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LABOUR PRODUCTIVITY IN CONSTRUCTION SMEs: PERSPECTIVES FROM SOUTH AFRICA

RESEARCH ARTICLE¹

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ABSTRACT

Small and medium-sized enterprises (SMEs) are strategic to South African economic performance. Despite their strategic role in economic growth, South African construction SMEs are predominantly confronted with the problem of poor performance, which is partly due to poor productivity. This contributes to a negative outlook for construction and undermines its contribution to the nation's economy. This study determines essential strategies to help improve construction SMEs' productivity in South Africa. Qualitative data were collected from registered small and medium-sized construction organisations in South Africa, using a semi-structured interview approach. The research data were analysed, using content analysis. The study reported key strategies, including the need for proficiency at managerial and non-managerial levels, effective teamwork, and effective planning, to improve contractors' productivity. Although existing studies have widely reported major factors influencing contractors' productivity, there is still a shortage of research on SMEs' productivity, especially in South Africa. This research determines

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SMEs-specific productivity challenges and the interventions needed to improve productivity in the SME sector.

ABSTRAK

Klein en mediumgrootte ondernemings (KMO's) is strategies vir Suid-Afrikaanse ekonomiese prestasie. Ten spyte van hul strategiese rol in ekonomiese groei, word Suid-Afrikaanse konstruksie-KMO's oorwegend gekonfronteer met die probleem van swak prestasie, wat deels te wyte is aan swak produktiwiteit. Dit dra by tot 'n negatiewe vooruitsig vir konstruksie en ondermyn die bydrae daarvan tot die land se ekonomie. Hierdie studie bepaal noodsaaklike strategieë om konstruksie-KMO's se produktiwiteit in Suid-Afrika te help verbeter. Kwalitatiewe data is ingesamel vanaf geregistreerde klein en mediumgrootte konstruksie-organisasies in Suid-Afrika deur gebruik te maak van 'n semi-gestruktureerde onderhoudbenadering. Die navorsingsdata is ontleed met behulp van inhoudsanalise. Die studie het sleutelstrategieë wat die behoefte aan vaardigheid op bestuurs- en nie-bestuursvlakke, effektiewe spanwerk en effektiewe beplanning insluit, gerapporteer om kontrakteurs se produktiwiteit te verbeter. Alhoewel bestaande studies wyd gerapporteer het oor belangrike faktore wat kontrakteurs se produktiwiteit beïnvloed, is daar steeds 'n tekort aan navorsing oor KMO's se produktiwiteit, veral in Suid-Afrika. Hierdie navorsing bepaal KMO's-spesifieke produktiviteitsuitdagings en die intervensies wat nodig is om produktiwiteit in die KMO-sektor te verbeter.

1. INTRODUCTION

South Africa spends billions of rands annually on construction operations. Small and medium enterprises (SMEs) benefit from a significant part of the spending, due to their role in job creation (Barbosa, Woetzel & Mischke, 2017: 8). The construction engineering subsector is the second largest employer among SMEs, accounting for about 34.2% of total small business employment (Adediran & Windapo, 2017: 158). SMEs are tasked by the government to significantly reduce unemployment in South Africa (Balogun, Ansary & Agumba, 2016: 49). Recently, there are records of poor performance amongst some SMEs in South Africa (Mkhonza & Sifolo, 2022:1). Some South African construction SME projects experience poor cost, quality, and time performance in project delivery (Wentzel, Smallwood & Emuze, 2016: 1480), resulting in a high rate of business failure. Of the construction SMEs, 70%-80% fail within their first five years of existence. This raises huge concerns regarding the sustainability of construction SMEs in South Africa, the livelihoods of the people they employ, as well as their contribution to the economy (Balogun *et al.*, 2016: 62; Wentzel, Fapohunda & Haldenwang, 2022: 16). Several factors are reportedly responsible for their poor performance, including poor productivity (Adebowale & Smallwood, 2020: 332).

South African construction labour productivity (CLP) has been at its lowest in 46 years (Bierman, Marnewick & Pretorius, 2016: 38). However, the construction productivity problem is not peculiar to South Africa. Karthik and Rao (2019: 62) report a 15% loss of productivity in Indian construction organisations. The Indian CLP loss was largely associated with the average

time on non-productive task motions. An overall 51% of hour loss on-site per week was also reported in Iran (Goodarzizad, Mohammadi Golafshani & Arashpour, 2021: 763). The situation is similar in the United States and Canada, where the average hour loss in projects was estimated at 19.7% and 13.6%, respectively, for projects with craft labour shortages and projects that did not experience craft shortages (Karimi, Taylor & Goodrum, 2017: 369). Workers' efficiencies and working time distributions in commercial construction projects in Alberta revealed an average direct effective working time that ranges from 49.5% to 52.1% (Hewage & Ruwanpura, 2006: 1077). Construction labour costs account for 30% to 50% of the total cost of a construction project in many countries; thus, to a large extent, CLP determines the profitability of construction organisations (Jarkas & Bitar, 2012: 816). CLP is only equal to 85% of productivity in other industries. The global growth of CLP is lower than the average annual growth of about 16% in many industries (Hai & Tam, 2019: 258). It is estimated that per 10% increase of CLP in the United Kingdom, there will be a saving of an equivalent of £1.5 billion (Lu *et al.*, 2021: 8).

