



Scaling Construction Start-ups in Gauteng, South Africa: Overcoming Challenges for Growth



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MASTER OF BUSINESS ADMINISTRATION degree at The
Independent Institute of Education, IIE MSA.

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DECLARATION

I, Tafadzwa Wurayayi, declare that this mini dissertation entitled “Scaling Construction Start-ups in Gauteng, South Africa”, submitted in partial fulfilment of the requirements for the Master of Business Administration degree at The Independent Institute of Education, IIE MSA, is entirely my own unaided work and has not been previously submitted to any other University or Higher Education Institution for degree purposes.

Any assistance that I have received in the preparation of this dissertation has been duly acknowledged in the text. Except where reference is made in the text, this dissertation contains no material published elsewhere or extracted in whole or in part from a thesis or report presented by me for another qualification. No other person’s work has been used without due acknowledgement in the main text of the report.



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ABSTRACT

The South African construction sector plays a pivotal role in infrastructure delivery, job creation and economic transformation. However, construction start-ups operating within the Construction Industry Development Board (CIDB) Grades 1–3 in Gauteng, grapple with structural and operational challenges that impede their growth and long-term sustainability. This study examines how known financial, regulatory, skills and technology-related constraints affect the ability of construction start-ups to scale and identifies strategies to support inclusive and sustainable growth.

The study is guided by an integrated theoretical framework combining the Resource-Based View (RBV), Diffusion of Innovation (DOI) theory and the Dynamic Capabilities Framework (DCF) to explain how internal resources, technology adoption and strategic adaptation influence company growth using a qualitative exploratory research design. Fourteen industry stakeholders were interviewed, including start-up contractors, established construction companies and institutional representatives from regulatory, financial and professional organisations. The data was analysed thematically using Numerical Variation In Organisation (NVivo) software.

The study found that construction start-ups face complex and interrelated challenges, barriers and dynamics. Limited access to finance, heavy regulatory burdens, skill and capacity shortages, technology barriers and fragmented institutional support were consistently raised as key themes. The most severe constraint, however, was the lack of financial resources driven by lack of collateral, weak credit records and delayed payments from clients which undermined cash flow and restricted project execution.

Regulatory compliance and compliance requirements imposed a heavy administrative burden on small construction companies with limited managerial capacities. The shortage of skilled workers, weak supervision and slow technology adoption further reduced productivity, quality and competitiveness. Institutional support and systems were found to be fragmented and poorly coordinated, while procurement frameworks favoured larger, more established construction companies which restricts market access for emerging contractors.

The study contributes theoretically by validating an integrated RBV, DOI & DCF framework for understanding construction start-up scalability in developing economies. It practically provides financial management, skills development and technology adoption guidance for start-up construction companies based on evidence. From a policy perspective, it offers insights for improving contractor development and support systems in alignment with South Africa's National Development Plan.

Keywords: *Construction Start-ups; Scaling, Gauteng; Financial Constraints; Regulatory Barriers; Human Capital; Technological Adoption; Institutional Support; Sustainable Growth; Challenges*

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LIST OF ABBREVIATIONS

AfCFTA	African Continental Free Trade Area
AI	Artificial Intelligence
BBBEE	Broad-Based Black Economic Empowerment
BIM	Building Information Modelling
CE	Civil Engineering
CDP	Gauteng Contractor Development Programme
CETA	Construction Education & Training Authority
CIDB	Construction Industry Development Board
COIDA	Compensation for Occupational Injuries and Diseases Act
CPD	Construction Project Developer
CSD	Central Supplier Database
DCF	Dynamic Capabilities Framework
DOI	Diffusion of Innovation
DTIC	Department of Trade, Industry and Competition
et al.	et alia
GB	General Building
GDP	Gross Domestic Product
ICSSF	Integrated Construction Start-Up Support Framework
IDC	Industrial Development Corporation
IIP	Infrastructure Investment Plan
IoT	Internet of Things
NDP	National Development Plan
NHBRC	National Home Builders Registration Council
NVivo	Numerical Variation in Organisation
OECD	Organisation for Economic Co-operation and Development
OHS	Occupational Health and Safety
PPP	Public–Private Partnership

PPPFA	Preferential Procurement Policy Framework Act
RBV	Resource-Based View
ROI	Return on Investment
SARS	South African Revenue Service
SAFCEC	South African Federation of Civil Engineering Contractors
SEDA	Small Enterprise Development Agency
SEFA	Small Enterprise Finance Agency
SMMEs	Small, Medium and Micro Enterprises
SSACI	Swiss-South African Cooperation Initiative

CHAPTER ONE: INTRODUCTION

1.1 Chapter Introduction

Chapter one presents the research on scaling construction start-ups in Gauteng, South Africa. The chapter gives context for this research, sets the context for the problem of construction start-ups in South Africa and also states the purpose of the study. It defines the key concepts presented in this study and aims to prime the reader for the problem statement, research objectives and research questions which follow in this chapter.

1.2 Introduction & Background to the Study

Scaling construction start-ups is an evolving research area within the broader and well-established field of entrepreneurship and business growth studies, with increasing attention being given to its application in the construction sector (Hove, 2016a; Chen *et al.*, 2021; Omotayo *et al.*, 2024a). Infrastructure investment, including construction, is essential for economic development, job creation, and social welfare in South Africa (Perkins *et al.*, 2005; Fedderke & Garlick, 2008; Infrastructure SA, 2023). The Construction Industry Development Board (CIDB), established through an Act of Parliament in the year 2000 to promote best practices and support the growth and transformation of the construction sector, plays a central role in regulating contractor registration, grading and capacity development across different categories of enterprises (Chiloane-Nwabueze *et al.*, 2020; CIDB, 2021). According to the CIDB (2023), the construction industry contributes about 3% to the national gross domestic product (GDP) and 37% to gross fixed capital formation, making it a critical driver of the country's economic development. In addition to its direct contribution to the GDP, construction is one of South Africa's largest employers, with labour-intensive sub-sectors playing a crucial role in creating jobs and alleviating poverty (SAFCEC, 2017; SEDA, 2023). Gauteng, the economic hub of South Africa, is home to the largest number of construction small, medium, and micro-enterprises (SMMEs), contributing to 37% of all SMMEs in the country (Chakwizira *et al.*, 2018; SEDA, 2023; Hailu & Tshehla, 2025). Data from the South African Federation of Civil Engineering Contractors (SAFCEC) indicates that more than 80% of construction companies in South Africa are SMMEs, with a significant proportion falling within the start-up category (Phaladi & Thwala, 2006; SAFCEC, 2017; Sacities, 2023). However, empirical evidence reveals that 60%–80% of construction enterprises in South Africa are not long-lived and do not survive the five-year mark (Mthabela, 2015; Leboea, 2017; CIDB, 2024; Hailu & Tshehla, 2025). In the face of their strategic significance, construction start-ups encounter a myriad of challenges in scaling their operations and achieving long-term sustainability in a challenging economic landscape (Ofodile *et al.*, 2022).

The challenges which have been identified and discussed above are not only unique to South Africa as other African countries and international construction markets experience similar challenges and opportunities with regards to scaling start-up construction companies (Hove, 2016; Balogun *et al.*, 2016; ACF, 2019). Research conducted on construction start-ups and small contractors in other sub-Saharan African markets such as Nigeria, Kenya and Ghana identified similar constraints of finance, regulatory barriers, weak support institutions and skills shortages, amongst others (Amoah & Pretorius, 2019; Ofori, 2020; World Bank, 2022). Moreover, studies from Nigeria and Kenya revealed that construction start-ups tend to collapse after the start-up phase due to unstable

cash-flows from inconsistent tender success and late payments by clients and the low uptake of construction technologies (Akinsiku & Adeyemi, 2018; Kibwami et al., 2021).

Internationally, construction start-ups face different conditions depending on the market in which they are based (ACF, 2019; Zif, 2025). In developed markets such as the United Kingdom, Germany and Australia, construction start-ups exist within more sophisticated financial, regulatory and technological environments which assist in their scalability (Skala, 2019; Nováková, 2024). However, there are still significant barriers facing these enterprises such as risk-averse banking systems, skills shortages and market-entry restrictions (Loosemore & Lim, 2017; Farmer, 2019; OECD, 2022). On the other hand, construction start-ups based in developing economies are impacted more heavily by finance, policy and technology constraints which makes the scalability of these start-ups significantly more difficult (World Bank, 2022; UNIDO, 2023). Contextualising these findings in South Africa reveals that whilst failure is common amongst construction start-ups worldwide, local construction start-ups operate within a uniquely constrained environment (Skala, 2019).

Some of the deep-rooted and mutually reinforcing barriers include access to finance, regulatory red tape, corruption, skills shortages, and low project performance (Mthabela, 2015; Leboea, 2017; CIDB, 2024; Hailu & Tshehla, 2025). Construction start-ups in Gauteng face seven critical challenges which are (1) financial, (2) economic, (3) corruption-related, (4) regulatory, (5) organisational, (6) project performance, and (7) market access (Hailu & Tshehla, 2025). Economic downturns such as the 2008 financial crisis and the COVID-19 pandemic have increased vulnerabilities, causing job losses and reduced confidence in the sector (CIDB, 2020; CIDB, 2024).

Construction start-ups are typically defined as SMMEs that are newly established and have the potential to offer innovative and value-adding solutions for identified construction inefficiencies (Yucel & Azhar, 2023). Due to their youthful and nimble nature, construction start-ups are often able to adapt faster to the rapidly changing construction environment, for example, through the adoption of digital tools, modular construction methods, or green practices than their established counterparts (Ruggieri *et al.*, 2018; Chen *et al.*, 2021). In the South African context, the start-up concept has entrepreneurial connotations that are considered highly desirable for job creation, innovation, and the promotion of inclusive economic growth (Bvuma & Marnewick, 2020; Smit & Nene, 2022; Ndjama & Westhuizen, 2024). Construction start-ups often labelled as SMMEs or start-ups provide a conceptual foundation for entrepreneurship but do not guarantee success or sustainability (Yucel & Azhar, 2023). The challenge lies in scaling, resilience, and sustained growth in a competitive industry (Li *et al.*, 2025). Scaling, in this context, refers to the act or process of growing a construction start-up into a larger, more resilient, and competitive construction business (Crnogaj & Rus, 2023).

