourth latent variable considered is organisational motivational policies influencing construction workers' productivity with six measurement variables. Furthermore, governmental motivational policies have 10 measurement variables considered for this model. Lastly, sustainable productivity has 5 measurement variables considered for the model to be rigorous as shown in Table 7.1

Table 7.1 Conceptual model latent variablesTable 7.2 1

Latent variable constructs	Measurement variable	
Motivational incentives influencing workers' productivity in the South African construction industry	BB1	Frequent annual salary
	BB10	Bonus payment to workers
	BB11	Long service award to workers
	BB8	Overtime payment to workers
	BB3	Promotion when due to workers
	BB9	Safety plans for workers
	BB7	Workmen's compensation to workers
	BB5	provision funds for workers
	BB6	Provision of social security to workers
	BB4	Provision of leave allowance to workers
Motivational empowerment influencing workers' productivity in the South African construction industry	CC2	Access to information needed to perform
	CC3	Trust and communication with the management
	CC4	Good work environment
	CC5	Job security
	CC6	Access to resources needed to perform
	CC7	Long-term career prospects with the organisation
Psychological influence on construction workers productivity in South Africa	DD1	Availability of shelter on the construction site
	DD2	Workers feeling valued and appreciated.
	DD3	Good communication skills
	DD4	Safety measures and protocols
	DD5	Adequate fairness to all workers
	DD6	consulting workers onsite before effecting change
Organisational motivational policies influencing construction workers' productivity in South Africa	EE1	Employee retention policy
	EE2	Policy related to work environment/culture
	EE3	Job rotation policy
	EE4	Policy related to work structure
	EE5	Policy on health and safety practices
	EE6	Policies on celebrating workers performance

Governmental motivational policies that influence construction workers' productivity in South Africa.	FF1	Current government policies positively influence.
	FF3	Favourable policies on work environment
	FF4	Safety standards policies
	FF5	Adequately policies on wages and benefits
	FF6	Government policy on job security
	FF7	Adequately policies to the mental and wellbeing
	FF8	Government initiatives on inclusive and diverse
	FF9	Minimise impact of economic fluctuations
	FF10	Government policies to enhance worker morale
	FF11	Policies for workers discrimination at workplace
Establishment of sustainable productivity of workers	GG1	Delivery of quality project within the specification
	GG2	Free from hazards onsite during project delivery
	GG3	Profit generated during project delivery
	GG4	Customer satisfaction to worker provided efficient
	GG5	Completion of project within the budgeted cost

7.3.2 Measurement Model Results

The measurement model was developed using SmartPLS 4.0 to assess the reliability and validity of the selected constructs and evaluate the model's predictive performance. All hypothesised paths between latent constructs were established, and the visual indicators changing from red to blue confirmed the presence of statistically meaningful relationships.

The PLS algorithm was run to compute key estimates, including standardised path coefficients, factor loadings, and R^2 values. Indicators with factor loadings below 0.5 were excluded from the model due to their minimal contribution, aligning with guidelines (Fornell and Larcker,1981). Although a threshold of ≥0.7 is typically preferred, this study followed the ≥0.5 benchmark previously used in the PCA analysis.

Internal consistency reliability was assessed using Cronbach's Alpha (CA) and Composite Reliability (CR). As detailed in Table 7.3, CA values ranged from 0.712 to 0.974, while CR values spanned 0.833 to 0.979, both exceeding the acceptable threshold of 0.7 (Sarstedt *et al.,* 2021). This confirms that the measurement items are internally consistent across constructs.

To evaluate convergent validity, the Average Variance Extracted (AVE) was examined, with all constructs recording AVE values between 0.533 and 0.904, surpassing the 0.5

minimum recommended by Fornell and Larcker (1981). This affirms that each construct explains more than half of the variance in its respective indicators.

Discriminant validity was also confirmed, based on the criterion that the square root of each construct's AVE (shown in bold along the diagonal in Table 7.3) must exceed the inter-construct correlations in the same row and column. This approach adheres to guidelines by Sarstedt et al. (2021), confirming each construct's uniqueness. The results show a strong reliability discriminant validity and convergent validity in the measurement model, indicating that the chosen constructs effectively model motivational factors for sustainable productivity in the South African construction industry.

Table 7.2 Inter-Construct Correlation Matrix and Reliability Statistics for Latent Variables

	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)	R square	GMP	ME	MI	OMP	PI	SP
GMP	0.931	0.941	0.594	0.338	**0.771**	0	0	0	0	0
ME	0.896	0.918	0.615	0	0.515	**0.784**	0	0	0	0
MI	0.884	0.901	0.604	0	-0.01	-0.051	**0.777**	0	0	0
OMP	0.881	0.908	0.622	0.067	0.111	0.222	0.083	**0.789**	0	0
PI	0.927	0.938	0.578		0.479	0.47	-0.061	0.182	**0.76**	0
SP	0.904	0.928	0.722	0.376	0.576	0.242	0.043	0.242	0.244	**0.85**

Note: The number in bold is the square root of AVE.

7.3.3 Validation of Structural Model Results

The validated measurement model's convergent was used for SmartPLS 4.0, analyzing factor loadings and cross-loadings for each indicator across endogenous latent constructs. The results in Table 7.3 show that all measurement items loaded strongly onto their respective constructs, with values ranging from 0.60 to 0.90. These robust factor loadings indicate that the indicators accurately represent their underlying constructs, confirming convergent validity and supporting the structural integrity of the motivational model for sustainable productivity.

The assessment of the structural model, illustrated in Figure 7.1, using the PLS algorithm is to examine the hypothesized relationships between constructs the model analyzed direct paths and six key latent constructs: Psychological Influence (PI), Motivational Empowerment (ME), Motivational Incentives (MI), Government Motivational Policies (GMP), Organisational Motivation Policies (OMP) and Sustainable Productivity (SP). By

calculating path coefficients to determine the strength and significance relationship of each hypothesis.

The analysis revealed that Government Motivational Policies (GMP) positively influenced Sustainable Productivity (SP) with moderate strength, supported by strong factor loadings (FF9 = 0.826) and (FF5 = 0.821). Additionally, Motivational Empowerment (ME) showed a positive relationship with SP, with indicators like CC4 (0.820) and CC7 (0.815) exceeding the 0.7 threshold, confirming its significant contribution to productivity outcomes.

Motivational Incentives (MI) showed strong internal consistency, with high item loadings (DD1 = 0.901) and (DD5 = 0.787) confirming its robust construct validity. Nevertheless, its relationships with other constructs like Government Motivational Policies (GMP) and Motivational Empowerment (ME) were weak or slightly negative, indicating that while MI is internally well-defined, its connections to other model components may be more nuanced.

Organisational Motivation Policies (OMP) showed a solid internal consistency, with item loadings like EE4 (0.858) and EE3 (0.850), and positively influenced Sustainable Productivity. Psychological Influence (PI) emerged as another significant driver, with strong loadings such as BB3 (0.819) and BB5 (0.809), and meaningful correlations with both ME and GMP.

Finally, the endogenous construct, Sustainable Productivity (SP), exhibited excellent reliability and validity, with its indicators (e.g., GG1 = 0.863, GG5 = 0.859) strongly aligning with the construct and indicating a solid outcome measure for the motivational model.

The R^2 values for the endogenous constructs, all above the 10% threshold, confirm acceptable predictive relevance (Fornell & Larcker, 1981; Henseler *et al.,* 2014). These findings support the model's theoretical structure and validate the interplay between motivational factors and sustainable productivity in the South African construction industry.

Table 7. 3 Factor loadings (bolded) and cross loadings for measurement model

	GMP	ME	MI	OMP	PI	SP
BB1	0.417	0.392	-0.053	0.168	**0.789**	0.190
BB10	0.329	0.376	0.010	0.133	**0.779**	0.155
BB11	0.395	0.380	-0.075	0.147	**0.795**	0.204
BB12	0.433	0.359	-0.021	0.129	**0.759**	0.230
BB13	0.335	0.316	-0.027	0.122	**0.685**	0.176
BB2	0.358	0.330	-0.036	0.155	**0.794**	0.235
BB3	0.385	0.418	-0.110	0.091	**0.819**	0.144
BB4	0.315	0.319	-0.048	0.226	**0.727**	0.157
BB5	0.412	0.419	-0.048	0.101	**0.809**	0.235
BB6	0.328	0.284	-0.050	0.153	**0.705**	0.178
BB9	0.181	0.327	-0.052	0.074	**0.686**	0.048
CC2	0.411	**0.760**	0.009	0.216	0.343	0.189
CC3	0.383	**0.761**	-0.055	0.189	0.324	0.135
CC4	0.432	**0.820**	-0.059	0.125	0.325	0.216
CC5	0.335	**0.722**	0.002	0.091	0.363	0.173
CC6	0.418	**0.807**	-0.071	0.158	0.378	0.236
CC7	0.395	**0.815**	-0.034	0.219	0.435	0.138
CC8	0.438	**0.801**	-0.063	0.207	0.415	0.227
DD1	-0.002	-0.056	**0.901**	0.111	-0.055	0.061
DD2	-0.024	-0.076	**0.762**	0.016	-0.096	0.042
DD3	-0.044	-0.067	**0.761**	0.017	-0.074	0.004
DD4	-0.027	-0.039	**0.770**	0.072	0.003	-0.014
DD5	0.015	-0.006	**0.787**	0.037	-0.071	0.025
DD6	0.021	0.033	**0.667**	0.008	-0.028	0.049
EE1	0.055	0.107	0.088	**0.733**	0.046	0.062
EE2	0.026	0.089	0.037	**0.733**	0.100	0.153
EE3	0.096	0.198	-0.001	**0.850**	0.147	0.201
EE4	0.153	0.244	0.113	**0.858**	0.227	0.239
EE5	0.055	0.181	-0.005	**0.746**	0.105	0.204
EE6	0.086	0.159	0.139	**0.803**	0.149	0.205
FF1	0.641	0.352	-0.033	0.057	0.289	0.316
FF10	**0.783**	0.437	0.016	0.158	0.335	0.438
FF11	**0.808**	0.438	0.070	0.127	0.384	0.456
FF2	**0.771**	0.394	-0.061	0.062	0.366	0.479
FF3	**0.758**	0.345	0.092	0.083	0.325	0.475
FF4	**0.778**	0.417	-0.024	0.048	0.388	0.452
FF5	**0.821**	0.356	-0.008	0.078	0.406	0.518
FF6	**0.765**	0.396	-0.017	0.085	0.408	0.382
FF7	**0.769**	0.420	-0.053	0.142	0.422	0.386
FF8	**0.742**	0.385	-0.035	0.031	0.342	0.452

FF9	**0.826**	0.425	-0.037	0.071	0.384	0.500
GG1	0.489	0.207	0.015	0.219	0.198	**0.863**
GG2	0.472	0.219	-0.034	0.169	0.210	**0.846**
GG3	0.531	0.225	0.026	0.193	0.195	**0.855**
GG4	0.458	0.179	0.124	0.219	0.200	**0.824**

The path coefficient constructs are presented in Table 7.4.