Due to the prevalence of poor productivity in construction projects, studies have investigated CLP in developed and developing countries (Agrawal & Halder, 2020: 571; Durdyev & Ismail, 2016: 449; Hiyassat, Hiyari & Sweis, 2016: 141; Jarkas, 2015: 96; Jarkas & Bitar, 2012: 813; Jarkas, Al Balushi & Raveendranath, 2015: 334; Sebastian & Raghavan, 2015: 92; Thomas & Sudhakumar, 2013: 105). Researchers have identified factors affecting CLP (Alaghbari *et al.*, 2019: 82; Gurmu, 2021; Tam *et al.*, 2021: 16; Adebowale & Agumba, 2022b: 15; Shoar & Banaitis, 2019: 46). The effects of heat (Yi & Chan, 2017: 8) and Building Information Modeling (BIM) (Wong, Rashidi & Arashpour, 2020: 15) on CLP have been investigated. Some researchers developed quantitative models (Sarihi, Shahhosseini & Banki, 2023: 429; Selvam *et al.*, 2022: 2401; Tsehayae & Fayek, 2018: 210) and qualitative models (Jalal & Shoar, 2019: 288; Palikhe, Kim & Kim, 2019: 429; Nojedehe & Nasirzadeh, 2017: 1519) to help improve CLP. Some researchers leveraged information technology to predict CLP (Mlybari, 2020: 208; Goodarzizad *et al.*, 2021: 763). Arising from these studies are several interventions to improve human resource productivity in the construction sector.

Studies have also investigated South African construction SMEs' performance (Wentzel *et al.*, 2016: 1478; Aigbavboa, Tshikhudo & Thwala, 2014: 352; Aghimien *et al.*, 2019: 216; Adediran & Windapo, 2017: 159). A number of these studies have also addressed productivity challenges in South African construction (cidb, 2015: 8; Bierman, Marnewick & Pretorius, 2016: 40; Isabirye & Orlando, 2020: 342). Bierman, Marnewick and Pretorius (2016: 37-44) investigated productivity management in South African construction. Isabirye and Orlando (2020: 340-355) explored organisational

justice as a matrix for ethics and integrity to improve construction productivity. These studies have made a laudable contribution to improve productivity in South African construction, but the current poor SMEs' productivity performance is an indication that the existing studies have not largely benefited the construction SMEs or research recommendations have not been taken up in practice by SMEs. Considering the large number of construction SMEs in South Africa and the implication of their productivity on business survival, the study investigates productivity in SMEs to determine SMEs-specific challenges and interventions that would set the industry on the path of growth and mitigate the extent of business failure.

2. LITERATURE REVIEW

2.1 An overview of South African construction SMEs

SMEs in South Africa are contractors with 250 full-time employees and an annual turnover of less than R220 million (Renault, Agumba & Ansary, 2020: 9). The poor performance of SME contractors undermines their potential to contribute meaningfully to job creation (Fatoki, 2014: 922). Construction SMEs account for a significant number of contractors in South Africa (Balogun *et al.*, 2016: 46). Until 2016, more than 50% of construction SMEs were owned by previously disadvantaged South Africans (George, 2016: 23). Studies have shown that large contractors generally perform better than SMEs in terms of achieving project objectives (Wentzel *et al.*, 2016: 1478), while SMEs are more strategic for job creation and poverty reduction. Although the government has spent a considerable amount to boost performance, present performance does not justify such spending (Mafundu & Mafini, 2019: 6; Aigbavboa *et al.*, 2014: 352). Current SMEs' challenges result from a combination of issues, including low productivity (Adebowale & Agumba, 2022a: 18).

Studies have reported salient factors hindering performance in South African construction SMEs. Chimucheka (2013: 791) identified insufficient education and low entrepreneurial skills. Aghimien *et al.* (2019: 217) recognised the need for capacity building of business owners, especially in corporate governance. Wentzel *et al.* (2016: 1485) reported management, strategic planning, and inadequate funding. Olawale and Garwe (2010) found problems related to financial support, education, and training. Aigbavboa *et al.* (2014: 355) and Wentzel *et al.* (2016: 1483) contended that contractors receive significant financial support to succeed, but poor financial management is rather the issue. Fatoki (2014: 922) reported the need for SMEs to cultivate a positive attitude toward training. Aigbavboa *et al.* (2014: 354) believed that leadership training will give SMEs a competitive advantage, while Abor and Quartey (2010: 224) recommended

the participation of governmental and non-governmental organisations. Both internal and external challenges confront construction SMEs (Fatoki, 2014: 922). Internal challenges include management functions, employee development, and attitude towards customers. External challenges include competition, rising costs of doing business, finance, and crime. Access to funding is becoming increasingly difficult for contractors, due to rising interest rates (Aghimien *et al.*, 2019: 219). These and other challenges make it difficult for some SMEs to compete with large construction organisations in terms of performance (Chimucheka, 2013: 789).