The process of scaling a construction start-up involves expanding the business's capacity to accommodate increasing workloads, market demand, and operational complexity, while maintaining or improving efficiency and profitability (Stampfl *et al.*, 2013; Ikwue *et al.*, 2023; Amajuoyi *et al.*, 2024). In the construction industry, this process is particularly challenging for start-ups, which often have limited resources and must compete with well-established larger construction companies to secure market share (Omotayo *et al.*, 2024a; Omotayo *et al.*, 2024c).

The ability of construction start-ups to scale is determined by several interdependent factors, including access to funding and capital, human resources and skills, construction technology and innovation, and regulatory and compliance requirements (Amit & Zott, 2020). Although South Africa's construction market is dominated by large construction companies, start-ups have the potential to disrupt traditional business models through innovation and sustainability (Sagar, 2023a; Sagar, 2023b). Adapting progressive technology, such as modular construction, automation, Artificial Intelligence (AI), and digital project management software, is crucial for scaling in start-ups (Chen *et al.*, 2021; Gavi & Olusegun, 2024). Evidence from a study done to explore the challenges and growth prospects of construction start-ups in Gauteng by Hailu and Tshehla (2025), further reveals that digital transformation and collaborative approaches have become essential for construction start-ups to compete and overcome market and performance challenges (Omotayo *et al.*, 2024c).

Civil engineers aid construction start-ups in achieving technical compliance, ensuring structural safety, managing projects efficiently, and promoting sustainable practices and digital tools, thereby enhancing credibility, competitiveness, and business growth (Ntuli & Allopi, 2014; Khamaksorn, 2018). In this sense, evidence shows that while technical knowledge remains a critical input for supporting scale and growth, construction start-ups must develop an entrepreneurial orientation characterised by leadership, financial literacy, and adaptive capacity to survive in South Africa's dynamic and volatile construction environment (Mhlongo & Daya, 2023). The link between entrepreneurial leadership and civil engineering capabilities is particularly critical in Gauteng, where most construction start-ups must compete with larger established companies for a shrinking pool of projects (Hailu & Tshehla, 2025). However, with adequate support, through government policy, financial support, and capacity development, construction start-ups could leverage their agility, innovation, and technology to improve efficiency and productivity and play a critical role in South Africa's infrastructure delivery (Dede *et al.*, 2022; CIDB, 2023; SSACI, 2024).

Building on this foundation, this study aims to explore the challenges and strategies for scaling construction start-ups in Gauteng, South Africa. The research will investigate the key obstacles that construction start-ups face in scaling their operations, including access to finance, acquisition and retention of skilled labour, technology adoption, and regulatory compliance, among others. It will also identify the best practices and strategies for overcoming these challenges and supporting the scalability of construction start-ups.

1.3 Preliminary Literature Review

Introduction

The construction sector has been a major contributor to economic development and growth in South Africa over many decades (Olawajun & Ibrahim, 2020). It has delivered infrastructure that benefits society, contributed to employment generation and skills development, and enabled inclusive growth (Watermeyer & Phillips, 2020a). In recent years, construction start-ups have begun to play a crucial role in expanding service provision and industry transformation (Yucel & Azhar, 2023). By bringing innovation and agility to the sector, construction start-ups are helping to meet the demand for housing and infrastructure, and address long-standing imbalances in the sector (Stella & Marnewick, 2020; Kuklina *et al.*, 2021; Breugh, 2021b; Omotayo *et al.*, 2024b).

However, many of these start-ups face significant challenges that can stifle their ability to scale (Zajko, 2017; Ikwue *et al.*, 2023). This literature review examines the existing body of knowledge on the scalability of construction start-ups, with a specific focus on those operating in Gauteng. The review is structured around key themes, which are constraints to growth, enablers and opportunity spaces, theoretical perspectives, and gaps in the research.

Scaling in the Construction Sector

Scaling is the process through which a company grows in its capacity to deliver larger or more projects, or to participate in markets with higher value-added activities, or both (Jansen *et al.*, 2023; Coad *et al.*, 2024). Scaling often requires companies to operate at an increased level of complexity and coordination while still preserving efficiency and returns on investment (ROI) (Jean, 2024). For construction companies, scaling can involve growing the size of contracts, projects or units delivered, or venturing into markets with higher mark-ups (Jansen *et al.*, 2023). For construction start-ups, formal measures of scale include progression through the CIDB grading system, a nine-tier classification which functions as the de facto quality assurance system for construction companies in South Africa (CIDB, 2025). The classification indicates the company's capacity and capabilities with companies in Grades 1–3 on small contracts with tight financial, capacity, and overhead constraints (Doman, 2023). Grades 4–6 include companies that straddle the start-up level with small projects in relative terms and the formal regulatory threshold required for mid-sized contracts and operations, where formal reputational credibility starts to matter in the industry (Akang, 2024). Established contractors with larger capital bases and more resources to deliver large, complex infrastructure and public works contracts are those in Grades 7–9 (Omotayo *et al.*, 2024a). Progression through CIDB grades is often non-linear, as the literature indicates, and most companies stagnate at Grade 3, unable to scale further due to barriers ranging from finance and access to complex, high-value contracts to general capability deficits and poor technology adoption (Thwala & Phaladi, 2019; CIDB, 2022c).

In countries around the world there are often equivalent contractor classification and scaling regimes, although they vary in effectiveness and structure (Jang *et al.*, 2020). In the United Kingdom for example, small construction start-ups scale through frameworks such as Constructionline and local authority contractor accreditation schemes (Piri, 2025). Both these systems do similar things to the CIDB and operate in an almost similar way but are backed by healthier financial and procurement markets (Loosemore & Lim, 2017). Start-up contractors also exist in emerging markets like India and Brazil but also encounter a growth ceiling at similar tipping points moving from residential or commercial work into public-sector work due to bonding requirements, credit restrictions and general lack of institutional trust (World Bank, 2022; OECD, 2022). These cases abroad illustrate how grading regimes can help or hinder scaling when connected or not connected to finance, procurement and contractor development programmes.

Constraints to Growth and Scalability

Empirical findings and policy statements have identified the key constraints to growth and scalability as financial, technological, regulatory, and institutional (Satish *et al.*, 2024). Financial constraints are the most commonly cited barriers for construction start-ups (Fatoki, 2014a; Gounden, 2021). Access to affordable capital is limited by stringent collateral and creditworthiness

requirements. Interest rates are high relative to gross margins (CIDB, 2022b). Cash flow is constrained by lengthy turnaround times for payment, a challenge that is particularly acute for public-sector contracts (Chadee *et al.*, 2023). Many start-ups are exposed and vulnerable to project default risk or have been refused financing from commercial banks because their internal resources are largely tied up in operations, with very little capital to cushion them (Gounden, 2021). The current state of financial markets also excludes start-ups that cannot meet capital and collateral requirements for commercial banks or that do not have well-established relationships with traditional lenders, with finance, or lack thereof, impeding critical equipment and technology procurement, skilled labour, or expansion (Fatoki, 2014b). Limited financial buffers and capabilities also trap start-ups in a cycle of low-value contracts and low margins, with limited ability to compete for more complex and long-term contracts (Lazopoulos, 2025).

The second constraint is that despite their potential to reduce costs and enhance efficiency, the adoption of Construction Technology (ConTech) solutions such as Building Information Modelling (BIM), advanced analytics, drones, digital project management tools, mobile applications and green building innovations remains limited among start-ups due to high acquisition costs, a shortage of skilled personnel, and low levels of awareness (Podder *et al.*, 2022; Jane, 2024). Construction start-ups are also operationally inefficient and have to deal with weak supply chains and logistics coordination, inadequate business support services, and general under-capitalisation, as well as a reliance on manual processes that delay operations and lead to cost overruns (Phahlamohlaka & Mpungose, 2025).

The third constraint is that compliance with CIDB regulations, health and safety certification, labour legislation, and procurement procedures requires administrative capacities that most start-ups lack (Amoah & Mlenzana, 2022). In addition, more general infrastructure and operating conditions in South Africa expose start-ups to avoidable risks from a volatile regulatory regime with ad hoc compliance, escalating transport and material costs, poor electricity supply, and general conditions that make construction, and especially start-up construction, more expensive and less competitive (Watermeyer & Phillips, 2020a).

Market conditions have a negative impact on growth and sustainability prospects and increase exposure to risk (Wang, 2023). Construction demand is volatile and cyclical, while start-ups are particularly exposed to demand shocks due to their lack of buffers, as their projects are more easily cancelled than those of large companies with market power or established customer relationships (Gounden, 2021). The presence of a “growth ceiling” indicates both a market ceiling and low profitability, which are especially prevalent in lower-value segments (Cossío-Silva *et al.*, 2013).

Similar constraints are experienced in the construction industries of other countries. Late payment, limited bank finance and boom and bust demand are found to impact start-ups in the construction industry of Kenya, Ghana and Nigeria, resulting in high mortality rates of start-up construction companies in these countries (Amoah & Pretorius, 2019; World Bank, 2022). Other developed countries such as Australia and Canada also have unstable payment systems and difficulties with accessing finance from banks due to the risky and cyclical nature of construction (Ngonyani, 2022). However, lack of growth finance is particularly prominent in these markets for start-up construction companies (OECD, 2022; Loosemore & Lim, 2017). These findings suggest that

these constraints relating to finances and market conditions are faced globally, and are more intensified in developing economies.

Opportunity and Enablers of Construction Start-up Growth

Contrary to the challenges above, the same literature sources note multiple opportunity spaces that construction start-ups can and should capitalise on. Technological innovation in construction is one of the most significant. Emerging ConTech including BIM (Jane, 2024), the use of drones, 3D printers, prefabricated modular construction and construction management software can reduce cost, improve coordination and shorten project delivery timelines (Bryde *et al.*, 2013). Prefabrication and modular construction of residential and non-residential buildings, and other engineered structures, is increasingly being considered and shown to be an efficient, cost-effective delivery method for emerging economies and many private players (Meena *et al.*, 2022).