Table 7. 4 Path coefficient of the constructs

	GMP	ME	MI	OMP	PI	SP
GMP	**0**	0	0	0	0	0.629
ME	0.373	0	0	0.178	0	-0.105
MI	0.027	0	0	0.098	0	0.024
OMP	**0**	0	0	0	0	0.202
PI	0.305	0	0	0.104	0	-0.043
SP	**0**	0	0	0	0	0
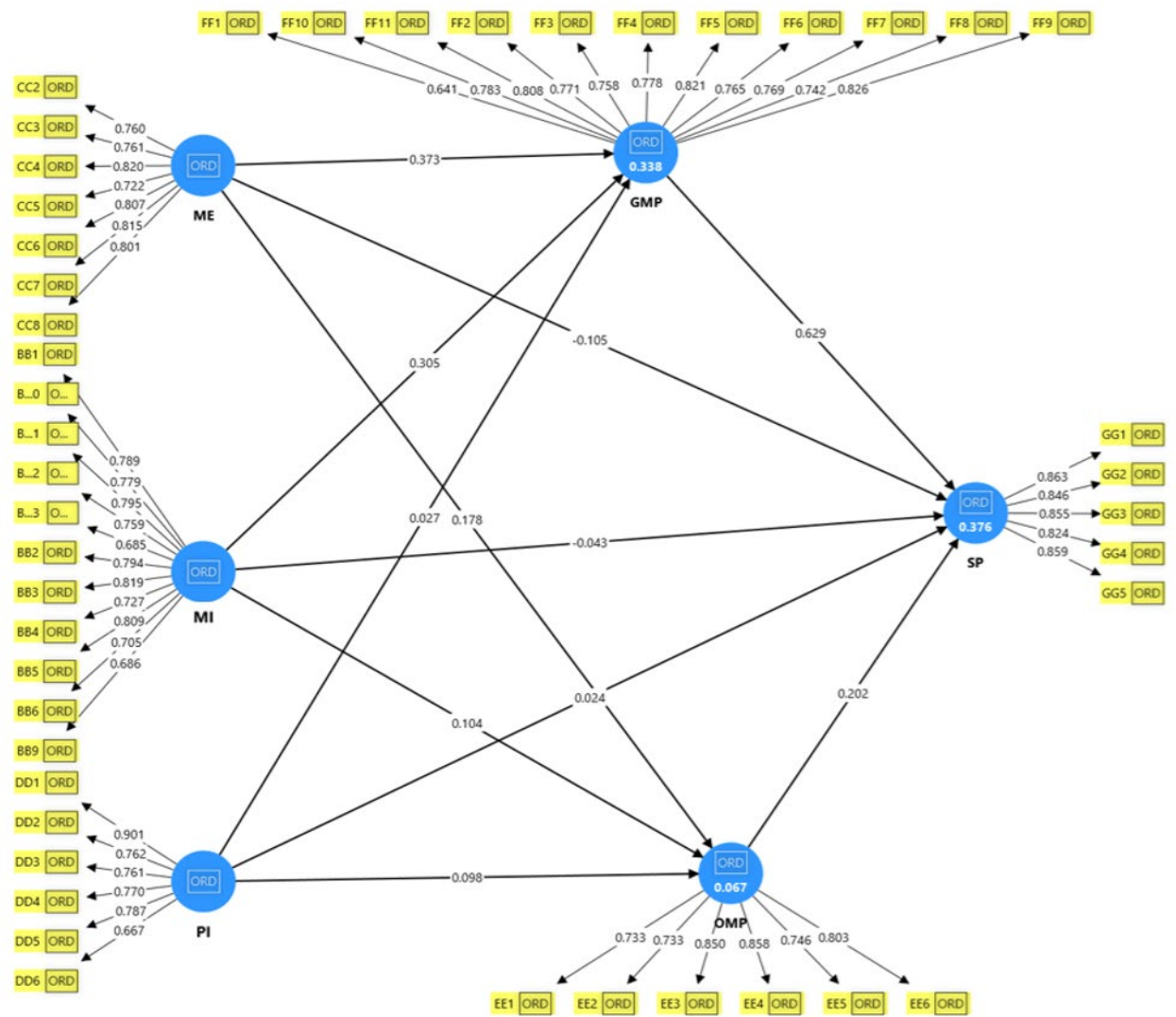
Figure 7. 1: Structural model with path coefficient and R-square values

To verify the strength and statistical relevance of the hypothesised relationships in the structural model, a bootstrapping procedure was conducted within the SmartPLS environment. This technique, involving 500 resamples, was employed to generate empirical t-values and assess the stability and significance of the path coefficients between the latent variables.

According to the established criteria, a path is considered statistically significant at the 10% confidence level if the t-value exceeds 1.65, at 5% if it exceeds 1.96, and at the 1% level if it surpasses 2.57. The computed t-values for each path are detailed in Table 7.6, while Figure 7.2 provides a graphical representation of the structural model, including the magnitude of the path coefficients and their respective t-statistics.

The results show that several pathways among constructs such as Government Motivational Policies (GMP), Motivational Empowerment (ME), and Psychological Influence (PI) toward Sustainable Productivity (SP) achieved statistical significance, thereby supporting the study's hypotheses regarding the influence of motivational factors on productivity in the South African construction industry.

Additionally, the outer model loadings for the indicator variables were statistically robust, with all factor loadings achieving significance at $p < 0.001$. This indicates a strong degree of association between the observed items and their respective latent constructs, affirming the quality of the measurement model. These findings collectively provide credible support for the proposed theoretical framework and highlight the validity of motivational constructs in driving sustainable outcomes within the construction sector.

Table 7.5 PLS path modelling bootstrapping results with t-statistics (Direct hypotheses)

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
GMP -> SP	0.629	0.626	0.057	11.008	0.000
ME -> GMP	0.373	0.372	0.056	6.639	0.000
ME -> OMP	0.178	0.181	0.077	2.325	0.020
ME -> SP	-0.105	-0.104	0.067	1.581	0.115
MI -> GMP	0.027	0.023	0.077	0.354	0.723
MI -> OMP	0.098	0.088	0.088	1.121	0.263
MI -> SP	0.024	0.027	0.052	0.465	0.642
OMP -> SP	0.202	0.207	0.059	3.431	0.001
PI -> GMP	0.305	0.307	0.053	5.718	0.000
PI -> OMP	0.104	0.104	0.077	1.355	0.176
PI -> SP	-0.043	-0.042	0.069	0.622	0.535

The findings reveal that several paths are statistically significant at the 5% level or better:

- GMP → SP (β = 0.629, t = 11.008, p < 0.001): This is a strong and significant positive effect, supporting the hypothesis that Government Motivational Policies (GMP) have a substantial positive impact on Sustainable Productivity (SP).

- ME → GMP (β = 0.373, t = 6.639, p < 0.001): Indicates a significant positive influence, confirming that Motivational Empowerment (ME) plays a meaningful role in shaping Government Motivational Policies (GMP).

- ME → OMP (β = 0.178, t = 2.325, p = 0.020): Demonstrates a statistically significant relationship, suggesting that Motivational Empowerment (ME) positively contributes to Organisational Motivation Policies (OMP).

- OMP → SP (β = 0.202, t = 3.431, p = 0.001): A significant positive path, confirming that Organisational Motivation Policies (OMP) enhance Sustainable Productivity (SP).

- PI → GMP (β = 0.305, t = 5.718, p < 0.001): There is a significant positive effect of Psychological Influence (PI) on Government Motivational Policies (GMP), supporting the associated hypothesis.

Insignificant Direct Paths

Some hypothesised relationships, however, were not found to be statistically significant:

- ME → SP (β = -0.105, t = 1.581, p = 0.115): This path is not significant, suggesting that Motivational Empowerment (ME) does not directly influence Sustainable Productivity (SP).

- MI → GMP (β = 0.027, t = 0.354, p = 0.723): Indicates no significant relationship between Motivational Incentives (MI) and Government Motivational Policies (GMP).

- MI → OMP (β = 0.098, t = 1.121, p = 0.263): The path from Motivational Incentives (MI) to Organisational Motivation Policies (OMP) is not statistically significant.

- MI → SP (β = 0.024, t = 0.465, p = 0.642): Suggests that Motivational Incentives (MI) have no meaningful direct impact on Sustainable Productivity (SP).

- PI → OMP (β = 0.104, t = 1.355, p = 0.176): The relationship between Psychological Influence (PI) and Organisational Motivation Policies (OMP) is not supported.

- PI → SP (β = -0.043, t = 0.622, p = 0.535): This path is insignificant, indicating that Psychological Influence (PI) does not have a direct effect on Sustainable Productivity (SP).

Table 7.6 PLS Path Modelling Bootstrapping Results with T-Statistics (Indirect/Mediated Hypotheses)

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	Tstatistics(|O/STDEV|)	P values
ME -> OMP -> SP	0.036	0.037	0.018	2.014	0.045
MI -> OMP -> SP	0.020	0.018	0.019	1.022	0.307
ME -> GMP -> SP	0.234	0.233	0.041	5.720	0.000
PI -> OMP -> SP	0.021	0.021	0.017	1.213	0.226
MI -> GMP -> SP	0.017	0.014	0.048	0.357	0.721
PI -> GMP -> SP	0.192	0.192	0.039	4.853	0.000

Some relationships emerged as significant only through mediation:

- ME → OMP → SP (β = 0.036, t = 2.014, p = 0.045): A significant mediated effect, indicating that Motivational Empowerment (ME) influences Sustainable Productivity (SP) indirectly through Organisational Motivation Policies (OMP).

- ME → GMP → SP (β = 0.234, t = 5.720, p < 0.001): A strong and significant mediation path, showing that ME enhances SP via Government Motivational Policies (GMP).

- PI → GMP → SP (β = 0.192, t = 4.853, p < 0.001): A significant indirect path where Psychological Influence (PI) affects Sustainable Productivity (SP) through its impact on Government Motivational Policies (GMP).

Other mediation paths were not statistically significant:

- MI → OMP → SP (β = 0.020, t = 1.022, p = 0.307): Indicates that Motivational Incentives (MI) do not significantly influence Sustainable Productivity (SP) via OMP.

- MI → GMP → SP (β = 0.017, t = 0.357, p = 0.721): No significant mediation effect was observed from MI through GMP to SP.