2.2 Construction productivity research

Productivity is one of the major parameters for measuring the performance of any construction project (Gurmu, 2019: 1462; Karthik & Rao, 2019: 58). For construction SMEs to meaningfully contribute to job creation, their productivity must continue to improve. Studies from developed and developing countries have reported factors affecting CLP. Some of these countries include the United States, Australia, Saudi Arabia, and India (Kermanshachi, Rouhanizadeh & Govan, 2022: 1257; Gurmu, 2021: 256; Thomas & Sudhakumar, 2013: 103; Tam *et al.*, 2021: 1-18). Some researchers have undertaken reviews of factors influencing CLP (Adebowale & Agumba, 2022a: 1-21; Adebowale & Agumba, 2022b: 4-17; Adebowale & Agumba, 2021: 1-20; Hamza *et al.*, 2022: 413). The studies have presented scientometric analyses, systematic reviews, causal layered analysis, and meta-data analyses of literature with respect to CLP research. The reviews presented insights into emerging knowledge areas in construction productivity research. CLA presents a transformed future for construction productivity in developed and developing countries. Factors influencing CLP in high-rise buildings have been identified (Shoar & Banaitis, 2019: 41-52; Gurmu, 2020: 77-86). These studies indicated inflation in the cost of execution and improper project financing as the important factors influencing CLP. Construction materials management practices enhancing labour productivity in multi-storey building projects were investigated (Gurmu, 2020: 77-86). Bhilwade *et al.* (2023: 959) demonstrated a high degree of accuracy in predicting labour productivity for formwork activities in high-rise building construction. Gurmu and Aibinu (2018: 730) reported the management practices enhancing labour productivity in multi-storey building construction projects. Nguyen and Nguyen (2013: 569) advised practitioners to consider the relationship between building floor and labour productivity when planning manpower and construction activities.

The impact of craft workers' availability on North American construction project productivity was investigated (Karimi *et al.*, 2017: 368). Projects that experienced worker shortages had lower productivity compared to projects that had adequate workers. Aghayeva and Slusarczyk (2019: 1-14)

considered the importance of motivated human resources to construction organisations' productivity and reported a hierarchy of workers' motivating and demotivating factors. Tam *et al.* (2022: 1-18) used a self-determination theory to study motivation for construction productivity improvement in Vietnam. Jarkas and Horner (2015: 633) created a baseline for labour productivity in building construction. The study used metrics specific to Kuwait, but the principles of data collection, analysis, and use are generic and could be applied in other countries. Statistical analyses and probability theories for plastering work have been applied to predict the amount of time required to complete construction works (Kubeckova & Smugala, 2021: 2535). In the United States, Kermanshachi *et al.* (2022: 1278) developed management policies and analysed the impact of change orders on CLP. Gunduz and Abu-Hijleh (2020: 1-18) used the importance of rating and risk mapping methodology to assess the drivers of construction human resource productivity. Chaparro *et al.* (2020: 1305-1309) examined the impact of workforce transportation on CLP in Australia. Yi and Chan (2017: 1-14) studied the effects of heat stress on CLP in Hong Kong. Wong *et al.* (2020: 1-21) evaluated the impact of BIM on the CLP in Malaysia. Construction organisations can use the research outcomes to minimise the negative impact commuting and heat stress can have on workers' productivity, while the practical application of BIM can be leveraged. The conditional frontier theory was used to investigate the convergence of CLP. Error correction models are implemented to identify the long-run equilibrium and dynamics of CLP (Ma, Liu & Mills, 2016: 287).

CLP model development and the lack of frameworks for adapting existing or original models in different contexts limit the possibility of reusing the existing models. Tsehayae and Fayek (2016: 227) developed a context adaptation framework that helps adapt existing or original CLP models. In Iran, Sarihi *et al.* (2023: 4) developed, optimised, and validated a series of CLP models to address the challenges of a systematic approach to measuring CLP, while considering the complex relationships between multiple factors simultaneously. Selvam *et al.* (2022: 2401) proposed a model that can be effectively used to determine a real-time project duration with the consideration of factors affecting labour productivity and project constraints. Dijkhuizen *et al.* (2021: 950) considered the importance of using off-site construction to increase labour productivity. The study developed a conceptual model that describes critical factors influencing off-site construction. System dynamics has widely been used to model different causal relations among factors interacting with labour productivity (Jalal & Shoar, 2019: 385; Nojedehi & Nasirzadeh, 2017: 1516; Palikhe *et al.*, 2019: 427). System dynamics helps recognise the interrelatedness of productivity-influencing factors. System dynamics models could inform policymaking for decision makers (Palikhe *et al.*, 2019: 441). Existing

studies have measured productivity based on different parameters related to the research objectives. In this study, productivity focused on the extent to which South African construction SMEs delivered construction projects within the constraints of cost, quality, and time. Therefore, productivity is measured based on the performance of these key project objectives. While this section presented the contributions of scholars to construction productivity research, Table 1 presents the key findings of factors influencing CLP and summarises the significant productivity-influencing factors reported over 33 years.