Emerging global and national imperatives for sustainable construction and low-carbon infrastructure development are also opening up new markets and product-service differentiation opportunities (Weiss *et al.*, 2021; Breaugh, 2021a). Government policies and initiatives to expand and open up participation in the construction sector to more players, such as South Africa's Preferential Procurement Policy Framework Act (PPPFA) and climate finance programmes under the National Development Plan (NDP), also create more equitable market conditions and opportunities (Dede *et al.*, 2022; National Planning Commission, 2012).

Finally, strategic collaboration, through partnerships with other construction companies and with public agencies or even international organisations in the case of cross-border mega-projects, can provide access to finance, mentoring, support, and especially the opportunity to participate in larger and more complex projects through supply chains (Loosemore & Dainty, 2003; Farmer, 2016). Cross-border regional integration under the African Continental Free Trade Agreement (AfCFTA) further opens opportunities in this respect for South African start-ups to participate in infrastructure development activities in the region (DTIC, 2019).

Internationally, construction start-ups have unlocked growth opportunity spaces through a number of effective strategies (Jiang *et al.*, 2019). In many countries across Europe, Asia and beyond construction start-ups have capitalised on technology innovation and followed niche strategies around sustainability and collaboration (OECD, 2022; Chen *et al.*, 2021). From Germany to Japan and Singapore small contractors have scaled by focusing on modular construction, green buildings, and digital platforms for project delivery, backed by robust public-private collaboration (Smorzhenkov & Ignatova, 2023). These international examples show that construction start-ups can defy the downsides of smallness when technology, policy, and market forces are aligned.

Theoretical Perspectives

Insights from several theories were drawn upon in the study. The Resource-Based View (RBV) is a resource-driven theory in strategic management that argues that the resources endowments of a company are the key sources of competitive advantage (Barney, 1991). It is relevant to the current study as an internal factors' theoretical lens. The Diffusion of Innovation (DOI) theory of Rogers (2003) explains how technological innovations, which range from BIM software to prefabricated concrete, diffuse within an industry and become adopted through a process of peer adoption and

imitation (absolute and relative advantages), as well as institutional leadership and support. The Innovation Scaling Theory literature, also sheds light on how companies, such as start-ups, innovate but then have to transition from isolated or pilot projects to routine adoption, which requires both a supportive ecosystem and institutional fit but was not utilised in this study (Podder *et al.*, 2022). The present study leans most heavily on the Dynamic Capabilities Framework (DCF), which is a dynamic view of companies as open systems in unstable environments (Bleady *et al.*, 2018; Cavusgil & Deligonul, 2024). It describes how companies achieve advantage by sensing, seizing, and transforming in response to the dynamic market and technology environments that they are a part of (Teece, 2022a, p. 981). The DCF builds on the RBV but extends it to describe how companies that can actively reconfigure their strategies and structures to adapt and evolve in volatile contexts gain advantage in the industry (Madhani, 2010; Cavusgil & Deligonul, 2024). The DCF and similar capability-driven theories are applicable to small construction companies in South Africa because this is a fast-moving and highly regulated environment that requires active business model innovation and strategic realignment on an ongoing basis (Cavusgil & Deligonul, 2024). Building on this, a detailed DCF theoretical analysis of construction start-ups is still required. This study synthesised and built on these multiple theoretical traditions to provide a grounded understanding of the constraints and enabling factors faced by construction start-ups, grounded in the lived realities of construction start-ups in Gauteng.

These theoretical frameworks have also been applied extensively in international construction and entrepreneurship research (Fubah, 2021). Studies in Europe, North America and Asia have shown that companies with strong dynamic capabilities, technological absorptive capacity and innovation-oriented resources are more likely to scale in highly competitive and regulated construction environments (Teece, 2022a; Cavusgil & Deligonul, 2024; Jean, 2024). This reinforces the relevance of RBV, DOI and DCF as appropriate lenses for analysing construction start-up scalability in Gauteng (Kero & Bogale).

In conclusion, this literature review revealed a number of important issues that were developed throughout this study. On the one hand, the literature affirms that construction start-ups face multiple barriers, including financial, technological, regulatory, and operational, and that they are at risk of getting trapped in a growth ceiling. Simultaneously, this literature also points to an evolving opportunity space for construction start-ups, defined by forces such as innovation, sustainability, and strategic collaboration. With respect to theory, while there are multiple bodies of work that can be drawn upon, DCF, DOI, and RBV have particular relevance and utility. DCF has a specific application to the reality of construction start-ups in the South African context, characterised by volatility, uncertainty, and regulatory change (Bleady *et al.*, 2018; Cavusgil & Deligonul, 2024). Finally, this study fills a gap in the literature on start-ups and entrepreneurship specific to the construction sector, particularly the issue of scalability among construction start-ups.

1.4 Problem Statement

Construction plays a vital role in South Africa's economy by providing infrastructure, creating jobs and promoting entrepreneurship (CIDB, 2022b). Despite its importance, many construction start-ups have limited growth beyond the start-up phase, with an estimated 60–80% failing within

the first 2-3 years of operation (Aigbavboa *et al.*, 2016; Novela *et al.*, 2018; Leboea, 2017; Mhlongo & Daya, 2023). This high failure rate is due to a number of challenges that impede start-ups' growth and sustainability (Bowen, Cattell, & Kaka, 2019). South Africa's construction sector is highly concentrated, with a few large construction companies dominating the market. Start-ups are vital to the sector, accounting for more than 90% of registered construction companies, with most of them registered as CIDB Grades 1–3 companies (SAFCEC, 2023; SEDA, 2023; CIDB, 2023a; CIDB, 2023b). However, these start-up businesses encounter numerous barriers that severely limit their growth, making it challenging for them to expand their operations, secure larger projects, and achieve long-term sustainability in the industry (Fatoki, 2014b). Although the government and some agencies are implementing policies and support programmes aimed at supporting small businesses in the construction industry, many start-ups face slow or stagnant growth (Dede *et al.*, 2022; Windapo & Cattell, 2013). Scaling requires financial resources, strategic planning, industry partnerships, and access to emerging construction technologies (Ofori, 2015). Financial constraints and regulatory challenges are among the most significant factors that contribute to the failure of construction start-ups (Bowen, Cattell, & Kaka, 2019). Start-ups need capital to meet the stringent financial requirements for registration and comply with legal and regulatory frameworks (Bowen, Cattell, & Kaka, 2019). The lack of access to skilled labour and technology further compounds the problem, making it challenging for these businesses to deliver quality services that can help them obtain high-value contracts and improve their productivity (Fatoki, 2014a). In addition, intense competition from well-established and reputable companies in the construction sector makes it difficult for emerging businesses to gain traction and establish themselves in the industry (Mubangizi & Ogra, 2020; McKinsey & Company, 2017; Novela *et al.*, 2018). Despite the importance of the construction industry on the South African GDP, there is still limited research on the factors influencing the growth of start-ups in the construction industry in the country (Thwala & Phaladi, 2019; Stats SA, 2020). This study therefore seeks to examine how these financial, regulatory, skills and technology-related constraints influence the scalability of construction start-ups in Gauteng and to identify practical strategies that can enable sustainable growth.

1.5 Rationale

The construction industry plays a pivotal role in South Africa's economic development, creating employment, infrastructure, and wealth (CIDB, 2022b). However, the industry's start-ups struggle to scale and survive due to various internal and external factors such as financial vulnerability, market access, innovation, and regulatory complexity (Maboya & McKay, 2019a; Mofokeng & Thwala, 2018a). This is evident in the low numbers of contractors in the upper categories of the Construction Project Developer (CPD) matrix used by the CIDB to classify and monitor contractors (CIDB, 2022a; Chiloane-Nwabueze *et al.*, 2020). Construction start-ups have been identified as potential sources of job creation, productivity, and innovation but often lack the institutional support, skills, and capital to graduate from subsistence to growth, especially in the capital-intensive and skill-intensive construction sector (Fatoki, 2014a; Thwala & Phaladi, 2019; Breaugh, 2021a). This is because the research available is either on large construction companies, which is not entirely representative, or generic start-up companies research, which lacks context (Watermeyer & Phillips, 2020a). As a result, there are limited opportunities for evidence-informed policy development to improve support for the formalisation, industrialisation, and transformation

of the construction industry and empowerment of historically disadvantaged construction enterprises.

The Gauteng province is an ideal context for this research because it is a hub of construction activity, public procurement, and the evolving entrepreneurial support ecosystem (Mhlongo & Daya, 2023). Furthermore, Gauteng has the largest number of registered contractors with the CIDB, making it the most significant province in which to conduct a study into what it takes to scale a construction start-up (CIDB, 2022c). National policy strategies such as the NDP and the Infrastructure Investment Plan (IIP) articulate a vision for a transformed and developmentally-oriented construction industry, but the enabling mechanisms to support construction start-ups in particular, towards scalability are underdeveloped or poorly implemented (Infrastructure South Africa, 2024; National Planning Commission, 2012).

This study is important as it investigates the challenges and opportunities construction start-ups face in scaling, from theory to practice in the Gauteng context. The proposed study will utilise theoretical concepts such as the Resource-Based View (RBV), Diffusion of Innovation (DOI), and the Dynamic Capabilities Framework (DCF) to form a theoretical foundation on which the empirical findings can be contextualised, referenced, and applied to draw evidence-informed recommendations. Therefore, this research has the potential to add value to the sustainable and inclusive economic development of South Africa by improving policy refinement and implementation by construction support institutions and assisting construction entrepreneurs with evidence-informed approaches to overcoming structural constraints and unlocking growth opportunities.

1. 6 Research Purpose, Objectives & Questions

1.6.1 Research Goal

This study aims to examine the growth challenges faced by construction start-ups in Gauteng, South Africa, and to identify strategies for overcoming these hurdles. It seeks to uncover insights into the financial, regulatory, and operational issues prevalent in the industry, while also pinpointing opportunities that could foster the sustainable development of these enterprises.

1.6.2 Research Objectives

Primary Objective

The primary objective of this study is to examine how key challenges influence the scalability of construction start-ups in Gauteng, South Africa.

Secondary Objective

To achieve the primary objective, this research has the following secondary objectives:

1. To identify the challenges faced by start-up construction companies in Gauteng
2. To explore the perceived effectiveness of growth strategies employed by CIDB Grade 4-6 construction start-ups in addressing industry-specific challenges.
3. To provide actionable recommendations for start-ups, policymakers, and industry stakeholders to foster an enabling environment for start-up scaling.