- PI → OMP → SP (β = 0.021, t = 1.213, p = 0.226): Suggests that the indirect impact of Psychological Influence (PI) on Sustainable Productivity (SP) via OMP is not statistically supported.
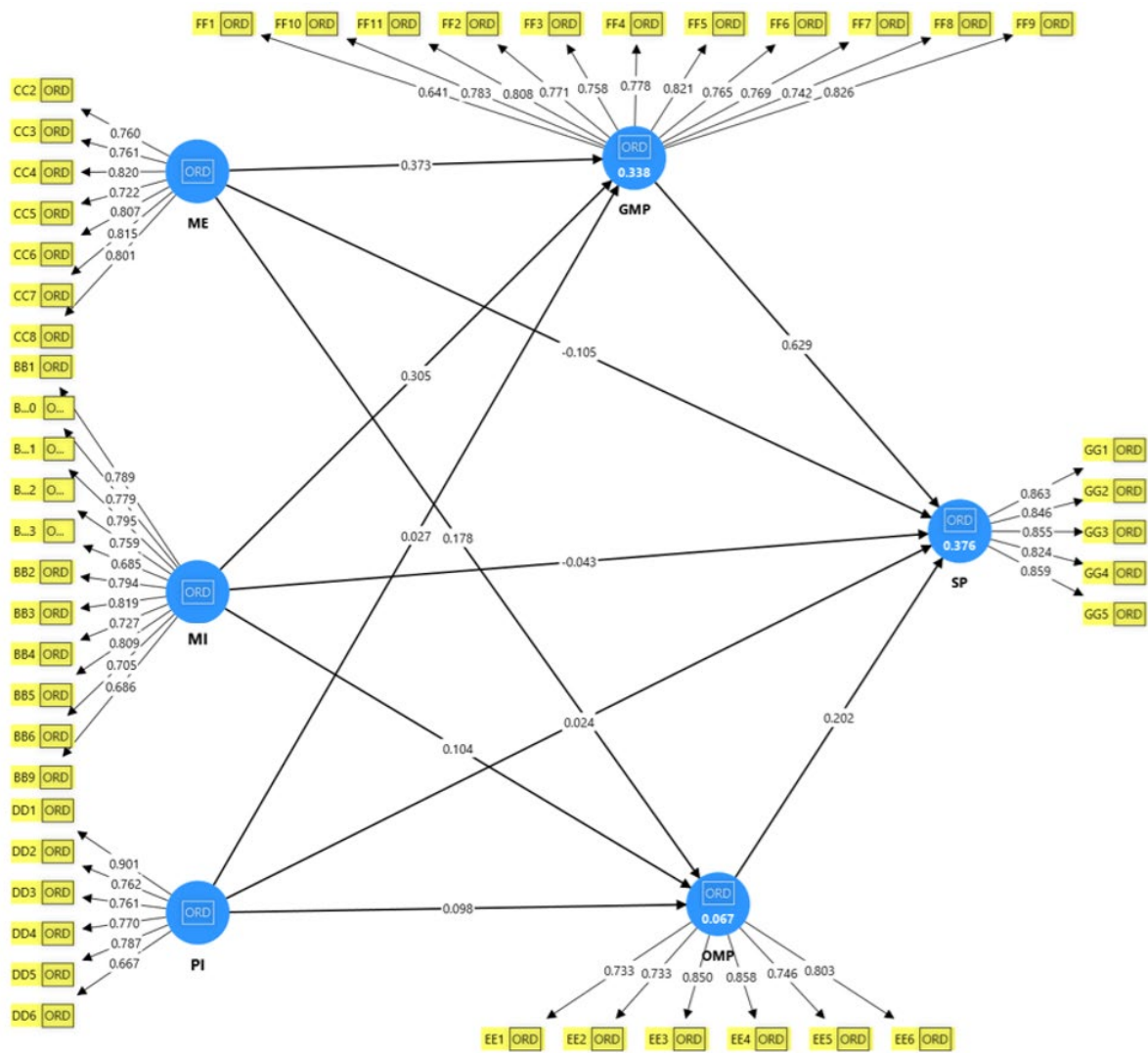
Figure 7.2 Structural model with coefficients

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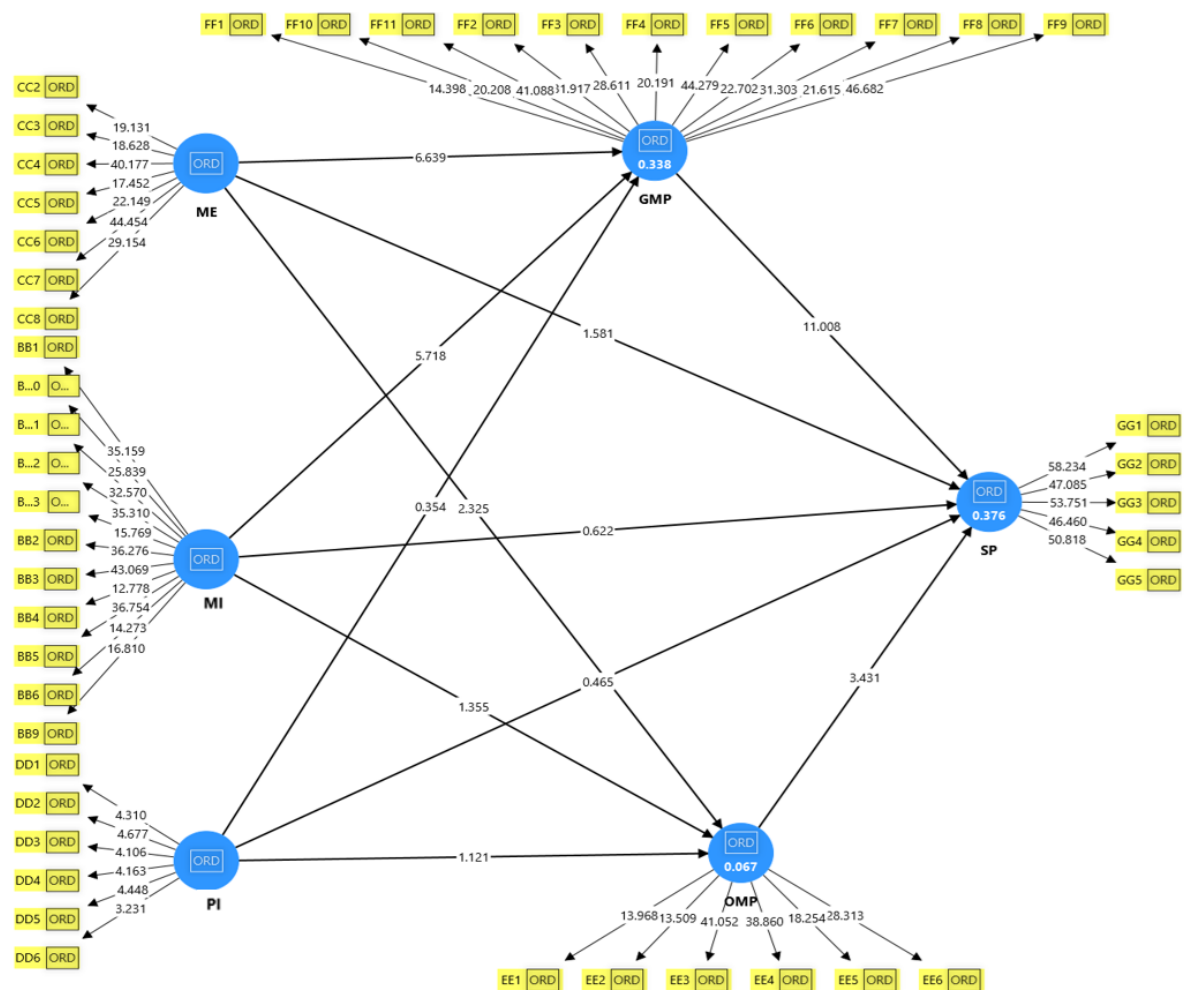
Figure 7.3 Structural model with t-statistics values

7.3.4 Structural Equations to Validate the Structural Model

The structural model depicted in Figures 7.2 and 7.3 illustrates the hypothesised relationships among the latent constructs of the study. In line with the classification by Mehmetoglu and Venturini (2021), and Cefis and Carpita (2024), latent variables in structural equation modelling (SEM) are categorised into endogenous and exogenous variables. Endogenous variables are those influenced by other variables within the model (i.e., they have incoming arrows), while exogenous variables are not influenced by any other construct in the model but instead serve as causal drivers of other variables.

In the context of this study, the exogenous variables are:

- Psychological Influence (PI)

- Motivational Incentives (MI)

- Motivational Empowerment (ME)

These constructs do not have preceding latent variables influencing them within the model, and they function as input drivers. This implied that the endogenous variables include:

- Organisational Motivation Policies (OMP)

- Government Motivational Policies (GMP)

- Sustainable Productivity (SP)

These outcomes are influenced by one or more constructs in the model, forming the main the underlying relationships being examined.

In line with PLS-SEM assumptions, the structural model is undertaken as linear, causal, and additive relationships between constructs (Hwang et al., 2020). Using SmartPLS, we estimated standardized path coefficients to represent the hypothesized relationships between constructs, which are captured in the structural equations below.

1. **OMP = α1(ME) + α2(MI) + α3(PI) + ε1**
   (Organisational Motivation Policies are influenced by Motivational Empowerment, Motivational Incentives, and Psychological Influence)

2. **GMP = β1(ME) + β2(MI) + β3(PI) + ε2**
   (Government Motivational Policies are influenced by Motivational Empowerment, Motivational Incentives, and Psychological Influence)

3. **SP = γ1(OMP) + γ2(GMP) + γ3(ME) + γ4(MI) + γ5(PI) + ε3**
   (Sustainable Productivity is predicted by Organisational Motivation Policies, Government Motivational Policies, Motivational Empowerment, Motivational Incentives, and Psychological Influence)

Each equation includes an error term (ε) to account for the proportion of variance in the endogenous variable that is not explained by the predictor constructs.

The figure accompanying this section (Figure 7.2) visually presents these relationships through directed arrows (paths), and the estimated path coefficients were validated using the bootstrapping procedure (500 resamples) in SmartPLS to assess statistical significance.

In addition to direct effects, the model also includes mediated (indirect) effects, such as:

- ME → OMP → SP

- ME → GMP → SP

- PI → GMP → SP

These mediation paths further enrich the explanatory power of the model and offer insight into how empowerment and psychological influence may enhance productivity through institutional and policy channels.

Figure 7.4 illustrates the motivational model that has been established to guide SACI towards the achievement of sustainable productivity of workers. The model constructs and measurement variables for each construct are shown clearly in the model.

Figure 7.4 Causality structural model explaining underlying factors of the motivational model to guide South African construction industry towards achieving sustainable productivity of workers.