Table 1: Construction productivity-influencing factors

<i>Factors</i>	<i>Country</i>	<i>Source</i>
Lack of material, lack of tools, equipment breakdown, rework, changing of workers, interference, absenteeism, supervision delays	Indonesia	Kaming <i>et al.</i> , 1997: 29
Lack of material, incomplete drawings, incompetent supervisors, lack of tools and equipment, absenteeism	Thailand	Makulsawatudom, Emsley & Sinthawanarong, 2004: 6
Poor supervision, the simplicity of building design, level of site experience, information flow, and communication with sub-contractors	UK	Chan & Kaka, 2007: 583
Lack of monetary bonuses for good performance, younger craft workers not as motivated as the older ones, delays in work because of the absenteeism of other workers, errors on drawings, and lack of materials	USA	Dai, Goodrum, P.M. & Maloney, 2007: 1151
Material shortages, lack of labour experience, lack of labour surveillance, misunderstanding between labour and superintendents, drawings and specifications altered during execution	Palestine	Enshassi <i>et al.</i> , 2007: 253
Unavailability of material on time at the workplace, delayed material delivery by the supplier, unavailability of drawings on time at the worksite, equipment necessary to do the job not available on time, and poor pay	India	Thomas & Sudhakumar, 2013: 124
Unrealistic design schedules imposed on designers, construction methods, unrealistic scheduling, low design fees, and payment delays	Oman	Jarkas & Horner, 2015: 343
Planning, worker-management relationships, education and experience, climate, technology, and equipment	Jordan	Hiyassat <i>et al.</i> , 2016: 148
Excessive bureaucracy, late delivery of materials, industrial action resulting from political activities, inadequate project planning, and inadequate workers' skills	South Africa	Adebowale & Smallwood, 2020: 345

Source: Authors

3. RESEARCH METHODOLOGY

3.1 Research design

This study used a qualitative research method to gather information from SME construction practitioners on their construction productivity experiences. The qualitative research method allows for interviews to collect data where participants are allowed to express and clarify their opinions on construction productivity without restrictions (Mohajan, 2018: 35). It also allows for content analysis to determine the presence of certain words, themes, or concepts to generate non-numeric data (Akinyode & Khan, 2018: 167). In this study, data from the open-ended questions in the semi-structured interviews (Bernard, 2013: 215) were coded and grouped into six themes, of which three guide SMEs' strategies for improving productivity, and three are the critical measures for construction SMEs' productivity growth in South Africa.

3.2 Population, sample, and response rate

The research was conducted with SMEs in Gauteng province, South Africa. According to the cidb (2015: 13), Gauteng province has recorded more construction activities than other provinces in South Africa. A list of registered SMEs obtained from the cidb showed that there were 152 grades 1-5 contractors registered with the cidb in Gauteng province. These constitute the research population. Qualitative researchers have several recommendations regarding adequate sample size for qualitative studies. Bekele and Ago (2022: 48) indicated that, if the research aims to understand common perceptions and experiences among groups of relatively homogenous individuals, 12 interviews will be adequate. Ando, Cousins and Young (2014: 4) as well as Picariello *et al.* (2017: 403) indicated 12 interviews as the minimum required to achieve data saturation in qualitative studies. According to Namey *et al.* (2016: 438), a sample size of 8 to 16 interviews is required to answer a research question adequately. In this study, 15 interviews were conducted, using a purposive sampling technique to select research participants from construction companies. Purposive sampling allows researchers to select knowledgeable participants who can provide relevant information on a topic under investigation (Blumberg, Cooper & Schindler, 2008: 20). Considering the subject under investigation, directors, site managers, and supervisors were considered knowledgeable to provide insights into productivity issues. The sample size was adequate, as data had reached saturation, and no new information was available.

3.3 Data collection

Grades 1-5 contractors were randomly selected from the cidb list and contacted via their cell phone numbers to explain the study's intent. The research questions were emailed to SMEs who agreed to participate, with a request to familiarise themselves with the questions. Eight interview sessions were conducted on-site, while seven were conducted online via Microsoft (MS) teams from October 2021 to March 2022.

The research questions were divided into three sections. The first section dealt with the socio-demographic information of the respondents. Respondents were asked about their years of experience, their organisation's cidb rating, and the time their organisations have been in construction. Before the second part of the research questions was presented to respondents, the definition of productivity applicable to this study was explained to avoid misrepresenting ideas. Productivity was measured based on how SMEs used project resources to meet projects' cost, quality, and time objectives. Study participants provided their responses based on these parameters. In the second section, the respondents were asked to describe strategies which their organisations have found helpful in improving their productivity. The third section sought the respondents' opinions on other essential measures that should be considered, in order to improve construction SMEs' productivity.