1.6.3 Research Questions

Primary Research Question

The primary research question of this study is " *How do key challenges influence the scalability and sustainability of construction start-ups in Gauteng, South Africa?*"

Secondary Research Questions

To support the primary research question, this research has the following secondary research questions:

1. What are the primary challenges faced by start-up construction companies in Gauteng?
2. What are the most effective growth strategies employed by CIDB grade 4-6 construction start-ups in addressing industry-specific challenges?
3. What actionable recommendations can be made to improve the scalability and sustainability of construction start-ups in Gauteng?

1.7 Research Design and Methodology

1.7.1 Research Design

The study employed a descriptive and exploratory research design to investigate and report the problems associated with construction start-ups in South Africa. The choice to use a descriptive approach was based on the need for an in-depth exploration of operational and environmental factors involved in scaling start-up businesses, which qualitative methods are particularly effective in capturing (Ikwue *et al.*, 2023). The qualitative approach also allowed the study to explore firsthand the motivations, challenges, and opportunities unique to the South African context. On the other hand, the exploratory design is appropriate when there is limited or no existing research on the subject. This study used the exploratory design to gain insights into the unique challenges of scaling a construction start-up in South Africa. The lack of constraints from existing theories and frameworks allowed the researcher to approach the problem with an open mind and identify patterns and relationships that may not have been considered previously (Saunders *et al.*, 2016). Qualitative data collection and analysis techniques such as semi-structured interviews, open-ended questions, and thematic analysis allowed for flexibility in data gathering and interpretation. This flexibility is crucial in exploratory research, as it enables the identification of patterns, insights, and relationships in the data that can contribute to theory development and practical application (Creswell & Creswell, 2018). In combination with descriptive analysis, these methods helped to identify recurring themes and characteristics, providing a detailed and nuanced understanding of the various obstacles and enablers to scaling construction start-ups (Saunders *et al.*, 2016). The research was cross-sectional, with data collected from participants at one point in time to provide an overview of the current challenges and opportunities within the construction start-up ecosystem (Wang & Cheng, 2020).

1.7.2 Population and Sample

The study population consisted of owners and managers of construction start-ups, representatives of successful construction companies, and key industry stakeholders within the Gauteng province of South Africa. Gauteng was selected as it has the largest concentration of construction start-ups in South Africa according to Statistics South Africa (Stats SA), although no comprehensive, publicly available database exists that quantifies the exact number of construction start-ups and

related stakeholders operating in the province at a given time. Industry stakeholders included consultants and investors operating within the construction sector. A purposive sampling technique was employed to ensure a diverse representation of owners/managers of construction start-ups, representatives of successful construction companies and key industry stakeholders (Makwana *et al.*, 2023). Participants categorised as representatives of “successful construction companies” were selected based on the explicit criteria of progression beyond CIDB Grade 3, that is companies that currently have a CIDB grade of 4 to 6, a sustained operating history exceeding five years, demonstrated ability to secure and deliver higher-value contracts, and evidence of organisational stability and growth. These criteria were used to distinguish established and scaling construction companies from start-ups. The sample was made up of six founders and managers of construction start-ups (CIDB grades 1-3), five representatives of successful construction companies (CIDB grades 4-6), and three industry stakeholders. Industry stakeholders were selected based on their direct involvement in construction sector development, finance, policy, or technical advisory roles relevant to start-up scalability. The distribution across these three categories outlined was guided by the study’s exploratory qualitative design, with greater emphasis placed on construction start-ups as the primary unit of analysis, while successful companies (CIDB grade 4-6) and the relevant industry stakeholders were included to provide comparative and contextual insights. Sampling continued until the data saturation point was reached which is defined as the point at which additional interviews will no longer yield new themes or substantive insights relevant to the research objectives (Guest *et al.*, 2006). The diversity in the sample in terms of participants, their roles and perspectives helped to explore in-depth the sectoral and regional challenges, increasing the depth and validity of the findings (Guest *et al.*, 2006; Schut *et al.*, 2023).

1.7.3 Data Collection Methods

The research used semi-structured interviews as the sole primary data collection method. The interviews were guided by themed interview schedules developed from key issues and challenges identified in the literature review (Adams, 2015). This qualitative tool was appropriate because it allowed for flexibility in probing individual entrepreneurs' unique challenges while still maintaining comparability across responses (Ruslin *et al.*, 2022). Interview guides were used to explore topics that discussed challenges affecting the growth of construction start-ups and difficulties in competing with larger, more established corporations and strategic partnerships (Giglio *et al.*, 2025; Hailu & Tshehla, 2025). Interviews were recorded (with participants' permission) and transcribed verbatim for data analysis (Stuckey, 2014).

Secondary data was also collected from public government reports, industry publications, and academic literature to provide context and interpretation for the findings. These sources offered insights into the broader construction landscape in South Africa, including policy initiatives and market trends but did not constitute a separate empirical data collection method in this study.

1.7.4 Data Analysis

The data analysis process employed thematic analysis for the examination of qualitative data, supported by systematic coding and the use of software tools to organise and interpret the findings (Braun & Clarke, 2012; Naeem *et al.*, 2023). Thematic analysis was employed to analyse the qualitative datasets. The coding process involved breaking down the interview transcripts into

smaller, meaningful units, followed by focused coding to identify and develop themes related to the process of scaling construction start-ups (Dawadi, 2020; Naeem *et al.*, 2023). Qualitative data analysis was further supported by the use of NVivo software and Microsoft Excel, which facilitated the systematic organisation, coding, and interpretation of data within a structured thematic framework (Limna, 2023; Rosairo, 2023). These tools were chosen for their capabilities in managing extensive data, supporting multiple data formats, and ensuring transparency and rigour in qualitative analysis (Woods *et al.*, 2015; Creswell & Creswell, 2018). To ensure precision and validity in the analysis, the researcher enlisted the assistance of software specialists with expertise in qualitative data analysis.

The primary data from interviews was integrated with secondary data from industry reports and academic studies to provide a well-rounded analysis of the scaling process.

1.7.5 Validity and Reliability

To ensure validity and reliability in data processing this study utilised strategies like incorporation of multiple stakeholder perspectives within a single qualitative dataset and creation of an audit trail (Creswell & Creswell, 2018). With respect to internal validity and credibility, the inclusion of participants from different categories within the construction sector enabled the comparison of perspectives, thereby strengthening the accuracy and trustworthiness of the findings. Methodological triangulation with separate data sources was not performed in this study, however the equivalent of within-sample corroboration was done by observing similarities and differences between interview participants of different categories including construction start-up founders and managers, successful construction businesses, industry stakeholders (Creswell & Creswell, 2018). Specifically, this study compared insights obtained from CIDB-registered construction start-up owners and managers in Gauteng with those of successful construction company representatives, as well as the perspectives of other key industry stakeholders such as policymakers and consultants. This approach enhanced internal consistency by allowing recurring themes to be verified across participant groups. To ensure reliability, a standardised data collection process was established, including a structured interview guide and systematic coding to maintain consistency in data analysis (Saunders *et al.*, 2016). This contributed to the internal reliability and dependability of the study by ensuring that the data collection and analysis procedures were applied in a consistent manner across all interviews. Additionally, an audit trail was maintained to document all the key decisions made during data collection and analysis, enhancing transparency and supporting external reliability by enabling the research process to be reviewed and followed by other researchers (McLeod, 2024b). Regarding external validity or transferability, while the findings are not statistically generalisable due to the qualitative nature and contextual focus of the study, rich contextual descriptions of the Gauteng construction environment and participant characteristics were provided to allow readers to assess the applicability of the findings to similar contexts and similar environments. These measures helped establish the credibility of the study's findings (Korstjens & Moser, 2017), providing valuable insights into the challenges and strategies for construction start-ups in the province of Gauteng, South Africa.

1.7.6 Limitations

This research was subjected to several limitations. These limitations are presented separately to clarify their nature and implications. The first limitation of the study was the qualitative nature of the research design. As Creswell and Creswell (2018) note, qualitative data cannot be generalised beyond the study sample to wider populations due to sampling practices that emphasise depth over representative distributions of participants. Second, all data were collected from construction start-ups operating in Gauteng province, thus limiting generalisation to construction start-ups elsewhere in South Africa and in other countries. Third, the study used cross-sectional data, implying that snapshots in time were used to measure variables of interest but not how they may have changed over time. For example, the changing face of the construction industry was not considered (Capili, 2021; Saunders *et al.*, 2016). Fourth, some responses can be subject to perception by construction start-up owners and industry stakeholders (Jones, 2021). Respondents may have responded to questions based on their own experiences, interests or position in the construction start-up ecosystem, leading to responses that may not reflect actual conditions (Gutterman, 2023; Bryman, 2012). The fifth limitation was that time and resource constraints limited the ability to collect more data and perform more in-depth analysis (Kabir, 2016). Despite the existence of these limitations, various steps were taken to ensure that the data collected are valid and that the analyses used to derive conclusions are credible (Vu, 2016).

1.7.7 Expected Contributions

This study contributed to entrepreneurship, construction management, and engineering in multiple ways. Theoretically, it built upon and extended the theoretical frameworks on scaling in entrepreneurial ventures by providing a contextualised lens through the construction industry, particularly for construction start-ups in South Africa. This study aimed to offer unique theoretical insights into the relationship between business scaling and operationalisation barriers in a fragmented industry. It also aimed to enrich and extend the existing body of knowledge on entrepreneurship (Breugh *et al.*, 2021a; Breugh *et al.*, 2021b; Farmer, 2016).

In terms of scientific contributions, this study filled a critical gap in the literature by specifically addressing scaling in the construction industry, an aspect that is often overlooked in the context of entrepreneurship (Omotayo *et al.*, 2024b). In the realm of practice, the study provided construction start-up founders, as well as managers in the construction industry, with a lens to guide their focus on strategies for overcoming potential barriers to growth and, thus, expanding their businesses to scale (Omotayo *et al.*, 2024c). Policymakers and other stakeholders could also benefit from the findings in formulating policies, such as targeted infrastructure investment policies, or entrepreneurship support programmes (Prasannath *et al.*, 2024). Finally, this study contributed to the growth of green construction practices and sustainable construction methods by uncovering how innovation and strategic partnerships enhance sustainability in the construction sector (Breugh *et al.*, 2021a; Breugh *et al.*, 2021b).