PI

DD1   Availability of shelter on the construction site
DD2   Workers feeling valued and appreciated.
DD3   Good communication skills
DD4   Safety measures and protocols
DD5   Adequate fairness to all workers
DD6   Consulting workers onsite before effecting change

GMP

FF1   Current government policies positively influence.
FF3   Favourable policies on work environment
FF4   Safety standards policies
FF5   Adequately policies on wages and benefits
FF6   Government policy on job security
FF7   Adequately policies to the mental and wellbeing
FF8   Government initiatives on inclusive and diverse
FF9   Minimise impact of economic fluctuations
FF10   Government policies to enhance worker morale
FF11   Policies for workers discrimination at workplace

MI

BB1   Frequent annual salary
BB10   Bonus payment to workers
BB11   Long service award to workers
BB8   Overtime payment to workers
BB3   Promotion when due to workers
BB9   Safety plans for workers
BB7   Workmen's compensation to workers
BB5   provision funds for workers
BB6   Provision of social security to workers
BB4   Provision of leave allowance to workers

Government motivational policies (GMP)

Psychological influence (PI)

Motivational incentives (MI)

Motivational Empowerment (ME)

Sustainable productivity (SP)

SP

GG3   Quality projects within the specification
GG4   Free from hazards on site
GG1   Completion of project within budgeted cost
GG2   Completion of project within the timeframe
GG5   Customer satisfaction

Organisation motivational policies (OMP)

ME

CC2   Access to information needed to perform
CC3   Trust and communication with the management
CC4   Good work environment
CC5   Job security
CC6   Access to resources needed to perform
CC7   Long-term career prospects with the organisation

OMP

EE1   Employee retention policy
EE2   Policy related to work environment/culture
EE3   Job rotation policy
EE4   Policy related to work structure
EE5   Policy on health and safety practices
EE6   Policies on celebrating workers performance

Figure 7.5: Motivational model to guide South African construction industry towards achieving sustainable productivity of workers.

7.3.5 Model evaluation

In the PLS model estimation in the present study, the PLS utilizes the Rsquare values as the most significant values to test predictive relevance of the model. One of the primary indicators used to assess the explanatory power of the model is the R^2 value, which reflects the proportion of variance explained in the endogenous constructs. In addition to R^2, the model's quality can be assessed using non-parametric resampling techniques like bootstrapping, which test the significance and reliability of path coefficients and model (Henseler *et al.,* 2014). Hussain *et al.* (2021) developed the global measure of goodness of fit (GoF) index, which was utilized. The equation to calculate GoF values provided by Memon *et al* (2021) employed as procedural rules in global validation for the calculation of minimum values in PLS path models was applied.

$$GoF = \sqrt{Average\ AVE \times Average\ R^2}$$

Using data from Table 8.3, the relevant statistics are:

Average AVE = (0.594 + 0.615 + 0.604 + 0.622 + 0.578 + 0.722) / 6 = 0.6225

Average R^2 (from GMP, OMP, and SP) = (0.338 + 0.067 + 0.376) / 3 = 0.2603

Thus:

$$GoF = \sqrt{0.6225 \times 0.2603} = 0.4025$$

According to values (Table 7.2), GoF value of 0.402 was achieved for the whole model. a GoF value of 0.36 or higher indicates a large effect size for R^2, suggesting strong model quality. (Abd Rahman *et al.,* 2022). Hence, confirms that the model is theoretically sound and empirically valid for explaining the interrelationships among the constructs under investigation.

7.4 Discussion of Findings from the Model Results

The PLS-SEM analysis provides insightful findings regarding the motivational factors influencing Sustainable Productivity (SP).

- Government Motivational Policies (GMP) demonstrated a moderate R^2 value of 0.338, showing that it is significantly shaped by Motivational Empowerment (ME) and Psychological Influence (PI). Both ME ($\beta = 0.373$, t = 6.639, $p < 0.001$) and PI ($\beta = 0.305$, t = 5.718, $p < 0.001$) contribute strongly and significantly to GMP, affirming that both individual empowerment and mindset factors are critical to shaping effective public policies.

- Sustainable Productivity (SP) had the strongest R² value at 0.376 (37.6%), making it the best-explained outcome in the model. The direct paths contributing to SP included:

  o GMP → SP (β = 0.629, t = 11.008, p < 0.001): Strongest positive influence.

  o OMP → SP (β = 0.202, t = 3.431, p = 0.001): Significant impact from organisational practices.

  o Other variables such as ME, MI, and PI had insignificant direct effects, but contributed indirectly through mediation.

- Organisational Motivation Policies (OMP) exhibited a weak R² value of 0.067, suggesting that although ME and PI positively affect it, the model does not strongly predict OMP outcomes.

- Motivational Incentives (MI) showed no significant paths in the model, and its contribution to any endogenous construct (GMP, OMP, or SP) is minimal. This suggests that standalone incentive programs are not sufficient drivers of sustainable productivity unless embedded within broader empowerment or policy frameworks.

The mediation results highlight important indirect contributions:

- ME → GMP → SP and PI → GMP → SP are strong and significant indirect paths.

- ME → OMP → SP is a weaker but still significant path.

Meanwhile, indirect effects involving MI were not statistically significant, confirming its limited role in isolation.

In summary, the reflected results based on the structural model demonstrate that motivational incentives, motivational empowerment, psychological influence, organisational policies and governmental motivation have positive significant relationships and moderate predictive capabilities to influence workers productivity during project delivery. The overall predictive strength of the motivational model is acceptable as the R2 values are above 10%. The accepted predictive strength of the model has thus supported the research proposition that a combination of the motivational latent variables by SACI to achieve sustainable productivity of workers is critical. Table 7.7 summarises the effects of the structural model results on the hypothesised links in the PLS-SEM path model which were guided by the propositions.

Table 7.7 Summary of the Effects of Structural Model Results on Hypothesised Links in PLS-SEM Path Model (Direct Hypotheses)

Path Label	Path Relationship	T-statistic	Corresponding Hypothesised Path	Remark on Hypothesis
GMP → SP	Government Motivational Policies → Sustainable Productivity	Significant	**Hypothesis 1**: There is a significant positive effect of Government Motivational Policies (GMP) on Sustainable Productivity (SP).	Supported
ME → GMP	Motivational Empowerment → Government Motivational Policies	Significant	**Hypothesis 2**: Motivational Empowerment (ME) significantly influences Government Motivational Policies (GMP).	Supported
ME → OMP	Motivational Empowerment → Organisational Motivation Policies	Significant	**Hypothesis 3**: Motivational Empowerment (ME) positively affects Organisational Motivation Policies (OMP).	Supported
ME → SP	Motivational Empowerment → Sustainable Productivity	Not significant	**Hypothesis 4**: Motivational Empowerment (ME) has a direct effect on Sustainable Productivity (SP).	Not Supported
MI → GMP	Motivational Incentives → Government Motivational Policies	Not significant	**Hypothesis 5**: Motivational Incentives (MI) significantly influence Government Motivational Policies (GMP).	Not Supported
MI → OMP	Motivational Incentives → Organisational Motivation Policies	Not significant	**Hypothesis 6**: Motivational Incentives (MI) have a significant effect on Organisational Motivation Policies (OMP).	Not Supported

MI → SP	Motivational Incentives → Sustainable Productivity	Not significant	**Hypothesis 7**: Motivational Incentives (MI) positively influence Sustainable Productivity (SP).	Not Supported
OMP → SP	Organisational Motivation Policies → Sustainable Productivity	Significant	**Hypothesis 8**: Organisational Motivation Policies (OMP) positively influence Sustainable Productivity (SP).	Supported
PI → GMP	Psychological Influence → Government Motivational Policies	Significant	**Hypothesis 9**: Psychological Influence (PI) has a significant effect on Government Motivational Policies (GMP).	Supported
PI → OMP	Psychological Influence → Organisational Motivation Policies	Not significant	**Hypothesis 10**: Psychological Influence (PI) positively affects Organisational Motivation Policies (OMP).	Not Supported
PI → SP	Psychological Influence → Sustainable Productivity	Not significant	**Hypothesis 11**: Psychological Influence (PI) directly affects Sustainable Productivity (SP).	Not Supported

Table 7.8 Summary of the Effects of Structural Model Results on Indirect Hypothesised Links in PLS-SEM Path Model (Mediation Effects)

Path Label	Path Relationship	T-statistic	Corresponding Hypothesised Path	Remark on Hypothesis
ME → OMP → SP	Motivational Empowerment → Organisational Motivation Policies → Sustainable Productivity	Significant	**Hypothesis 12**: Motivational Empowerment (ME) significantly influences Sustainable Productivity (SP) through Organisational Motivation Policies (OMP).	Supported
ME → GMP → SP	Motivational Empowerment → Government Motivational Policies → Sustainable Productivity	Significant	**Hypothesis 13**: Motivational Empowerment (ME) significantly affects Sustainable Productivity (SP) through Government Motivational Policies (GMP).	Supported
PI → GMP → SP	Psychological Influence → Government Motivational Policies → Sustainable Productivity	Significant	**Hypothesis 14**: Psychological Influence (PI) significantly impacts Sustainable Productivity (SP) via Government Motivational Policies (GMP).	Supported
MI → OMP → SP	Motivational Incentives → Organisational Motivation Policies → Sustainable Productivity	Not significant	**Hypothesis 15**: Motivational Incentives (MI) influence Sustainable Productivity (SP) through Organisational Motivation Policies (OMP).	Not Supported
MI → GMP → SP	Motivational Incentives → Government Motivational Policies → Sustainable Productivity	Not significant	**Hypothesis 16**: Motivational Incentives (MI) affect Sustainable Productivity (SP) via Government Motivational Policies (GMP).	Not Supported

| PI → OMP → SP | Psychological Influence → Organisational Motivation Policies → Sustainable Productivity | Not significant | **Hypothesis 17**: Psychological Influence (PI) influences Sustainable Productivity (SP) through Organisational Motivation Policies (OMP). | Not Supported |

7.5 Application of the PLS model

Xiong, Skitmore, and Xia (2015), SmartPLS is a powerful tool for SEM fit to be used in empirical as well as theoretical studies and increasingly so in construction studies. Partial Least Squares Structural Equation Modelling (PLS-SEM) was utilized in this study due to its capacity to analyze and forecast the complex interaction of motivational drivers that affect employees' sustainable productivity within the South African Construction Industry (SACI). Given the multi-dimensionality of the motivation of workers and the suitability of the same towards sustainable economic growth, PLS-SEM gave methodologically conservative solutions to relationship estimation of latent constructs in the theory-based model in Chapter 3. Its predictability and capacity for explaining interdependency of multiple predictors (Fischer, 2012) made it best to explain the interdependent and dynamic determinants of productivity of the SACI. Thus, PLS-SEM was not only accessible but also an analytical tool to examine the theoretical model as envisioned and advise practice and policy in the industry.

In terms of Its flexibility gives an overview of the complex correlation between government policy, organisational practice, and psychological factors of workers. Also, the model gives policymakers information on those policies having maximum influence on worker motivation and productivity, for example, safety levels and wage equity. Such evidence-based information allows policymakers to prioritize and develop policies that make safe, stable, and stimulating work environment a top agenda. For the construction firms, HR and project managers may leverage the model as a diagnostic tool in recognising communication gaps, fairness, and appreciation in their organizations'. To address fair compensation high-impact drivers, job security, and protection against injury, they can implement site-level interventions that are regulatory compliant and enhance worker motivation. Furthermore, construction professionals can also utilize the model results to mobilize improved work conditions of the workers by ascertaining topmost significant predictor like mental health treatment and care, and equitable treatment. Lastly, construction firms can integrate the PLS model into their human resource management system so they can frequently track the motivation and productivity of workers and adjust practice with the findings.