3.4 Data analysis

Content analysis is a research technique for determining the main facets of valid conclusions from written, verbal, or visual communication messages, either qualitatively or quantitatively, depending on the nature of the project and the topics to be covered in the research (Kondracki, Wellman & Amundson, 2002: 224). Content analysis is valuable for gathering and organising information and examining document trends and patterns. Qualitative content analysis focuses on grouping data into relevant categories. By contrast, quantitative content analysis determines the numerical values of categorised data (*i.e.*, frequencies, ratings, and rankings), by simply counting the times a topic is mentioned. Qualitative and quantitative content analyses were performed in this study.

On-site and online interviews were recorded. Electronic data were transcribed into qualitative data. After data transcription, the data pattern was examined and manually coded. The data were grouped into relevant themes. Categories were created by merging different codes under each theme. Content analysis determines the presence of specific themes in specific data. After deriving the main themes from the responses, the number of factors associated with each theme was determined, indicating the severity of each category on productivity (Tables 3 and 4).

4. DATA PRESENTATION

Table 2 presents the sociodemographic data of the study participants. Site managers constitute 20%, directors 26.7%, and foremen 53.3% of the study participants. Respondents were production drivers at the site and were, therefore, deemed relevant to the study, as they were largely aware of productivity and its influencing factors. The cidb classification of the participating organisations ranges from grades 1 to 5, which falls within the South African SME categories. Of the contractors, 53.3% were registered in grades 1-3, classified as small contractors, while 46.7% were enrolled in grades 4-5, classified as medium-sized contractors. Of the respondents, 53.3% have been in the construction industry for at least 16 years, while 46.7% have been in the industry for 5 to 13 years. The average construction experience of the respondents is 18.3 years. The data shows that 33.3% of the organisations surveyed have been operating for at least 16 years, and 66.7% for 3-14 years.

Table 2: Respondents' data

<i>Interviewee (respondent)</i>	<i>Position</i>	<i>Years of experience</i>	<i>cidb grading</i>	<i>Years of operation</i>
1	Construction manager	30	5	16
2	Director	12	1	3
3	Foreman	25	4	11
4	Foreman	7	5	13
5	Foreman	16	2	9
6	Director	9	3	14
7	Foreman	13	4	8
8	Construction manager	23	5	13
9	Director	31	4	20
10	Foreman	8	3	12
11	Construction manager	13	2	13
12	Director	38	5	32
13	Foreman	25	2	20
14	Director	5	1	5
15	Director	20	2	20

Source: Authors

Respondents reported the measures their organisations have implemented to improve the productivity of their projects. As indicated in Table 3, feedback is grouped into three themes: human development, teamwork/relationship value, and effective planning. Each category is described according to its perceived importance to respondents, derived from the number of factors related to each category. Of the organisations surveyed, 46.7% reported human development as a means of improving the productivity of their

projects. Some respondents (R) were more specific, indicating the forms of training they used to develop their organisation's human capital. The on-the-job training system was helpful for two construction companies (R3 and R4), while R2 and R15 found that the use of more skilled individuals improves the competence of less-skilled workers to increase their companies' productivity.

Following human development is teamwork between the members of construction projects. R1 expressed teamwork and good relations as a tool that has helped less skilled workers gain more experience than more skilled workers. Collaboration across different levels of organisations and even with members and community representatives was identified as measures benefiting two organisations (R7 and R11). R12, a director, was very vocal about her commitment to her staff's personal affairs, which she says encourages their commitment to work. Effective planning was an essential tool for some of the organisations interviewed. R1's organisation believes in the inevitability of poor performance in the event of poor planning. R3 reported on the importance of effective planning for time management in his organisation. R3 and R7 identified their organisations' planning policies and frameworks that have helped improve their productivity. R12 considered effective planning as a strategy used by his organisation to remove obstacles in achieving its project goals.

Table 3: Productivity improvement strategies in practice

<i>Respondent</i>	<i>Themes and feedback</i>
	<i>Human development</i>
R2	"...get a specialist in a trade to instruct others who are less skilled..."
R3	"...train our workers on the job..."
R4	"...offers on-the-job training in different trades..."
R12	"...invest in training and retraining..."
R13	"... train the poorly skilled and qualified workers..."
R14	"...train our workers..."
R15	"...use experienced workers to train inexperienced workers on the job..."
	<i>Teamwork / relational value</i>
R1	"...teamwork among workers makes our less experienced workers be more experienced..."
R5	"...good working relationships among workers..."
R7	"...ensures teamwork across board..."
R11	"...maintain good relationships with stakeholders in the community where we have projects..."
R12	"...intervene in their personal problems to help them sort out some issues in the best possible ways. I have a good relationship with my workers..."