1.8 Scope of Study

The research is limited to construction start-ups registered in the Gauteng province of South Africa. The primary focus of the study is on construction start-ups operating within CIDB Grades 1 to 3, which represent the early-stage start-up segment, as well as scaling construction companies within

CIDB Grades 4 to 6, which reflect the transition from start-up to more established operations. This combined focus enables the study to examine both early-stage scalability constraints and the strategies used by successful construction start-ups to overcome growth barriers. The CIDB Grades 1 to 6 classification includes start-ups involved in small which is grades 1-3 to medium-scale construction projects which is grades 4-6, covering residential, commercial, and public infrastructure sectors (CIDB, 2022b). The research aims to investigate the multidimensional challenges hindering scalability, such as financial barriers, regulatory complexities, technology adoption, operational constraints, and market access limitations. It also explores growth enablers like innovation diffusion, capacity building, and public-private partnerships (Liu *et al.*, 2023). While the study's insights may have broader applicability across South Africa, the focus on Gauteng is intentional due to the province's unique economic, regulatory, and infrastructural landscape. Gauteng is the economic hub of South Africa, and home to the largest number of CIDB-registered contractors (CIDB, 2022a). The study does not include large and established construction companies (CIDB Grades 7 to 9), as their scalability dynamics, challenges, and solutions differ significantly due to resource availability and market positioning (Watermeyer & Phillips, 2020b). However, individuals interviewed from "successful construction companies" were drawn from CIDB Grades 4 to 6 and therefore fall within the start-up category. These participants were included to provide comparative insights into successful scaling pathways within the construction start-up segment. This boundary ensures a focused examination of start-ups' early-to-intermediate growth stages in a competitive and rapidly evolving construction landscape, offering targeted, actionable recommendations.

1.9 Ethical Considerations

The study was designed and conducted according to the highest ethical standards in research, with a focus on research integrity, transparency, and respect for research participants. The research was not deemed to be a highly sensitive research subject because it did not deal with sensitive or vulnerable topics or populations. However, the research involved human subjects, specifically, entrepreneurs, ethical considerations had to be made. The researchers made sure to give all the participants full information about the study, its purpose, procedures, and their role before participating. Informed consent was received from all the participants, in the form of signed consent forms that acknowledged their voluntary participation and the freedom to withdraw from the study at any time without any penalty (Creswell & Creswell, 2018). The researchers also ensured the confidentiality and anonymity of the participants by keeping personal data anonymous, using unique identifiers instead of names, and storing all the data in password-protected files that only the researcher could access, and they reported the findings in aggregate form, so individual responses could not be identified (Saunders *et al.*, 2016). In addition, the study avoided any potential harm or risks to the participants, both physical and psychological, by word choice when asking questions, and by being sensitive to the participants' psychological, emotional, and reputational safety throughout the study. The study received ethical clearance from the appropriate institutional ethics review board, and the research was conducted in compliance with all applicable laws, regulations, and guidelines related to research governance and oversight. Finally, the study ensured the integrity and transparency of the data, as well as the accurate and honest data collection, analysis, and reporting, without any manipulation or misrepresentation of the data (Resnik, 2020).

1.10 Definition of Key Concepts

The following provides a summary of definitions of key terms being used in this study:

Building Information Modelling (BIM): A digital construction management system to produce 3D models and use them for coordination and collaboration throughout the project lifecycle (Jane, 2024).

BuildSmart: An integrated construction management and Enterprise Resource Planning (ERP) software that enables real-time project costing, financial control and operational efficiency for construction companies (RIB, 2025).

CIDB Grading System: A system that assigns contractors a grading (Grades 1–9) based on their financial capacity and level of experience that determines which public tenders they can bid for (CIDB, 2022a).

CIDB: The Construction Industry Development Board. A state entity responsible for regulating and developing the construction industry in South Africa (CIDB, 2022b).

Construction Start-ups: Recently established construction companies that have begun their development, and are looking to enter, and grow in the formal construction environment (CIDB, 2022b; Maboya & McKay, 2019b).

ConTech (Construction Technology): A general term used to describe new and innovative construction technologies like drones, 3D printing, BIM and automation (Pan *et al.*, 2021).

Diffusion of Innovation (DOI): The rate and manner in which new technologies, systems or methodologies are adopted by companies and industries (Rogers, 2003).

Dynamic Capabilities Framework (DCF): The ability of a company to renew and reconfigure its strategic assets to address changing environments.

Entrepreneurship: Initiating, recognising, and pursuing opportunities for the purpose of creating, capturing and scaling value through a new business (Hisrich *et al.*, 2017).

Innovation: A new application of knowledge that improves performance or competitiveness in a given domain (Chen, 2023; Breaugh *et al.*, 2021a).

Public–Private Partnerships (PPPs): Alliances between private-sector companies and government entities, formed for the delivery of specific infrastructure or services (Anugwo *et al.*, 2018; Zubair, 2023).

Resource-Based View (RBV): An organisational theory, which assumes that resources and capabilities within an organisation, can be leveraged for competitive advantage (Barney, 1991).

Sage Pastel: An accounting and business management software used by construction companies to manage finances, payroll and reporting ensuring accurate budgeting and financial control across projects (Tapang & Jones, 2018; Sage, 2025).

Scaling: Increasing the size and reach of a start-up, in terms of capacity, markets and infrastructure, in a way that will support its growth (Ismail *et al.*, 2021b).

SMMEs: Small, Medium and Micro Enterprises, which operate in all sectors of the economy and are crucial to job creation and growth (Bvuma & Marnewick, 2020; Ndjama & Westhuizen, 2024).

1.11 Chapter Outline

The chapter outline was developed in a way that guarantees a coherent flow of ideas, connecting theoretical ideas with real-world applications and offering a thorough analysis of the potential and difficulties faced by South African construction start-ups. Additionally, it conforms to academic best practices and research procedures suggested by Yin (2018) and Creswell and Creswell (2018). The chapter is organised as follows:

Table 1.1: Structure of the Dissertation

Chapter	Title	Description
Chapter 1	Introduction	Introduces the research topic, background, problem statement, research objectives, research questions, and rationale for the study. It also defines the scope, limitations, and overall structure of the dissertation.
Chapter 2	Literature Review	Provides a synthesis of existing theories and frameworks related to construction entrepreneurship, scaling, financial management, and innovation. The chapter contextualises the discussion within the South African environment and reviews relevant local and international literature, identifying gaps addressed by this study.
Chapter 3	Research Methodology	Describes the research design and methodological approach, including the sampling strategy, data collection method, and data analysis procedures. It also addresses ethical considerations, validity, and reliability.
Chapter 4	Data Presentation, Analysis & Discussion	Presents and analyses the empirical findings of the study in relation to the research questions. Themes, patterns, and key insights emerging from the data are reported and supported where appropriate by tables and figures. It also interprets the findings by linking them to the literature reviewed in Chapter 2 and the theoretical frameworks underpinning the study. Areas of convergence and divergence with existing research are discussed.
Chapter 5	Conclusion and Recommendations	Summarises the main findings and discusses their implications for construction start-ups, policymakers, and industry stakeholders. The chapter provides practical recommendations and highlights areas for future research.

1.12 Conclusion

In conclusion, Chapter 1 provides an overview of the study, which comprises the problem statement, background, purpose, and objectives, research questions, significance, and justification. The background section locates the construction industry as a critical contributor to South Africa's economic growth through job creation and infrastructure delivery, with Gauteng identified as the construction hub most affected by industry challenges. A notable problem is the barriers faced by construction start-ups which impede their development. The literature review forms the foundation of the research, highlighting the importance of the research problem and justifying the need for the study, derived from identified gaps in existing studies on construction entrepreneurship and scalability. The purpose of the study is presented together with the objectives, and the research questions posed in the study. The significance and justification sections of the study are presented in the following sections. Finally, the chapter concludes with an outline of the remaining chapters.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The construction sector in South Africa is pivotal to infrastructure development, economic transformation, and job creation (CIDB, 2022a). As one of the most labour-intensive and infrastructure-dependent industries, construction plays a central role in enabling national economic performance, spatial transformation, and urbanisation (Watermeyer & Phillips, 2020a). The sector also serves as a critical platform for the government's developmental objectives, such as those outlined in the NDP, which seeks to promote inclusive economic participation and reduce inequality (Dede *et al.*, 2022; National Planning Commission, 2012). Within this ecosystem, construction start-ups, which are typically construction companies registered in the CIDB grades 1-3, are essential drivers of innovation, employment, and entrepreneurial diversity (Madondo *et al.*, 2024). These companies often provide more localised and flexible construction services, making them integral to both rural and urban infrastructure expansion (Watermeyer & Phillips, 2020a). However, despite their potential, construction start-ups face numerous structural, financial, and operational barriers that hinder their scalability and long-term sustainability. These include limited access to finance, lack of project opportunities, technological lag, and regulatory burdens (Maboya & McKay, 2019c; Mofokeng & Thwala, 2018a).

In the South African context, these challenges are compounded by historical inequalities, economic volatility, and policy implementation gaps, which disproportionately affect emerging entrepreneurs, especially those from previously disadvantaged backgrounds (Hove, 2016a; Enaifoghe & Vezi-Magigaba, 2023; Hailu & Tshela, 2025). Furthermore, the post Covid-19 pandemic economic recovery and infrastructure-driven stimulus programmes have increased pressure on start-ups to build capacity and deliver at scale, often without the institutional support or capital necessary to compete with more established contractors (CIDB, 2022b; Infrastructure South Africa, 2024).

Internationally, construction start-ups in both developed and developing economies face comparable scalability challenges, although the intensity and nature of these constraints differ (Kirchberger, 2020; Hanifzadeh *et al.*, 2024). In developed economies such as the United Kingdom, Germany and Australia, construction start-ups benefit from more mature financial markets, stronger institutional support systems and advanced digital infrastructure, yet still encounter barriers related to risk-averse lending, skills shortages and market entry constraints (Loosemore & Lim, 2017; OECD, 2022). In contrast, start-ups in developing economies, including those in sub-Saharan Africa, face additional constraints such as limited access to capital, weak contractor development frameworks and fragmented policy implementation, making sustainable scaling more difficult (World Bank, 2022; UNIDO, 2023). These international comparisons highlight that while construction start-up challenges are global, the South African context presents unique structural and institutional constraints that warrant focused investigation (Omotayo *et al.*, 2024).