7.6 Chapter summary

PLS-SEM was applied in this study to validate the conceptual model described in Chapter 3 according to the type of relationship that exists between constructs in the model. The structural model derived indicated there are positive relationships between all the cause links. From the R2 values, the model outcomes are good explanatory (predictive) power indicating over 10% and 14%, which is evidenced by all the explanatory factors of the model. The updated structural model clearly indicates that:

- Policy-level interventions (GMP) and organisational policies (OMP) are crucial to enhancing sustainable productivity.

- Empowerment (ME) and psychological factors (PI) exert their influence indirectly through policy and organisational structures.

- Motivational incentives (MI), though conceptually important, do not independently drive productivity in this model.

With an R^2 value of 0.376 for SP and a GoF of 0.402, the model demonstrates good predictive relevance, supporting the study's proposition that an integrated motivational framework improves sustainable productivity in the construction sector.

CHAPTER 8 CONCLUSIONS AND RECOMMENDATIONS

8.1 Introduction

This chapter collates research findings that align with the objectives set at the beginning of this study. The review of the available literature identified some key factors that affect the motivation of construction workers, namely motivational incentives, motivational empowerment, psychological factors, organisational motivational approaches, and governmental motivational policies. The knowledge gained has been used in developing a motivational model aimed at improving sustainable productivity among South African construction industry employees; hence, some of the major challenges are addressed within the sector. The proposed model consolidates these variables into an operational framework, providing actionable strategies for industry professionals and policymakers to enhance workforce performance. Therefore, this study underlines its importance to theoretical and practical knowledge, considering the current gaps in understanding motivation in SACI. Limitations of this study are acknowledged, and findings require further research to add richness and expand the model. The results emphasise the need to develop motivation to achieve sustainable productivity, providing a platform for further studies in the field.

8.1.1 Conclusions on the motivational incentives

The first secondary (theoretical) aim was collating a literature review of the challenges construction workers faced during project implementation in their respective organisations. These literatures were reviewed in Chapter Two. The review was able to highlight several challenges that face construction workers that affect their productivity. It has been ascertained that motivational incentives are a critical determinant of employee behaviour and performance. However, the design and implementation of proper incentive schemes are a great concern. Evidence suggests that general strategies may not be effective due to individual variations in motivational factors. Focusing on short-term goals and lacking congruence with organisational goals also hinder long-term motivation. The proper mix of extrinsic-intrinsic motivators and equity issues remains an important challenge. Research has also proved that incentives bring temporary gains in productivity, but the gains are not easy to sustain for a long period. Any organisation has to balance the cost of monetary incentives with the benefits they bring regarding enhanced productivity. Budgetary constraints may not always permit broad-based incentive schemes; a strategic approach thus needs to be adopted to maximise impact within the available budget.

Organisations with diverse workforces find it challenging to design monetary incentive systems to meet various needs and employee preferences. What works for one may not

work for another; customised approaches must be applied to maintain continuous motivation in a diversified demographic. Monetary rewards are associated with several not-so-nice side effects: unethical behaviour, competition among employees, abandonment of goals that take longer to achieve and focus on short-term gains, to name a few. To maintain such productivity gains, one must be aware of these possible side effects and how to manage them. Organisations must balance the expense of offering monetary incentives against the productivity benefits that will accrue. For organisations in budgetary straits, it may be challenging to implement broad-based incentive programs. Under such circumstances, adopting a strategic approach to deriving maximum value from the available budgetary resources would be prudent.

Monetary rewards for staff motivation are a helpful tool to improve productivity, though there are some issues linked to them. Productive sustainability requires a deep understanding of the dynamics between short-term rewards and long-term motivation, issues of fairness, the balance between intrinsic and extrinsic motivations, flexibility for diverse workforces, and negative consequences associated with incentive schemes.

8.1.2 Conclusions on the motivational empowerment

Empowerment essentially means giving employees autonomy, authority for decision-making, and an opportunity to develop skills. Some challenges in this area are employees' and management's resistance to change. Organisations with cultures that resist decentralisation tend to slow down the process of empowerment. Most importantly, it is difficult to balance the level of empowerment with accountability in an organisation for sustainable productivity.

Empowerment through motivation, as embedded within motivational theories and organisational psychology, helps develop sustainable productivity in workers. Many issues regarding effective motivational empowerment have been discussed in the literature. Among these, one finds the identification of motivational factors at the individual level. Although general principles might apply, considering each individual's special needs and preferences is an important factor in sustained motivational empowerment. Failure to recognise and respond appropriately to these diverse motivating factors will weaken empowerment efforts and reduce the likelihood of sustainable productivity improvements.

In addition, organisational culture and leadership styles also play a major role in the success of motivational empowerment. The centrality of autonomy support for empowering people outlines that environment fostering autonomy and intrinsic motivation influence productivity positively. In turn, insufficient supportive leadership coupled with a rigid organisational culture will lead to ineffective implementation of

motivational empowerment strategies. Therefore, linking organisational values and leadership practices with principles of empowerment holds the key to overcoming these challenges and sustaining productivity gains over time.

Another complication is brought in by the time dimension involved in motivational empowerment. Traditional extrinsic motivators, such as financial ones, may also be unsustainable over time. Here, strategies need to be developed through which the person moves away from dependence on external rewards to being intrinsically motivated—a sustainable form of empowerment. Combining short-term gains with sustainability over the long haul requires a fine understanding of motivational dynamics, organisational goals, and, lastly, communication and feedback mechanisms form important ingredients of effective motivational empowerment strategies. For this reason, providing timely and constructive feedback serves to reinforce behaviours that have been empowered. There are situations where challenges arise in communication channels or inconsistent feedback, leading to the collapse of an empowerment process. These challenges require organisational resolve to ensure that there is always transparent communication and double-way feedback loops that can help create a motivational and constantly productive workforce.

8.1.3   Conclusions on the psychological factors

The literature review has identified employee psychological well-being as being the core of achieving sustainable productivity. The key challenges are posed by stress, burnout, and work-life balance; these are further exacerbated by individual coping mechanisms and the potential stigma associated with concerns for mental health. To date, establishing a positive organisational climate characterised by psychological safety remains highly elusive.

Motivation, therefore, becomes central to the psychological aspects that influence sustainability in productivity. Motivational concepts are then based upon well-established psychological theories, namely Maslow's Hierarchy of Needs and Herzberg's Two-Factor Theory. However, problems come in the form of one-size-fits-all motivation techniques when these do not meet workers' diverse needs and demands, consequently failing to maintain productivity. In such environments, work-related stress ends up as a common obstacle that impacts the well-being of a worker and, hence, his or her productivity levels. Whereas stress stimulates a person's ability, too much or continued stress culminates in burnout, absenteeism, and low productivity. The psychological stress factors at work, such as high workload and lack of support systems, should be identified and addressed through organisational interventions to create a psychologically healthy workplace.

While job satisfaction is closely related to sustainable productivity, there are challenges in the form of a mismatch between expectations and realities of the job. Unsatisfactory recognition, inadequate work-life balance, and lack of opportunities for career growth are some of the reasons for low job satisfaction. Addressing such psychological factors becomes paramount for any organisation interested in enhancing general well-being to improve sustainable productivity. It has been found that the organisational culture is a significant facilitator of the psychological state of the employees. While a good and supportive culture ensures more motivation, job satisfaction, and productivity, a toxic or unwell culture will have quite the opposite results. In developing and maintaining a positive organisational culture, a broad-based understanding of psychological dynamics, including leadership styles and communication practices, is necessary.

The work-site integration of technology brings new opportunities and challenges to workers concerning their psychological well-being. While continuous connectivity may reinforce efficiency, it contributes to increased stress and impinges on work-life balance due to a fear of job losses. Therefore, proactive management of this challenge remains urgent to ensure that technological changes will influence productivity in sustainable ways. The literature review, therefore, calls for an integrated approach that considers individual differences, promotes a positive culture of work, and develops motivational strategies in tune with the myriad needs of workers to overcome the multifaceted challenges ascribed to psychological influence on sustainable productivity. Future studies should be directed toward developing interventions and strategies to enhance psychological well-being and job satisfaction that motivate sustained productivity in the contemporary workplace.

8.1.4   Conclusions on the OMP

The literature review on organisational motivational challenges delves into classical and contemporary motivational theories. Understanding individual motivations can be built upon the founding theories of Maslow's Hierarchy of Needs and Herzberg's Two-Factor Theory, complemented by newer theories such as Self-Determination Theory and Goal-Setting Theory to explain the complex dynamics in intrinsic and extrinsic motivation. These theoretical base lays the foundation for motivation to be a multifaceted aspect affecting sustainability in productive capacity within organisational settings.

It recognises that one of the great motivational challenges facing organisations is providing for individual differences in what people want from their experience at work. The literature emphasises that people have needs, preferences, and response tendencies to motivational stimuli sufficiently different to require an appropriately matched approach. This becomes complicated in today's workforce, which remains diverse in age, sex, cultural background, and work preference. It, therefore, becomes

very challenging to ensure that motivational strategies align with the workforce's expectations and values whenever an organisation is striving for sustained productivity.

Various research on leadership styles has shown that leadership forms the motivational climate of an organisation. The literature has identified that autocratic leadership inhibits intrinsic motivation, and transformational leadership may create inspiration to innovate and be more creative. This calls for the development of leaders so that their leadership styles are not only in line with the organisation's goal but are also motivating, helping make production sustainable. Organisational culture has been considered one of the more powerful motivators and productivity. The literature also reiterated that a caring culture for employee welfare, continuous learning, and open communication brings motivation; on the other side, resistance to change and a toxic work environment demoralise employees. Integrating technology into the workplace is both a challenge and an opportunity for organisations as they face the issues brought about by constant connectivity and the pressure to continuously adapt to new, evolving tools.

In summary, the literature review points out several challenges that come with organisational motivation: considering individual differences, adjustment to changes in the labour force, leadership development, organisational culture, and dealing with technological advancement. In meeting these challenges, long-term worker productivity will be created, and strategies will be created that align organisations with rich tapestries of motivational theories and insights and complement such theories.

8.1.5 Conclusions on the governmental motivational policies

The construction industry is quite instrumental in employment and the growth of infrastructure, hence important to the economic development of countries. In recent times, with the emphasis on sustainable development by governments worldwide, much focus is now being put on the productivity and welfare of construction workers. This literature review has discussed how governments find it difficult to motivate labourers in the construction sector for sustainable productivity, considering workforce management, occupational health and safety, skill development, and implementing policies that support sustainable practices in the construction industry.

Equally seriously, the challenge for any government is the adequate training and development of a sufficiently skilled construction workforce. Thereby, most of the obstacles to attaining skills are due to unstandardised training programs- issues that directly affect productivity and safety at workplaces, especially on construction sites. Such factors of job insecurity, small or limited career advancement opportunities, and heavy working conditions influence high turnover rates in construction that might ultimately hold them from successfully running sustainable productivity for government

mega projects. Safety is also a challenge impelled through poor measures of safety, deficiencies concerning the wearing of personal protective equipment, and a lack of awareness that begets accidents and injuries that highly bear upon worker productivity and health.