<i>Respondent</i>	<i>Themes and feedback</i>
	<i>Effective planning</i>
R1	"...operate with the saying that proper planning prevents poor performance..."
R3	"...our company does not joke with planning because it helps us to manage our time. We have guidelines for planning..."
R7	"...framework for planning our projects and remain committed to it..."
R12	"...properly plan ahead and ensure we stick to plans as much as possible. Doing these assist us toll away every stone out of our way..."

Source: Authors

The study participants provided insights into measures considered critical to SMEs' productivity growth in South Africa. Measures are grouped into managerial and employee competence, leadership styles, and government support (Table 4). Most of the respondents viewed the competence of construction workers and managers as a key factor in improving contractor productivity. Seven respondents (R1, R4, R6, R7, R9, R10, and R14) recommended staff training, while six respondents (R1, R2, R8, R12, R13, and R15) suggested training for managers. On-the-job training, supervisors mentoring their subordinates, and short courses were some recommended training systems for construction workers. Respondents discussed the need for directors of construction companies to improve their skills through training. Business and construction skills were the dominant interventions of the study participants. R1 recognised the need for directors to improve their cash flow.

Effective leadership styles were considered essential measures to increase contractor productivity. Leadership is widely associated with managerial competence, which respondents highlighted as a critical concern. Effective leadership was expressed concerning the relationship value of the employees of organisations, particularly between supervisors and their subordinates. Some respondents expressed the need for improved employee relationship value through team building and social events. They advocated improved directors' involvement in production processes, managers' willingness to consider the perspectives of their subordinates, and good health and safety practices in construction projects. Respondents believed that government intervention to increase support for contractors was one measure that would help increase contractor productivity. Two areas of concern for study participants were contractors' access to funding and government policy. Four respondents (R2, R13, R14, and R15) advised the government to make funding more accessible to contractors. R15 indicated that the support should be in the form of loans.

Regarding government policy, it was considered that regulations detrimental to productivity should be eliminated (R8, R10, R13, and R15).

Explicit reference was made to the policy requiring contractors to recruit within the geographic location of construction projects and policies related to construction workers' benefits. It was reported that the government needed to review these guidelines. Time wastage on government projects is reported to impede construction progress. Time loss from late decision-making, late payments from contractors, and corruption were major issues in public works (R12).

Table 4: Critical measures for SMEs' productivity growth

<i>Respondent</i>	<i>Themes and feedback</i>
	<i>Proficiency</i>
R1	"... training during operations for artisans. Business training to improve cash flow ..."
R2	"...we directors must also always be hungry for knowledge for a better way to do things..."
R4	"...train the skilled workers more to become excellent and ask them to train others..."
R6	"...workers should be taken for training outside the company and during work on their sites..."
R7	"...workers need training. Some should be sent on short courses..."
R8	"...contractors should upskill in business and construction operations management. They must also train workers and use experienced supervisors..."
R9	"...the few skilled workers should mentor the less skilled ones..."
R10	"...owners must take training their workers, especially supervisors, very seriously..."
R12	"...contractors must learn proper management of construction projects..."
R13	"...members of the management team should attend capacity-building training..."
R14	"...workers should be given the privilege of short courses..."
R15	"...many company owners need to upskill and not just their workers..."
	<i>Leadership style</i>
R4	"...good leadership and business management strategies..."
R5	"...owners should have a good bonding with workers..."
R6	"...team building using different strategies like taking workers out for games and braai on monthly basis or how the company deems it suitable for their organisation..."
R8	".... directors should get more involved in day-to-day production..."
R9	"...contractors must avoid discrimination by skin colours – It does not matter who corrects them, as long as it is with good intentions to prevent pitfalls, they should be willing to learn and accept corrections in good fate [sic]..."
R10	"...managers must take safety more seriously. Injuries slow down our productions because we have to investigate the root cause of every accident..."
R11	"...operating the company should not entirely depend on the owners. Owners should allow the participation of their employees by considering their opinions in running their companies..."

Respondent	Themes and feedback
	Government support
R2	"...our government should increase access to funds for contractors..."
R8	"...government should eliminate the policy of forcing workers on contractors and forcing contractors to pay a bonus to undeserving workers..."
R10	"...the government must give contractors the free hand to recruit as their jobs demand and not compel them to employ certain individuals..."
R12	"...in government projects, time-related wastes due to delay in decision making should be avoided. Issues of corruption and late payments of contractors in public projects should also be avoided..."
R13	"...government must develop skills for construction, provide financial support for contractors and eliminate bad policies in construction..."
R14	"...government should make funds more available to us..."
R15	"...government needs to give us loans and better policies..."

Source: Authors

5. DISCUSSION OF THE FINDINGS

Table 5 shows that the challenges faced by South African construction SMEs are not only unique to the contractors but are also issues affecting different categories of construction organisations in other countries. Based on the literature reviewed and the results from this study, human development, teamwork, management style, leadership style, and government interventions are common factors affecting construction productivity in South Africa. The results show that these five challenges can be used as strategies and measures that could improve construction SMEs' productivity in South Africa.