This literature review critically examines existing theoretical frameworks and empirical studies related to construction entrepreneurship, with a specific focus on the South African construction landscape. It explores the evolution of construction entrepreneurship in relation to historical,

policy, and market shifts. Key thematic areas include financial management, access to finance, public-private partnerships (PPPs) defined as collaborative arrangements between public-sector entities and private companies for the delivery of infrastructure and services (Sesele, 2023), technological adoption, innovation strategies, and sustainable construction. In addition, the chapter reviews the key theoretical frameworks underpinning the study, namely the Resource-Based View (RBV), the Diffusion of Innovation (DOI) theory, and the Dynamic Capabilities Framework (DCF), which are used to explain how internal resources, innovation adoption, and adaptive capabilities influence the scalability of construction start-ups (Kero & Bogale, 2023). The chapter also draws on local and international research to contextualise these themes and identifies existing gaps that this study seeks to fill, particularly the lack of focused research on scaling mechanisms for construction start-ups within the Gauteng province. By synthesising current academic discourse and industry reports, this chapter lays the foundation for understanding the conditions under which construction start-ups can thrive and scale in a highly competitive and constrained environment.

2.2 Foundational Concepts Underpinning the Study

This section introduces foundational concepts from the broader entrepreneurship and small business literature that are critical for understanding construction start-up scalability. These concepts provide an analytical baseline before the chapter focuses on construction-sector-specific dynamics.

2.2.1 Scaling: Concept, Dimension and Indicators

Scaling is defined as how companies grow or expand in size, market reach and value creation (CIDB, 2025; Jansen et al., 2023). Scaling requires a start-up to develop its business or project activity in a manner which does not impact negatively on efficiency, resource allocation or performance (Jean, 2024). Growth, however, may be associated with inefficiencies, duplication of effort or wasted resources. Growth therefore means becoming bigger while scaling means becoming bigger more efficiently (CIDB, 2025).

Scale must therefore indicate growth and expansion, coupled with an improvement in performance. In the construction industry, scalability can therefore be defined through several characteristics. The company adopts repeatable project management tools and processes to improve coordination and workflow (Omotayo *et al.*, 2024a). Better performance through scalability can also be achieved through digitalisation or any technology use that positively disrupts current manual business processes (Chen *et al.*, 2021; Jane, 2024). This allows for turnover to increase at a greater rate as projects can now be completed in shorter time periods, more accurately and potentially with more scope for future business (Podder *et al.*, 2022). From a market point of view scaling allows the start-up to capture opportunities in higher-value market segments, serve new clients and expand beyond localised boundaries e.g. provincial tenders (World Bank, 2022).

Financial scaling requires the start-up to have access to working capital to support growth (Fatoki, 2014b; Gounden, 2021). As the company scales it will likely experience stronger financial controls and possibly access to credit facilities which support expansion (CIDB, 2022b). Organisational scalability will include improvements to governance, leadership and human capital (Cavusgil &

Deligonul, 2024). Often in construction this is overlooked as construction businesses scale but the technical capacity and project management ability of the growing start-up must also be considered (Thwala & Phaladi, 2019).

Measuring scalability can be difficult as the term itself is subjective, however using the descriptions described above several indicative aspects can be used to measure if a construction start-up is scaling or growing. These indicators include:

1. Turnover increases (CIDB, 2025)
2. Value of contracts (Jansen *et al.*, 2023)
3. Positive cashflow (CIDB, 2022b)
4. Improvements to CIDB grading (CIDB, 2025; Doman, 2023)
5. Adoption of digital technologies (Chen *et al.*, 2021; Jane, 2024)
6. Expansion into new markets (World Bank, 2022)
7. Management and organisational capabilities (Cavusgil & Deligonul, 2024; Omotayo *et al.*, 2024a)

These are the dimensions that will be analysed to determine how construction start-ups scale within the South African context. Literature explains how scaling occurs but what is not clear is what the drivers of scaling are and what constraints are hindering scaling for construction start-ups in Gauteng (Satish *et al.*, 2024; CIDB, 2022b).

2.2.2 Nature and Dynamics of Start-ups

Generally, start-ups are considered as “newly launched businesses that operate in highly uncertain and resource-constrained environments” (Cardinal *et al.*, 2018; Yucel & Azhar, 2023). Moreover, the elements associated with start-ups include unique business models that are unrefined and developing, limited access to resources such as funding and personnel (Ruggieri *et al.*, 2018; Chen *et al.*, 2021). As small companies themselves, start-ups often also lack well-established systems and reputations within their respective markets (Zajko, 2017; Omotayo *et al.*, 2024b).

Fundamentally, start-ups differ from SMMEs. While SMMEs cover a range of small businesses including businesses that have successfully scaled, start-ups do not constitute stable businesses (SEDA, 2023; Bvuma & Marnewick, 2020). There is a distinct difference between an evolving start-up and a steady small-medium business. SMMEs range from new businesses to small established companies (Fatoki, 2014a). Many SMMEs operate within their defined market and do not have an interest in growing. Start-ups, however, are inherently growth-driven. Their objective is not only to operate as a start-up, but to scale their operations, expand their market reach, and develop sustainable competitive advantages (Smit & Nene, 2022; Ndjama & Westhuizen, 2024).

Due to these characteristics, start-ups tend to rely on experimentation, rapid learning, and adaptive decision-making (Ruggieri *et al.*, 2018; Chen *et al.*, 2021). Their survival depends on the ability to identify viable opportunities, adjust their strategies quickly, and achieve product–market fit (Stampfl *et al.*, 2013). This process of learning and iteration allows start-ups to establish scalable operational models and position themselves for long-term growth (Jean, 2024). In contrast, established SMMEs often rely on structured and proven systems rather than constant adaptation (SEDA, 2023).

In the construction sector, these dynamics become even more pronounced. Construction start-ups face unique early-stage challenges that go beyond those of typical entrepreneurial ventures (Omotayo *et al.*, 2024a; Hailu & Tshehla, 2025). They must quickly build industry credibility, demonstrate compliance with regulatory and safety standards, and prove their ability to deliver projects effectively (CIDB, 2023; Ntuli & Allopi, 2014). At the same time, they operate in a project-based and capital-intensive environment where cash flow is often volatile and risks are high (Fatoki, 2014a; Gounden, 2021). These pressures require construction start-ups to be especially agile and resilient, balancing the need for innovation and scalability with the demands of operational reliability and financial stability (Chen *et al.*, 2021; Cavusgil & Deligonul, 2024).

Understanding the nature and dynamics of start-ups is therefore critical for analysing the growth trajectories of construction enterprises in Gauteng (Yucel & Azhar, 2023; Hailu & Tshehla, 2025). It provides insight into why many construction start-ups struggle to scale and how those that succeed develop the organisational and strategic capabilities necessary to transition from early-stage start-ups into sustainable, competitive construction SMMEs (Jean, 2024; Omotayo *et al.*, 2024b).

2.2.3 Entrepreneurial Ecosystems

Entrepreneurial ecosystems describe the interconnected environment in which entrepreneurial companies are created, supported, and developed (OECD, 2022; SEDA, 2023). These ecosystems consist of a wide range of actors and structures, including government institutions, regulatory bodies, financial organisations, markets, industry networks, and support agencies (CIDB, 2022a; World Bank, 2022). Together, these components create the conditions that either enable or constrain the survival and growth of start-ups within a specific economic and institutional context (Infrastructure South Africa, 2024). At its core, an entrepreneurial ecosystem influences how easily a new venture can access the key resources required for scaling (Fatoki, 2014b; Smit & Nene, 2022). This includes access to finance and credit, mentorship and training, infrastructure and technological support, regulatory guidance, and market opportunities (SEDA, 2023; SSACI, 2024). A strong and well-coordinated ecosystem provides start-ups with the institutional backing and networks necessary to grow sustainably (OECD, 2022). Conversely, fragmented or poorly aligned ecosystems create structural barriers that make it difficult for start-ups to expand their operations or compete effectively (World Bank, 2022).

For construction start-ups in South Africa, the entrepreneurial ecosystem plays a particularly important role. The construction sector is highly regulated and relies heavily on procurement systems, contractor development frameworks, and formal grading structures such as the CIDB (CIDB, 2022b; Windapo & Cattell, 2013). These systems determine not only who can participate in tenders, but also how companies progress from entry-level projects to larger, more complex infrastructure contracts (CIDB, 2025). As a result, the ability of construction start-ups to scale is strongly influenced by the effectiveness and coordination of the broader ecosystem in which they operate (Omotayo *et al.*, 2024a; Satish *et al.*, 2024). Where institutional support structures are weak, delayed, or inconsistent, construction start-ups face challenges in gaining market access, securing project finance, and maintaining operational stability (CIDB, 2022b; Fatoki, 2014a).

These limitations directly affect their capacity to scale and transition into higher CIDB grades (Thwala & Phaladi, 2019).

Understanding the nature of entrepreneurial ecosystems is therefore essential for explaining why many construction start-ups remain trapped in lower grading levels and what systemic interventions are required to improve their growth prospects (OECD, 2022; World Bank, 2022; Satish et al., 2024). In this way, entrepreneurial ecosystems provide a useful analytical lens for the study, linking the internal challenges faced by construction start-ups with the external institutional and policy environment that shapes their development and scalability within Gauteng and South Africa more broadly (CIDB, 2022b; SEDA, 2023).

2.2.4 Start-up Support Mechanisms and Cross-Sector Support Frameworks

Start-up support mechanisms refer to the range of financial and non-financial interventions designed to promote the formation, survival, and growth of small and emerging enterprises across different industries (SEDA, 2023; OECD, 2022). These mechanisms play a critical role in shaping the entrepreneurial landscape, particularly in developing economies where new ventures face structural, financial, and institutional constraints (World Bank, 2022; UNIDO, 2023). Their purpose is to create an enabling environment that allows start-ups to transition from early-stage operations into stable and scalable businesses (CIDB, 2022a). From a financial perspective, support mechanisms typically include access to credit, blended and development finance, loan guarantees, and targeted funding programmes aimed at reducing the capital barriers faced by start-ups (Fatoki, 2014b; Gounden, 2021; SSACI, 2024). These forms of financial assistance are essential for enabling construction start-ups to invest in equipment, technology, and human capital, which are key drivers of scaling (CIDB, 2022b; Omotayo et al., 2024a). Without such support, many start-ups struggle to move beyond subsistence-level operations (Leboea, 2017; Mhlongo & Daya, 2023).