The strenuous nature of the construction work often translates into stress, anxiety, and other related mental disorders among workers, where government intervention and recognition are highly warranted. Mental health challenges require instituted support systems to ensure the long-term well-being of the workforce. Indeed, in the construction industry, the success of governmental motivation depends upon sound regulatory frameworks. The challenges arise when the regulations are not strict or if the set regulations have not been adhered to, allowing non-compliance with sustainable practices. Besides, governments may find it difficult to provide adequate incentives to building companies to adopt sustainable practices due to challenges in implementing incentive schemes like tax breaks and subsidies or recognition programs.

Budgetary constraints during financial crises make it difficult for governments to invest in training programs, safety measures, and sustainable initiatives. The seasonal nature of the construction industry worsens these challenges, and long-term sustainability is being affected. Thirdly, society may perceive construction work as labour-intensive and low status, making it difficult to attract and retain a skilled workforce. These perceptions need to be changed by the governments through awareness campaigns and initiatives on the importance of construction in national development. Since many of these challenges are multifaceted, their resolution would require collaboration among governments, industry, and academia in developing and implementing effective solutions that can help bring about a sustainable and productive construction workforce.

8.2   Recommendations

The recommendations are provided to improve the productivity of construction workers in the South African construction sector and perhaps in other developing nations worldwide, considering the results of the empirical study and the studied literature.

8.2.1   Motivational incentives

- The management of the company will have to make it compulsory that employees are paid good, competitive wages that will at least make the company stand the test of the industry when it comes to attracting and maintaining skilled construction workers. Among these are frequent annual increases in salary for employees, long service awards to employees, first aid provision for workers, and social security provision for workers. In addition, including performance-related rewards tied to an individual or group's

performance will be effective motivators whereby workers can work consistently to make quality work and complete the projects on time.

- Incentives to the workforce for extra qualifications, such as safety qualifications or specialised training, would enhance not only the workforce competency but also raise the professionalism of the worker and the good name of the industry.

- It may provide for the death benefits and sharing after the profit is declared by the company to the construction worker's family. Hence, due credits in a certain percentage could be provided to the group of members working on projects for revenue generation, giving everyone a sense of ownership to approach and work collaboratively on a given project to achieve the defined goals and vision.

- Retention bonuses to counteract high turnover rates may be paid to workers for remaining in the organisation for a certain period. Longevity incentives are types of incremental salary increases, or additional benefits based on years of service that recognise and reward loyalty and experience in long-serving employees.

- Safety performance metrics as an incentive should be attached to individual and team performance for maintaining accident-free work environments. This approach will encourage a safety culture and well-being of the workers.

- Medical insurance and housing loans provided to workers should be performance-based, relating to their productivity and efficiency. These include completing projects before the scheduled time, minimising resource wastage, and achieving cost savings. Such incentives encourage workers to adopt innovative approaches and contribute to the overall success of construction projects.

8.2.2 Motivational empowerment

- Formulate holistic training programs that enhance the level of competence among construction workers. Training shall cover technical areas and focus on leadership development to make the workforce capable of lifelong learning to increase their competency, which will boost confidence and motivation levels and make them enjoy the job.

- Access to information is needed to do the job effectively and build an inclusive decision-making culture within construction teams. Construction workers need to be given power through involvement in decision-making at every level, such as planning, task allocation, and safety. This positive energy reinforces their skills and responsibilities, thus increasing their motivation and commitment toward successfully accomplishing projects.

- Emphasise occupational health and safety measures by enforcing strict safety protocols, adequate protection, and care for construction workers. A safe and healthy working environment develops good morale and a feeling of security and empowers workers through assurance that the organisation is concerned about their welfare.

- Organisations are to provide a visible career development pathway for construction operatives. Incentivise by illustrating potential routes for advancement, enhancement of their current skill set, and further specialised training. This gives them a road map to guide their personal and professional growth and further instils purpose and long-term commitment into the workforce during project delivery.

- Establish recognition systems with sufficient team spirit to recognise exemplary performances among the construction workers. These could be through an employee-of-the-month program or by making public acknowledgements. Recognition of excellence creates a very good work culture that will raise morale and empower workers by making them feel that their efforts are valued.

- Organisations should develop a positive organisational culture of teamwork, effective communication, and mutual respect. The organisation should focus on building an environment where the views and opinions of workers are welcomed, and teamwork is encouraged. Positive work culture instils a sense of belonging, influencing construction workers to contribute actively to the success of the team and the general achievement of the construction project's goals.

8.2.3 Psychological influence

- Organisations should ensure the full implementation of mental health awareness programs within the construction industry. This includes educating workers and supervisors, destigmatising seeking help, and providing resources regarding mental health support. This will help to provide an open environment regarding discussing stress and anxiety, along with other related mental health issues, supportive of the work environment.

- Safety measures and protocols will be put in place to make sure that the workers' psychological welfare is taken into consideration. Equipping workers with mechanisms or strategies that help them effectively deal with their stress will make them productive, considering how demanding this construction work will make them. Programs may include workshops, counselling services, and referral services to mental health professionals.

- Availability of shelter, restroom facilities, and sanitation on the construction site is affecting workers' productivity. Thus, the urgency of adopting policies and

practising that foster reasonable hours of work, adequate rest periods, and time off is critically needed; this would ensure a work-life balance, reduce stress levels, and enhance job satisfaction.

- Organisations should focus on providing leadership training programs aimed at equipping supervisors and managers with the ability to provide psychological support to the team. Training should enable them to identify signs of stress or poor mental health, be able to talk openly and refer workers to appropriate resources. Any organisation that demonstrates a sound leadership approach to the welfare of its workforce can go a long way toward ensuring a psychologically positive climate.

- It will also help establish peer support networks and equality amongst all workers in the building and construction industry and encourage workers to contact other people and share their experiences. This will reduce feelings of isolation, creating friendships and belonging. This can be through mentorship programs, peer counselling initiatives, or regular group discussions.

- Workers feeling appreciated and valued will influence their mental well-being. Recognising and valuing workers will improve physical safety, which will enhance productivity. Also, organisations should fulfil their promises to workers regarding bonuses and rewards.

8.2.4 Organisational motivation

- The construction firms ought to prioritize the training that creates an openness, non-sigma environment for the exchange of ideas thereby maintaining a sense of purpose and motivation during challenging times. These health care's facilities must provide stress management thereby promote effectiveness and sustain a safe workplace. Professional consultancy, workshops, and counselling are among the programs required during project delivery.

- The physical working conditions, for instance, the provision of toilet, shelter, and sanitation facilities, directly affect productivity. Organisations must have policies that facilitate reasonable working time, rest breaks, and leave. It will improve work-life balance and improve job satisfaction overall.

- Organisations must also invest in training their supervisors and managers in a manner that they are equipped with the provision of skills for offering enhancing workers productivity. These trainings must include identifying mental illness, open communication, and referring employees to organisations that may result in effective work culture.

- Incentives and appreciation are a great driver of well-being. Rewarding workers for effort is certainly going to improve productivity as well as safety, thereby showing the benefits of a dedicated worker.

8.2.5 Governmental motivational policy

- Governments must formulate and implement overall wage and bonus policies for construction workers. Such a policy implementation can solve problems related to wages and benefits. This will ensure that all wages and benefits of the workforce reach them on time. Establishing measures and regulations concerning the wages of workers in the construction industry is what the governments must do.

- Introduction and effective implementation of incentive programs for construction companies to encourage the involvement of sustainable practices in construction. These incentives include tax breaks, subsidies, and recognition programs that reward such companies with a sincere commitment to an environmentally friendly and socially responsible approach to construction. Applying these measures will ensure a sustainable approach at all levels within the construction industry.

- Governments should, therefore, make available a mental health support system for construction workers in appreciation of the demanding nature of construction work. It follows that there will be less workplace stress.

- Governments should effectively collaborate with industry stakeholders in the process. It would involve construction companies, trade unions, and professional associations. Engaging all relevant parties will have policies and initiatives practically workable and properly enforced. Such a campaign by the governments would change the societal perception of construction work by raising the importance of the construction industry as part of national development. This would include education and outreach programs exposing the construction industry as a rewarding and highly respected profession. This will bring in more qualified and motivated employees for the government and raise productivity overall.

8.3 Limitations of the study

The research was limited to the South African construction site sector; thus, the results could not be generalised. It would have been better to carry out the research in other regions within and outside South Africa. The sample population was also limited to professional workers who are experts and directly involved in the construction; hence, a larger sample size means better results. This, therefore, calls for further studies on the

subject. If resources permit, it will be highly desirable to carry out a similar study on the whole population of construction industries in developing countries.

Second, the SEM approach to analysing the data has limitations. The pre-existing, a priori model is supported, and the analysis and modelling results using raw data support this. Third, the measures may improve their validity and reliability by adding further variables or constructs. Fourth, investigating the suitability of other models is very important because this was a strictly confirmatory study that did not seek to explore other models. Fifthly, reliability studies that were carried out showed strong internal consistency, thus giving a very reliable research instrument; correlational values of some of the constructs also recorded significant values. This is understandable, as all the respondents were asked to complete a similar questionnaire. These findings could have been further enhanced by revisiting and refining the research instrument.

The study showed that, apart from the sample size constraints discussed previously, several SEM measures were impacted by the study sample size. Therefore, the nature of the sample study itself presents a constraint to empirical research. This paper has found that this variable—the Motivation Model of Sustainable Productivity of Workers— is complex, highly difficult, and open to further interpretations.

8.4   Policy Implications

The findings of this study will be important to South African construction industries in effectively managing workers' productivity. Decision-makers in South African construction industries face low productivity during project delivery and economic problems due to the lack of structured workers' motivation management frameworks in South African construction industries.

Although the South African Constitution has existed for over four decades, some firms have still not managed to sustain motivation, according to Weske and Schott (2018) and Hanabe *et al.* (2018). Construction firms still suffer from low productivity levels due to worker motivational deficiencies.

A lack of empowerment, incentives, psychological influence, organisational motivation, and governmental motivation from management significantly influences this problem. Considering incentives, empowerment, organisation, government, and psychological needs, reflecting on implementing policies in construction industries during project delivery (Palikhe *et al.,* 2019; Afolabi *et al.,* 2018). Therefore, an effective motivational model can be employed to try to solve these challenges and imbalances. If acted upon, these recommendations from this study might have potential impacts of great significance to construction industries on how workers and managers have used motivation to sustain their productivity.

The model offers new solutions to help construction industries successfully manage their workers to provide sustainable productivity: training, autonomy, bonuses, safety, a good working environment, reduction of stress, conflict resolution, good salaries, equality, and government policies to improve the quality of life for construction workers. This is so because the CWP at a construction process of project delivery impacts the profitability of the construction firms Kazaz and Acıkara 2015; Tsehayae 2015. CWP as a source of project risk is the highest variability in a project.