Table 5: Productivity improvement for construction SMEs

Strategies and measures	Country	Source
Human development (Proficiency)	Bahrain, Egypt, India, Nigeria, Qatar, Uganda, USA, Zimbabwe, India, Uganda, South Africa	Jarkas <i>et al.</i> , 2015: 343; Durdyev & Ismail, 2016: 461; Thomas & Sudhakumar, 2013: 124; Odesola & Idoro, 2014: 108; Jarkas, Kadri & Younes, 2012: 22; Alinaitwe, Mwakali & Hansson, 2007: 175; Karimi <i>et al.</i> , 2017: 379; Chigara & Moyo, 2014: 63; Sebastian & Raghavan, 2015: 95; Mafundu & Mafini, 2019: 8; Ntuli & Allopi, 2014: 573; Alaghbari <i>et al.</i> , 2019: 88; Alshammari <i>et al.</i> , 2020: 8; Chimucheka, 2013: 794; Aghimien <i>et al.</i> , 2019: 215
Teamwork	Jordan, Saudi Arabia, South Africa	Hiyassat <i>et al.</i> , 2016: 148; Mahamid, 2012: 284; Oyewob, Abiola-Falemu & Ibranke 2016: 233; Yap, Leong & Skitmore, 2020: 1501

<i>Strategies and measures</i>	<i>Country</i>	<i>Source</i>
Project planning	India, South Africa, Malaysia	Thomas & Sudhakumar, 2013:124; Adebowale & Smallwood, 2020: 345; Sambasivan & Soon, 2007: 525; Zwikael, 2009: 283; Project Management Institute, 2017: 88
Leadership style	Palestine, Egypt, Thailand, India, Chile, Iran, Qatar, USA, Zimbabwe, South Africa	Enshassi <i>et al.</i> , 2007: 253; Hafez <i>et al.</i> , 2014: 39; Makulsawatudom <i>et al.</i> , 2004: 6; Thomas & Sudhakumar, 2013: 124; Rivas <i>et al.</i> , 2011: 319; Sebastian & Raghavan, 2015: 95; Zakeri <i>et al.</i> , 1996: 425; Jarkas <i>et al.</i> , 2012: 22; Dai <i>et al.</i> , 2007: 1151; Chigara & Moyo, 2014: 63; Mafundu & Mafini, 2019: 9
Government interventions	Uganda, South Africa	Alinaitwe <i>et al.</i> , 2007:174; Adebowale & Smallwood, 2020: 345

Source: Authors

The results indicate human development, teamwork, and effective planning as leading SMEs' strategies for improving productivity in South African construction. For some decades, South Africa has operated an apprenticeship system that develops skilled workers for the construction industry. In recent years, the industry's productivity has shrunk, due to its failure to meet its skill demands. This suggests that the apprenticeship system has become less effective or that the growing demand for infrastructure in South Africa is overwhelming. The prevalence of skills shortages in the South African construction industry required contractors to develop internal skill-producing mechanisms that are peculiar to their operations. A study investigating the internal constraints on South African construction SMEs' business performance also reported skills shortages as a challenge. The authors opined that South African contractors need more qualified and experienced workers (Mafundu & Mafini, 2019: 8). In a similar study conducted in a different South African province (KwaZulu-Natal), inadequate skill for construction was found as one of the critical challenges confronting SMEs' business performance (Ntuli & Allopi, 2014: 573). The findings of these studies emphasise the incidence of skills issues in the South African construction industry. Contractors are typically cautious about spending their limited resources on training workers who may leave for another organisation, considering the project-based nature of construction. Construction organisations have largely preferred cost-effective systems such as on-the-job training and mentoring programmes to improve the skills of their employees. Human development is the business of construction multi-stakeholders, including the government and the private sector, as the industry's performance significantly affects the nation's macroeconomics. Inadequate skills necessitate human development for construction organisations to operate productively. Challenges related

to construction skills are long-lasting and affect not only SMEs but also larger construction companies in many countries (Alinaitwe *et al.*, 2007: 174; Durdyev & Mbachu, 2011: 30; Jarkas, Radosavljevic & Wuyi, 2014: 1088; Hiyassat *et al.*, 2016: 148; Alaghbari *et al.*, 2019: 85; Manoharan *et al.*, 2022: 13). In addition to construction organisations' efforts for human development, more commitments are required from the public and private sectors with respect to skills development for the industry. This requires a broader, intensified, and more committed approach to construction human resource development from industry practitioners.