In addition to financial support, start-ups benefit significantly from non-financial mechanisms. These include structured incubation and acceleration programmes, mentorship and training initiatives, business development services, market access facilitation, and procurement set-asides that create opportunities for small enterprises to participate in larger value chains (OECD, 2022; Smit & Nene, 2022; SEDA, 2023). Such interventions help start-ups strengthen their internal systems, improve managerial and technical capacity, and enhance their ability to compete for higher-value projects (CIDB, 2022a; Thwala & Phaladi, 2019). However, existing literature suggests that many support mechanisms fail to deliver the expected impact. This is often due to poor coordination between institutions, limited policy follow-through, complex administrative processes, and a lack of alignment between the support offered and the real operational challenges faced by early-stage businesses (World Bank, 2022; OECD, 2022; CIDB, 2022b). These shortcomings disproportionately affect start-ups that lack strong management structures or institutional networks, thereby constraining their scaling potential (Fatoki, 2014b; Leboea, 2017).

Within the South African construction context, these cross-sector support frameworks provide a useful foundation for evaluating the effectiveness of industry-specific contractor development programmes. They allow for a clearer understanding of whether existing construction-focused interventions adequately address the financial, organisational, and market-related barriers that

prevent start-ups from scaling and progressing within the CIDB grading framework (CIDB, 2022a; CIDB, 2025; Omotayo et al., 2024a).

2.3 Background of the Construction Industry

Building on the foundational concepts of scaling, start-up dynamics, entrepreneurial ecosystems and start-up support mechanisms, this section contextualises the construction industry and the specific environment within which South African construction start-ups operate (Crnogaj & Rus, 2023). The construction industry is recognised as a critical sector for the economic development and growth of both developed and developing countries (Durdyev & Ismail, 2012; Oke *et al.*, 2016). In South Africa, the industry is central to national infrastructure delivery, job creation, and spatial transformation (Watermeyer & Phillips, 2020b; Sesele, 2022). Recent Statistics South Africa (Stats SA) data confirms that the construction sector contributes approximately 3%–4% to South Africa’s GDP, and employs over 1.3 million people nationally, highlighting its importance in the country’s broader economic landscape (Stats SA, 2023; Stats SA, 2024). However, construction start-up performance and scalability remain key concerns, particularly in the context of today’s economic, regulatory, and market uncertainty (CIDB, 2022a; Hove, 2016b). Existing research on the scalability of construction start-ups is limited and relatively nascent (Yucel & Azhar, 2023; Hanifzadeh *et al.*, 2024). Much of the current literature on construction entrepreneurship focuses on broad themes around SMME development rather than early-stage construction start-ups specifically (González *et al.*, 2024). This is particularly true in emerging economies like South Africa, where issues of structural inequality and historical exclusion which is deeply rooted in the apartheid era, shape the entrepreneurial landscape in unique ways (Rogerson, 2008; Molefe, 2019).

Construction is a capital-intensive, project-based, and risk-intensive industry, characterised by fragmented markets, low profit margins, and cyclical demand (Mokhtariani *et al.*, 2017; Watermeyer & Phillips, 2020a). These factors present substantial barriers to entry for new and emerging businesses that are unestablished or lack robust financial and operational systems (Nawi *et al.*, 2014; Omotayo *et al.*, 2024a). Stats SA (2024) further notes that the construction industry has experienced slow and negative growth in recent years, largely due to declining infrastructure investment, rising material costs, and regulatory inefficiencies, all of which disproportionately affect start-ups and smaller companies. In general, start-ups find it hard to source adequate working capital, as well as to control costs of inputs and mitigate fluctuations in exchange rates, labour, and materials, especially in the case of foreign-owned businesses (Mofokeng & Thwala, 2018b; Watermeyer & Phillips, 2020a). There is also a lack of skilled labour and accredited certifications in the industry, which are necessary to compete for large-scale public tenders (ACF, 2019). In addition, because the industry often operates on a tender-based project acquisition model, cash flows and revenue can be inconsistent and subject to high levels of competition (Koopman & Cumberlege, 2021). This can be particularly challenging for early-stage construction start-ups without established brand recognition or business development capabilities (Windapo & Cattell, 2013).

Construction start-ups aiming for scalable growth must effectively address various challenges across domains, including financial management and access to working capital, customer

acquisition and sales, technology adoption and integration, supply chain management and optimisation, human capital and talent acquisition, and development, and many others (Zajko, 2017; Corvello *et al.*, 2023; Omotayo *et al.*, 2024c). At the same time, they must often grapple with reconciling these efforts with the integration of modern innovations (e.g. modular construction, BIM, and automation) into legacy systems, outdated contracting and payment practices, and cumbersome compliance frameworks (McKinsey & Company, 2021; Podder *et al.*, 2022; Jane, 2024). For construction start-ups in South Africa, these existing constraints are further exacerbated by macroeconomic factors such as exchange rate fluctuations, high inflation and rising input costs, low access to affordable working capital and other forms of financing, long public sector payment cycles, and structural inefficiencies that limit margins and affect cash flow management (CIDB, 2022a; Fatoki, 2014a). In order to more concretely contextualise some of these challenges within the South African construction environment, Table 2.1 below will outline the CIDB grading framework, which categorises construction companies based on their financial size, project values, and potential growth prospects.

In an effort to better understand and characterise the growth profiles of different players in the South African construction landscape, a formalised classification system is provided by the CIDB (Windapo & Cattell, 2013; CIDB, 2022b). As per the CIDB, construction companies are segmented in accordance with a lifecycle framework into one of three main categories. The categories are Construction Start-ups (Grades 1–3), Successful Construction Companies (Grades 4–6), and Established Construction Companies (Grades 7–9). Each of these broad groupings exists on a spectrum of nine discrete grading categories that are defined by a combination of financial capability, ability to deliver on projects, and industry recognition (CIDB, 2022b).

Table 2.1: CIDB Contractor Grading System: Categories, Characteristics, Challenges and Tender Value Ranges

CIDB Grade	Category	Characteristics	Key Challenges	Typical Projects	Upper Limit of Tender Value Range
Grade 1 to 3	Construction Start-ups	• Small scale operations • Limited Experience • Lack of Industry Recognition • Financial Constraints	• Accessing larger projects • Financial Instability • Lack of Industry Visibility	Low-value Contracts	Grade 1 – R500 000 Grade 2 – R1 000 000 Grade 3 – R3 000 000
Grade 4 to 6	Successful Construction Companies	• Stability and improved financial capacity • Ability to handle mid-sized projects	• Strategic growth planning • Scaling further • Competing with	Mid-sized projects	Grade 4 – R6 000 000 Grade 5 – R10 000 000 Grade 6 – R20 000 000

		• Building a reputation	established companies		
Grade 7 to 9	Established Construction Companies	• Market Leaders • Extensive Experience • Strong Financial Backing • Capability to execute large-scale projects	• Maintaining market leadership • Managing large scale projects efficiently	Large-scale government and private sector contracts	Grade 7 – R60 000 000 Grade 8 - R200 000 000 Grade 9 – No Limit

Source: Adapted from CIDB (2022)

Table 2.1 above summarises some of the key characteristics and major challenges associated with each of the aforementioned groupings, as well as the types of projects they are typically involved in and the maximum thresholds of tender values that they are qualified to take on. Grades 1–3 companies are small in size, with little to no experience within the industry, minimal financial resources, and low industry profile. As such, they deliver low-value contracts and have a tender limit of R500 000 – R3 million, with projects typically not qualifying for larger tenders (Thwala & Phaladi, 2019). As companies progress to Grades 4–6, they begin to show promise in terms of financial stability, operational capacity, and reputational capital, which allows them to take on mid-value contracts with a tender limit of R6 million – R20 million (CIDB, 2022b). However, these companies often struggle with issues around strategic planning for growth, scaling operations, and production, and meeting and maintaining operational standards to compete against more established industry players. Towards the other end of the spectrum, Grades 7–9 represent established companies that hold significant positions as market leaders in the South African construction industry. These companies have a long history of experience, large financial backing, and have the technical and operational capacity to deliver complex public and private sector contracts. Companies operating in these categories are qualified for large-scale contracts with a tender threshold of R60 million to R200 million, while Grade 9 companies have no tender threshold limit. As market leaders in the industry, their major challenges often come from the need to maintain such positions, and operational challenges of managing more complex projects (CIDB, 2022a).

The above categorisation provides context for understanding the core nature of the scalability problem in the South African construction industry, with the majority of start-ups often remaining in CIDB Grades 1–3 and, eventually, with little to no growth potential as a result of a number of issues, such as limited or no access to finance, lack of access to technical assistance, and a lack of policy follow-through and implementation. As Gounden (2021, p.115) points out, “unless this is changed, the potential economic and developmental benefits of expanding the pool of successful new entrants remain unfulfilled”. It is in light of this that the present study aims to evaluate the issues that prevent construction start-ups from moving beyond CIDB Grades 1–3.

2.4 Evolution of Construction Entrepreneurship in South Africa

In South Africa, construction entrepreneurship has been intertwined with the country’s broader socio-political and economic shifts. During apartheid, the formal construction industry was largely reserved for white-owned businesses, with black entrepreneurs pushed to the margins or the

informal “subsistence” economy (Rogerson, 2008; Thwala, 2010). Large, established white-owned companies, often family-run and with connections to the government, dominated the industry. Black-owned or historically disadvantaged businesses found limited access to opportunities, skills development, and resources such as financing and infrastructure (Fairlie & Robb, 2005). This resulted in a construction industry with deeply entrenched disparities between well-resourced large companies, and small, resource-constrained black entrepreneurs, a divide which still continues to this day. After the democratic transition in 1994, a number of policy and institutional interventions were put in place to open up the industry. These included the Broad-Based Black Economic Empowerment (B-BBEE) policy and the CIDB Act (Aigbavboa, 2014). These mechanisms have attempted to support entry and participation in the construction industry through preferential procurement policies, enterprise development, and support, as well as professionalisation through contractor grading and registration (CIDB, 2022a; DTIC, 2019). Many of these policies are designed to formalise previously excluded black entrepreneurs into the construction economy by providing preferential access to procurement, development, and compliance support (CIDB, 2022b; DTIC, 2019). However, black entrepreneurs and new entrants continue to face challenges in terms of accessing finance, skills, and capacity development, and navigating the regulatory and compliance landscape (Windapo & Cattell, 2013; Molefe, 2019).