8.5 Contribution to the Body of Knowledge

This research develops a Motivational Model that guides SACI toward achieving sustainable worker productivity. Previous and current global research on worker motivation and productivity in the construction industry was examined to achieve the aim. This inquiry revealed a huge research void on motivation in the construction industry in South Africa. Nevertheless, globally, motivational research in construction has been mainly focused on the following areas:

- Factors affecting worker productivity and motivation.
- The motivational strategies performance.
- Barriers to maintaining motivation in difficult construction environmental conditions.
- Strategies to improve job satisfaction and reduce the turnover of construction workers.

By contrast, motivational studies within the South African construction industry have been few, with existing research mainly focusing on

- The relationship between motivational incentives and sustainable productivity in SACI.
- The relationship between motivational empowerment and sustainable productivity in SACI.
- The relationship between psychological influence and sustainable productivity in SACI.
- The relationship between organisational motivational policies and sustainable productivity in SACI.
- The relationship between governmental motivational policies and sustainable productivity in SACI.

8.5.1 Key contributions of this study

Since these are gaps, the present study contributes to an exploration of knowledge in the following ways:

This proves that worker motivation in SACI directly contributes to the realisation of sustainable productivity. Consequently, five motivational factors must be identified: incentives, empowerment, psychological influence, organisational motivational policies, and governmental motivational policies to achieve sustainable productivity in SACI.

This is an original work in which a systematic motivational model is put forward, developing or logically integrating psychological factors, organisational motivational policies, governmental motivational policies, motivational incentives, and motivational empowerment that effectively increase sustainable productivity among workers in SACI. The proposed model bridges these existing theoretical gaps, providing a useful motivational framework that addresses certain challenges with worker motivation and productivity in SACI.

8.5.2 Development of the motivational model

These contributions are novel as a new motivational model was developed in this study to enhance the sustainable productivity of the workers in SACI. The model was validated with hypothesis testing using the Structural Equation Model. The SEM has been recognised as one of the robust methods that help advance management theories, providing critical insights into the relationships between motivational variables. Despite the limitation of application in management research, particularly in SACI, this study proved valuable for improving and verifying motivational theories.

8.5.3 Insights from the model

These are incentives, empowerment, psychological, organisational and governmental motivational policies and sustainable productivity, which have site levels that themselves have a strong bearing on perceptions of the motivation and productivity relationship and, thus, in turn, the strategies used to pursue workers' productivity while delivering the project.

The Motivational Model developed from this work greatly contributes to the body of knowledge by setting a framework linking incentives, empowerment, psychological, organisation, and governmental motivational policies to sustainable productivity in SACI. Similarly, the research findings show that the strongest predictors to enhance the sustainable productivity of workers within the South African construction industry were motivational incentives (MI) and Organisational Motivational Policies (OMP). There is a need for an integrated and full approach to predicting the importance of motivational

incentives and organisational motivational policies in enhancing the sustainable productivity of workers. This contribution would, therefore, create a theoretical and practical establishment for future research and implementation in the South African construction industry.

8.6   Summary for future research

It is necessary to draw insights from a study that illustrates the crucial influence of incentives, empowerment, psychological, organisational and government motivation in shaping the sustainable productivity of workers in a firm. The study focused on South Africa and emphasised the significance of adopting a comprehensive approach to sustainability within the construction industry. The key is that implementing robust motivational strategies, such as Bonus payment, a sense of belonging, stress-free, skill development, and autonomy in construction industries can significantly enhance their workers' productivity.

For motivation to be managed effectively, construction industries must comply with incentives, empowerment, psychological factors, and organisational and governmental motivation and implement them as mandated by Labor law. Without proper motivation in the industry, workers' productivity might be negatively impacted. According to Kalogiannidis (2021) and Chandrawaty and Widodo (2020), motivation plays a significant role in the sustainable productivity of workers. Nguyen and Watanabe (2017) and Hamza et al. (2022) supported the idea that management is a key indicator of the sustainable productivity of workers and should be held responsible for the low productivity of workers during project delivery. This means a credible, sustainable and responsive approach must be used to enhance worker motivation and ensure long-term productivity (Aung et al., 2023; Assaad *et al.,* 2023).

In essence, inadequate motivational factors are a key indicator of low productivity in the construction industry (Maqsoom et al., 2023; Al-Abbadi and Agyekum-Mensah, 2022; Bohórquez *et al.,* 2022). Therefore, management must ensure that workers' needs are promptly met. The results of the study have emphasised that incentives, empowerment, and psychological factors affect workers. This should be emphasised to ensure that worker motivation is managed effectively.

The study was initiated in response to evidence of workers' low productivity problems in the South African construction industry to develop a motivational framework to enhance the sustainable productivity of workers in the research and survey. The research findings show that managers fail to use appropriate motivational strategies that are sustainable and conclude with recommendations for responding to these factors. Motivational incentives and empowerment are significant to ensure optimal productivity within the

expected time, cost and quality to minimise wasteful of resources. Additionally, workers encounter difficulties in terms of performance because of inadequate fairness, lack of communication, lack of responsibility, inadequate restroom facilities and sanitation at the construction sites (Ali & Anwar, 2021; Pancasila *et al.,* 2020; Ryan & Deci, 2019; Aghayeva & Ślusarczyk, 2019). These difficulties stem from a lack of leadership skills from the employers, thereby reducing the productivity of workers during project delivery (Ichsan *et al.,* 2021; Purnomo, 2020; Wen *et al.,* 2019; Zawawi & Putrawan, 2019).

A further pressing need that contributes to the South African problem of low workers' productivity is governmental motivational policies initiatives, which include workers' skill development, safety standards, workers' wages and benefits, and the work environment have negatively affected workers (Nilsson & Nilsson, 2021; Mairia *et al.,* 2021; Ohueri *et al.,* 2018; Funso *et al.,* 2016) The findings from the literature that were reviewed on governmental motivational policies indicates within construction industries are facing implementation of favourable policies thereby reduce productivity. This implies that if the government does not take workers' welfare seriously, this problem will continue to impact not only managers and workers but also the economy of South Africa.

8.7   Recommendations for further studies

- The limitations identified in this study should be resolved in future investigations. Firstly, a better understanding of worker motivation, which results in more sustainable productivity, could be achieved by a more thorough and rigorous evaluation of the measurement levels used in the South African construction industry and other developing nations. Acknowledging some of the measurement scales is important, as they would likely be developed within Western cultural contexts and may not be entirely suitable for other cultural settings, including those explored in this study.

- Additionally, these findings need to be validated across different populations, as key aspects of the motivational model for construction workers' productivity may differ across regions and cultural backgrounds, while some elements may remain consistent.

   However, culture was not included as an individual concept in the current model, which might have affected the findings of the study. Although the study assumed that cultural values influenced workers' decisions, it is advised that future research take culture into account as an individual concept to gain a better understanding of how low-productivity cultures affect workers' motivation levels and to gain a more comprehensive understanding of the factors that sustainably influence worker productivity.

- A validation of the Samuel Nnadoziem Ndukuba Integrated Holistic Sustainable Productivity of Worker Model Presented in Figure (8.) (Model 2.0) is recommended.

9.8 Conclusion Section

The research main was to find empirical evidence to investigate the statistically significant variance between the different built environment professional (architect and contractors) groups and mean rankings regarding their insights regarding significant motivational incentives, motivational empowerment, psychological factors, organisational motivational policies and government motivational policies. Additionaly, the study developed a motivational model as a tool for decision making in terms of sustainable productivity of workers. The administering of the data was done using a lime(online) survey. The sampling setting for the research was limited to provinces in South African construction industry: knowledge and direct skill are significant for correctly examining the challenges, execution, and influence of sustainable construction and infrastructure practices towards motivating workers on productivity. Afterward, data was captured using SPSS to compute descriptive statistics (mean rankings), and inferential statistics: Factor Analysis and SEM-PLS. All research objectives and hypotheses were covered by the data analysis, and its interpretation offered a valuable underpinning for the findings that were made to advance the study and provide a positive result.

A decision support model for enhancing the sustainable productivity of workers has been developed and provided a clear template that may be useful to the private and public sector clients / developers, consultants and contractors intending to enhance workers motivation towards sustainable productivity.

Conceptual conclusion restated the empirical findings and pointed towards an integrated approach towards providing the sustainable productivity of workers. Contributions to the body of knowledge were stated and results specified that motivational incentives, organisational motivational policies on worker sustainable productivity and should never be overlook rather embracing towards sustainable productivity. The research has contributed to construction workers motivation and sustainable productivity research in a greater way through the application of SEM-PLS in formulating a model for predicting sustainable productivity. Suggestions were provided that proposed an alternative method of improving workers' sustainable productivity.

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APPENDIX A: SURVEY QUESTIONAIRE

Cape Peninsula
University of Technology

<div align="right">

Faculty of Engineering & Built Environment

Department of Civil Engineering & Geomatics

Phone: 021 959 6631

Fax: 021 959 6656

Date: Sept 15th, 2023.

</div>

Dear Sir/ Madam

QUESTIONNAIRE SURVEY

Motivational Model to Enhance sustainable productivity of construction workers in The South African Construction Industry

This study aims to establish a Motivational Model to Enhance the Sustainable Productivity of Construction Workers in the South African Construction Industry. It is a PhD research study in the Department of Civil Engineering at the Cape Peninsula University of Technology. Kindly examine the questionnaire, rating each question appropriately to the best of your knowledge. All the opinions of respondents will be confidential. Completing the questionnaire will only take less than twenty minutes. The completed questionnaire should be returned to the address below. Thank you for your support.

Samuel Nnadoziem Ndukuba

Ph.D. Candidate (CPUT),

Department of Civil Engineering and Quantity Surveying,

Faculty of Engineering and Built Environment,

Cape Peninsula University of Technology.

PO Box 1906 Bellville 7535 | Symphony Way, Bellville, Cape Town, South Africa.

Email: Ndusam4christ@gmail.com

CONSTRUCTION PROFESSIONAL SECTION A: RESPONDENT DETAILS

1. Please indicate your gender

Male ☐ Female ☐

2. Please indicate your age group

Less than 25 years	
25 - 30	
31 - 40	
41 - 50	
51 - 60	

Over 60 years	

3 Which of the following best describes your firm?

CIDB Grades	General Building (GB)	Civil Engineering (CE)
Grade 1		
Grade 2		
Grade 3		
Grade 4		
Grade 5		
Grade 6		
Grade 7		
Grade 8		
Grade 9		

4 Kindly indicate your position in the firm presently (Tick √ the appropriate)

Architect	
Project manager	
Site Engineer	
Quantity surveyor	
Supervising Builder (Foreman)	
Construction Manager	
Others.............................. (Please indicate)	

5 Please indicate years of relevant industry experience. (Tick √ the appropriate years)

1-5	
6-10	
11- 15	
16-20	
21-25	
26- 30	
Above	

6. Kindly indicate the highest qualification obtained:

Matric certificate	
ND (National Diploma)	
BSc / BTech / Advanced Dip	
Honours degree	
Master's degree	
PhD	
Other………………..	