The study found teamwork and good working relationships as measures that have helped increase contractors' productivity. Teamwork contributes to efficient project delivery and reduces rework (Oyewobi *et al.*, 2016: 233). Yap and Leong (2020: 1501) reported poor teamwork as a critical factor related to excessive rework, low productivity, and frequent design changes. Construction professionals can improve team management and communication to increase project productivity. Construction managers must promote synergies among project team members in their organisations, while ensuring inclusivity at all levels. Aside from company-based challenges that interfere with construction operations, there are occasional intrusions from community dwellers where projects are implemented (Adebowale & Smallwood, 2020: 345). Extensive engagement between construction stakeholders and community leaders can help prevent some of these disruptions. Beyond community dwellers' interference, unfortunately, activities of the construction mafia have led to disruptions in many construction projects. Construction mafias are hooligans and thugs who invade construction sites to demand money from contractors (Jerling, 2019: 6). While respondents have not mentioned the construction mafias as an issue associated with productivity, the mafias have the potential to cause a serious setback to productivity in South African construction. Their violent disruptions stalled billions of rands in construction projects across the nine South African provinces (Cawe, 2022: 45). South African construction stakeholders, including the government, must deal thoroughly with community interference and interruptions from the mafia buddies.

Contractors viewed effective planning for construction operations as a leading strategy to drive productivity in their organisations. Three planning phases are essential for construction companies to achieve their goal of increasing productivity. This includes pre-contract, contract, and construction planning. Contractors must view these planning phases as critical (Zwikaël, 2009: 283). It is not enough to develop project plans; it is also important to implement the developed project plans. While planning in construction is important, it is a challenging task for many contractors during project implementation (PMI, 2017: 88). Small and

medium-sized contractors require effective planning, in order to improve their productivity performance.

Managerial and non-managerial proficiency, leadership styles, and government support were determined as critical measures to improve construction SMEs' productivity. Construction management literature has reported the importance of construction managers' and workers' proficiency (Alaghbari *et al.*, 2019: 88; Alshammari, Yahya & Haron, 2020: 8). Directors must recognise the need for upskilling, as their complacency could contribute to production setbacks in the organisation. This finding is consistent with Chimucheka (2013: 794), who reported the lack of competent directors as being responsible for construction SMEs' business failure. Owners of construction SMEs should seek personal development and business competence (Aghimien *et al.*, 2019: 215). They must have a positive attitude towards improvement, especially in relation to their business demands.

Significant improvement in construction productivity is possible with effective management styles. Poor leadership in an organisation is detrimental to the overall organisational goal. A similar study reported the lack of leadership skills as the main obstacle confronting Black-owned construction organisations (Mafundu & Mafini, 2019: 9). Managers at different levels of the organisation can create systems that promote operational synergies. Participatory leadership styles, involving team members in critical decision-making, might produce desirable outcomes. This reduces the perceived discrimination against employees, especially those at the lower management levels.

Finally, improving the productivity of construction SMEs in South Africa requires the government to intensify intervention in terms of improving access to finance, eliminating unproductive policies relative to employer-labour relations, and reassessing the apprenticeship system. Measures must be implemented to eradicate corruption and expedite payments in public and private sector projects. Corruption is most prevalent during the bid evaluation and tendering phases of projects. Bowen, Edwards & Cattell (2012: 527) reported the leading causes of corruption in the South African construction industry. These include a lack of transparency in the award of public contracts and a lack of a positive operating environment. The barriers that impeded the effective reporting of corruption cases were other leading factors reported by the authors. Consequently, the development of efficient and strategic anti-corruption measures can be better achieved, if a deeper understanding of the causes of corruption in South African construction is established. This necessitates more investigations to uncover the underlying causes of corruption in the contemporary South African construction sector.

6. CONCLUSION

Many South African construction SMEs experience business failure within a few years of operation. Their business failure is partly associated with low productivity during project deliveries. Low productivity of construction SMEs negatively impacts on micro- and macroeconomic performance and contributes to job losses. Some studies have examined measures to improve construction productivity, by jointly investigating productivity-influencing factors in SMEs and larger construction organisations. These studies have made contributions that apply to all contractors in the construction sector. This study argued the need to exclusively address the productivity of small and medium-sized contractors, in order to gain insights into problems and interventions specific to these categories of contractors. The findings of this study are consistent with the results of some existing studies. This suggests commonalities in factors influencing construction productivity regardless of country and the size of construction organisations. The study reported key measures that South African small and medium-sized contractors should consider, in order to improve their productivity.

The South African construction SMEs can leverage the outcome of this study to develop frameworks that promote improved managerial and non-managerial competence, teamwork, effective planning, appropriate leadership styles, and increased government support. Such frameworks must be robust enough to provide sufficient skills for contractors' personnel at all levels of the organisation. The leadership of SMEs must understand and deploy the most suitable and result-oriented leadership style under different conditions. Effective leadership styles would contribute to developing plans that promote a more effective team and improved engagements with the government and other funding organisations. These would engender steady growth in SMEs' productivity and ultimately mitigate business failures. Consequently, the numerical strength of small and medium-sized contractors would increasingly be an advantage through increased job creation, thereby improving socio-economic development in South Africa. The study is limited to a few construction projects; therefore, the findings cannot be generalised beyond the study area. Considering some similarities in the results of this study and other studies, the industry can test the study's intervention in different regions of South Africa and developing countries. The research raises awareness of the need for more SMEs-centred productivity studies, considering the significance of SMEs to the construction sector.

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