7. Please indicate the ownership of this firm you are currently working with (Tick √ the appropriate answer)

Public		
Private		

6. Please indicate the Provincial location of the project site (Tick √ the appropriate answer)

Easterner Cape	
Free State	
Gauteng	
KwaZulu-Natal	
Limpopo	
Mpumalanga	
Northern Cape	
Northwest.	
Western Cape	

SECTION B: Motivational incentives that influence workers' productivity

Please indicate by ticking (X) the level of importance regarding the following motivational incentives that influence the sustainable productivity of workers in the construction industry using the scale below.

Not important at all	Not important	Slightly important	Important	Very important
1 V	2	3	4	5

S	Motivational Incentive Factors Influencing Productivity.	Not important at all	Not important	Slightly important	Important	Very important
1	Frequent annual salary increments for employees					
2	Promotion when due to workers					
3	Provision of first aid to workers					
4	Provision of leave allowance to workers					
5	Employer's contribution to provident funds for workers					
6	Provision of social security to workers					
7	Workmen's compensation to workers					
8	Overtime payment to workers					
9	Safety plans for workers					
10	Bonus payment to workers					

11	Long service award to workers					
12	Provision of death benefits to the family of deceased workers					
13	Provision of insurance to workers					
14	Provision of gratuity to workers					
15	Status or job title to workers					
16	Provision of housing loans to workers					
17	Provision of medical insurance to workers					
18	Provision of canteen subsidy to workers					
19	Provision of transportation or travel stipends to workers					
20	Provision of rent subsidy or housing allowance to workers					
21	Provision of motor vehicle loans to workers					
22	Profit sharing with workers after timely execution of projects					

SECTION C Motivational empowerment that Influences worker's productivity

Please indicate by ticking (X) the level of importance regarding the following motivational empowerment that influences the sustainable productivity of workers in the construction industry using the scale below.

Not important at all	Not important	Slightly important	Important	Very important
1	2	3	4	5

S	Motivational empowerment Factors	Not important at all	Not important	Slightly important	Important	Very important
1	Good supervision					
2	Growth opportunities in your carrier					
3	Job security					
4	Challenging work e.g., (designing work with variety of tasks and responsibilities)					
5	Recognition by authority by mentioning your name in the meeting					
6	Taking part in decision making					
7	Opportunity for skill development					
8	Cooperation from other workers					
9	Freedom for innovative thinking					
10	The satisfaction derived from work itself					

11	Good work environment					
12	Proper work scheduling					
13	Trust and communication with the management					
14	Adequate team spirit					
15	There are good working facilities					
16	Systematic flow of work					
17	Pursue your long-term career prospects with the organization					
18	Flexibility in work schedule to accommodate personal needs					
19	Access to information needed to perform job effectively					
20	Access to resources needed to perform job effectively					

SECTION D: Psychological influence on construction worker motivation in the construction industry.

Please indicate by ticking (X) the level of importance regarding the following psychological factors that impact the sustainable productivity of workers in the construction industry using the scale below.

Not important at all	Not important	Slightly important	High important	Very important
1	2	3	4	5

S		Not important at all	Not important	Slightly important	Important	Very important
			√			
1	Availability of shade or shelter on the construction site influences productivity					
2	Workers feeling valued and appreciated will influence their productivity					
3	Good communication skills					
4	Safety measures and protocols to ensure workers' psychological wellbeing					
5	Adequate fairness to all workers					
6	Ability to consult workers onsite before effecting change					
7	Company honouring promises made to workers in terms of bonuses and rewards					
8	Adequate restroom facilities and sanitation at the construction site					
9	Effective leadership skills in managing stress in the workplace					
10	Constructive criticism or corrective feedback impacts worker motivation					
11	Resolving conflicts or disputes within the team influences workers' motivation					
12	Workers have autonomy					

14	Opportunities for social interaction and friendship among workers					
15	Receiving training on psychological wellbeing at work					
16	Maintain a positive mindset during long and physically demanding workdays					
18	Assistance in terms of workers managing their finances					

SECTION E: Organisational motivational policies influencing worker productivity.

Please indicate by ticking (X) the level of importance regarding the following organisational motivational policies that influence the sustainable productivity of workers in the construction industry using the scale below.

Not important at all	Not important	Slightly important	High important	Very important
1	2	3	4	5

S	Organisational motivational policies	Not important at all	Not important	Slightly important	Important	Very important
			√			
1	Policy on equality in terms of promotion regardless of gender, race, or background					
2	Subcontractor management policy to ensure they align with project goals					
3	Environmental sustainability policy responsible for construction practices to reduce waste					
4	Continuous improvement policy on feedback from workers is valued and refined over time					
5	Environmental sustainability policy responsible for construction practices to promote sustainability					
6	Project planning and scheduling policy to optimise resource allocation and avoid delays					
7	Policy on equality in terms of bonuses regardless of gender, race, or background					
8	Materials procurement to ensure that materials are available when needed, reducing project delays und					
9	Policy on health and safety practices					
10	Training and development policy that improves workers' skills to stay updated with industry best practices					
11	Employee retention policy					
12	Policy on equality in terms of reward regardless of gender, race, or background					
13	Equipment maintenance policy to ensure equipment is in good working condition to prevent downtime					
14	Policy related to work structure					
15	Policy on Leadership Style					

16	Job rotation policy					
17	Policy related to celebrating the performance of deserving workers					
18	Policy related to work environment/culture					
19	Policy related to social opportunities					

SECTION F: Government motivation policy influence on construction worker motivation in the construction industry.

Please indicate by ticking (X) the level of importance regarding the following government motivational policies that influence the sustainable productivity of workers in the construction industry using the scale below.

Not important at all	Not important	Slightly important	High important	Very important
1	2	3	4	5

S	Government motivation policy influence	Not important at all	Not important	Slightly important	Important	Very important
			√			
1	The current government policies positively influence my motivation at work.					
2	Government initiatives support workers' skill development.					
3	Government policy that creates a favourable work environment					
4	Align with the safety standards in the construction industry.					
5	Adequately address issues related to wages and benefits.					
6	Government policy protects job security among construction workers.					
7	Adequately address issues relating to the mental and physical well-being of employees.					
8	Government initiatives lead to an inclusive and diverse construction workforce.					
9	Minimize the negative impact of economic fluctuations on workers.					
10	Government policies enhance the overall morale of construction workers.					
11	Effectively address issues related to discrimination in the workplace.					
12	Effectively address issues related to harassment in the workplace.					
13	Create a positive public image of the construction profession.					
14	Promotes positive attitude towards adapting new construction technologies					
15	Government initiatives lead to a reduction in workplace stress.					
16	Government initiatives contribute to a sense of stability and predictability.					
17	Policies encourage a long-term commitment to the construction profession.					
18	It promotes a healthy work environment that boosts worker productivity.					

19	Government policies contribute to a sense of empowerment.					

SECTION G: Sustainable Productivity

Please indicate by ticking (X) the level of importance regarding of the following sustainable productivity of workers in the construction industry using the scale below.

Not important at all	Not important	Slightly important	High important	Very important
1	2	3	4	5

S	Sustainable Productivity	Not important at all	Not important	Slightly important	Important	Very important
			√			
1	Customer satisfaction to indicate that the worker provided efficient and effective service					
2	Free from hazards onsite during project delivery					
3	Delivery of quality project within the specification of the contract					
4	Completion of project within the budgeted cost					
5	Completion of project within the timeframe					

Thank you very much for participating in the survey!

Samuel Nnadoziem Ndukuba

APPENDIX B: INTERVIEW INVITATION LETTER

SECTION A: INTERVIEWEE DETAILS

Please indicate your current position in the construction industry

Please indicate if the construction firm is a private or public company

Please indicate your years of work experience in the construction industry

SECTION B: QUESTIONS FOR THE INTERVIEW

Theme One question: Motivational Incentives

Do you have motivational incentives in place for enhancing workers' productivity within the firm?

If yes, please indicate the most important incentives for enhancing sustainable productivity within the firm.

Theme Two question: Motivational Empowerment

Do you think motivational empowerment initiatives positively influence your job satisfaction? If yes, explain.

In your experience, how has motivational empowerment influenced the sustainable productivity of workers during project delivery?

What are the motivation empowerment strategies adopted by your firm to enhance sustainable productivity during project delivery?

Theme three question: Psychological influence

Do you think psychological influence impacts your job satisfaction? If yes, explain.

Do you think individual psychological factors significantly influence sustainable productivity during project delivery at the workplace

Which psychological factors contribute significantly to enhancing workers' productivity within the firm? And why?

Theme Four: Organisational Motivational Policies

Do you have Organisational motivation policies in place for enhancing workers' productivity within the firm?

If yes, do you feel that the organisational motivation policies in your construction firm directly impact worker productivity towards achieving completion of project timelines? If yes and how?

What are the organisational policies adopted by your firm to improve the sustainable productivity of workers during project delivery?

Theme five: Government Motivational Policies

Do you think that governmental motivation policies are in place to enhance workers' productivity within the firm?

Do you think government motivational policies would significantly enhance the productivity of construction workers?

In your experience how do government regulations adequately address issues of fair wages, workplace safety, benefits and environmental sustainability that could enhance the sustainable productivity of workers during project delivery?

Thank you very much for participating in the survey!

Samuel Nnadoziem Ndukuba

Doctoral Research Student

APPENDIX……C

PROFESSIONAL EDITING SERVICES
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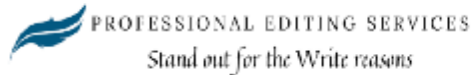
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Construction Industry*

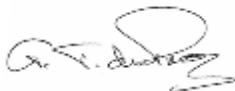with final word count of 95 139 on 14 February 2024

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- *I have completed the work independently and did not sub-contract it out*
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- *I did not accept work that could be considered unlawful, dishonest or contrary to public interest*

I uphold the following editing standards:

- *proofreading for mechanical errors such as spelling, punctuation, grammar*
- *copy-editing that includes commenting on, but not correcting, structure, organisation and logical flow of
  content, formatting (headings, page numbers, table of contents, etc.), eliminating unnecessary repetition*
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Gerald T du Preez, PhD

Membership: Southern African Freelancers' Association and Professional Editors' Guild (Membership #DUP015)

FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT

On **05 October 2021**, the Engineering and Built Environment Ethics Committee of the Cape Peninsula University of Technology granted ethics approval to **NDUKUBA, SAMUEL NNADOZIEM** student number **217019684** for research activities related to his research proposal at the Cape Peninsula University of Technology.

Title of proposal	The impacts of motivation on workers' productivity during construction projects in South Africa

Comments:

Data collection permission is required

Permission letter to collect data

	05 October 2021
Dr A Raji Chairperson (Acting) – Faculty Research Ethics Committee Meeting	Date

2021FEBEREC-STD-128

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