In the present day, construction start-ups continue to struggle to grow their operations and transition from service providers to scalable, competitive construction enterprises (Anugwo & Shakantu, 2016; Ntuli & Allopi, 2014). There is thus a tension between formal mechanisms of entry into the industry and the practical barriers to scaling that continue to challenge small and new entrants (Islami *et al.*, 2019; Vilakazi *et al.*, 2020). Construction entrepreneurship in the South African context has traditionally been shaped by the need to overcome barriers to entry, access to skills, resources, and markets (Haasje, 2006). For established and larger companies, business is often driven by longstanding relationships, reputation, and relatively stable market conditions (Rogerson, 2008; Thwala, 2010). The larger construction companies, especially white-owned companies, are typically well-established with a strong market share and client bases within the public and private sectors (Windapo, 2017). For new entrants or small, black-owned businesses, the emphasis on entry and B-BBEE compliance may limit the focus on the internal capabilities required to build and scale a competitive enterprise (Windapo & Cattell, 2013; Molefe, 2019).

2.5 Challenges faced by the Construction Industry

Several key barriers hinder the growth of construction start-ups. The main barriers, which have been identified, can be broken down into fragmentation and customer acquisition, financial constraints, technological and operational limitations, regulatory and environmental barriers and ineffective financial management (Aghimien *et al.*, 2019; Azeem *et al.*, 2020). Among these challenges, fragmentation and customer acquisition represent particularly critical issues, as they directly influence how start-ups establish market presence, secure projects, and sustain long-term growth.

2.5.1 Fragmentation and Customer Acquisition

Fragmentation in the construction industry, refers to the sector's highly decentralised nature, where projects are executed by multiple independent companies, subcontractors, and professionals, often

resulting in coordination challenges and inconsistent client relationships (Nawi *et al.*, 2014; McKinsey, 2021). For construction start-ups in South Africa, fragmentation is less of a challenge and more of an industry norm, as construction projects are typically once-off engagements with different clients, depending on the nature of the work (Goulding & Arif, 2013). Unlike other industries that rely on long-term client relationships, construction start-ups must continuously seek new contracts, making client acquisition an ongoing process (Watermeyer & Phillips, 2020b). This can increase marketing costs, as construction companies must consistently attract new business rather than relying on repeat customers (World Bank, 2020).

2.5.2 Financial Constraints

Financial constraints continue to be one of the primary obstacles to the scalability and sustainability of construction start-ups in South Africa (Maboya & McKay, 2019b). Budget limitations, irregular cash flows, high operating expenses, and the unavailability of affordable capital frequently characterise the financial management practices of start-ups in this industry (Tucker *et al.*, 2015; Lula, 2014; Schimdt *et al.*, 2017). The capital-intensive nature of civil engineering, coupled with tight profit margins, makes investment difficult to obtain (Barbosa *et al.*, 2017). Despite the numerous financing opportunities available in South Africa for start-ups, access to these opportunities is restricted for start-ups due to strict banking regulations and many other restrictive formal financial requirements (Schimdt *et al.*, 2017). Consequently, many start-ups are forced to utilise costly financing options that result in a high degree of cash flow volatility and put additional constraints on growth (Farmer, 2016; Schimdt *et al.*, 2017). In contrast to well-established companies that have greater access to financial networks and long-term relationships with stakeholders, the capacity to obtain credit on favourable terms can be challenging for start-ups, leaving them more exposed to volatility (Lula, 2024).

Unsustainable financial management practices, such as inadequate cash flow forecasting and poor financial planning, resulting in overspending and a lack of capacity, are among the primary concerns of financial constraints among construction start-ups (Mofokeng & Thwala, 2018b). This problem is further exacerbated by lengthy payment cycles common in the construction industry, which ties up liquidity and can disrupt business operations (Tucker *et al.*, 2015). Inflation and rising material costs can also create significant pressure on construction start-ups to effectively control project budgets and preserve profitability (Musarat *et al.*, 2020; Alabi & Fapohunda, 2021). Smaller and newer construction companies are more likely to be affected by external factors such as labour shortages, supply chain disruptions, and economic downturns, while larger and more established construction companies have more financial resources, diversified assets, and stakeholder trust that can help them to weather such events (Tucker *et al.*, 2015; Lula, 2024).

2.5.3 Technological and Operational Limitations

Despite the global shift towards digitalisation in the construction industry, South African start-ups are plagued by a multitude of technological and operational challenges that curtail their scalability (Kubjana *et al.*, 2024a). The primary challenge is their limited access to construction-specific technologies, which directly impacts the industry's efficiency and innovation capacity (Breaugh *et al.*, 2021a). This includes a deficiency in BIM software, automation equipment, and digital tools for project management and collaboration (van Wyk *et al.*, 2021a). The shortage of skilled

construction professionals, adept at using and managing these technologies is another major impediment (Kubjana *et al.*, 2024b). These two factors contribute to a low adoption rate of modern construction technologies, forcing many start-ups to rely on manual and labour-intensive processes (van Wyk *et al.*, 2021b). The high costs associated with acquiring and maintaining state-of-the-art construction equipment and machinery are also formidable barriers to entry and growth for these start-ups (Ofori, 2019). Additionally, the lack of infrastructure, poor internet connectivity, and minimal government incentives to encourage digital adoption further exacerbate these challenges (World Bank, 2021). In comparison to global peers, South African construction start-ups lag behind in the integration and application of digital technologies (van Wyk *et al.*, 2021a). Addressing these issues requires focused investments in digital skills training, government support for technology adoption initiatives, and increased access to affordable, scalable digital solutions specific to the South African construction industry (Komna & Mpungose, 2024; Ndjama & Westhuizen, 2024).

2.5.4 Regulatory and Environmental Barriers

In South Africa, construction start-ups face significant challenges related to regulatory compliance, environmental requirements, and infrastructural limitations, which collectively constrain business growth and scalability (Rogerson, 2008; CIDB, 2022b). These challenges are not unique to the construction sector but are particularly pronounced due to the industry's heavy regulation, project-based nature, and dependence on public-sector procurement (Windapo & Cattell, 2013; World Bank, 2022). Compliance with multiple regulatory frameworks, including CIDB registration requirements, environmental impact assessments, health and safety legislation, and labour regulations, imposes substantial administrative and financial burdens on construction start-ups with limited managerial capacity (Edwards, 2021a; Edwards, 2021b; CIDB, 2022a). Lengthy and complex permitting processes, coupled with frequent changes in regulatory and sustainability standards, often result in project delays, increased compliance costs, and uncertainty in project planning (OECD, 2022). For start-ups operating with limited cash flow and tight margins, such delays can significantly affect project viability and business continuity (Fatoki, 2014a; Leboea, 2017). In addition, environmental compliance requirements related to sustainable construction practices and climate adaptation, while necessary, can increase upfront costs and require specialised expertise that many start-ups do not possess (Weiss *et al.*, 2021; UNIDO, 2023).

Infrastructure-related constraints further exacerbate these challenges. Limited road access in certain regions, unreliable electricity supply, water shortages, and regional scarcities of construction materials increase operational costs and disrupt project timelines (Thusi & Mlambo, 2023; Infrastructure South Africa, 2024). Persistent energy supply disruptions and rising input costs also reduce productivity and competitiveness, particularly for small contractors who lack the financial buffers available to larger construction companies (CIDB, 2024). Broader macroeconomic and market uncertainties, including inflationary pressures, interest rate volatility, and fluctuating demand for construction services, add another layer of risk for construction start-ups (OECD, 2022). Economic downturns and delays in public-sector infrastructure spending can result in project cancellations or deferred payments, further weakening cash flow and undermining growth prospects (Velez-Ocampo & Gonzalez-Perez, 2021; CIDB, 2020). Collectively, these regulatory and environmental barriers create a highly uncertain operating environment that

significantly constrains the ability of construction start-ups in South Africa to scale sustainably (World Bank, 2022; Satish *et al.*, 2024).

2.6 Opportunities for Growth and Innovation

The landscape for construction start-ups is defined not only by challenges but also by a number of emerging enablers that could facilitate market entry and expansion (Hailu & Tshehla, 2025; Omotayo *et al.*, 2024a). These include various construction technologies that promise increased efficiency and productivity, the alignment of business models to green growth imperatives, and the leveraging of strategic partnerships and networks (van Wyk *et al.*, 2021a; Yucel & Azhar, 2023). If well harnessed, these enablers may offer construction start-ups opportunities to optimise operations, reduce costs, and access new market segments (Lartey, 2025).

The growing availability and affordability of construction technology tools and platforms is one of the key emerging enablers in the built environment sector (Olanrewaju, 2025). Start-ups could use construction technology solutions to modernise project delivery and improve productivity. For example, BIM software can help in creating and managing digital representations of physical infrastructure components (Podder *et al.*, 2022; Bryde *et al.*, 2013). BIM can enable early detection of design errors, facilitate more accurate quantity take-offs, and reduce rework, saving time and money on projects (Samimpay & Saghatforoush, 2020). Automated project management software can improve scheduling accuracy, resource allocation, and team coordination (Ahn *et al.*, 2021). It can also reduce administrative overheads and improve the ability to monitor tasks, mitigate delays, and communicate changes (Nabeel, 2024). Drones and remote sensing technologies can also be utilised for site surveillance and inspection, enabling real-time monitoring, safety compliance, and progress tracking, while reducing the costs and risks of manual site surveys (Li & Lu, 2020).

Modular construction and prefabrication techniques can also allow start-ups to deliver more efficient and less wasteful built environments (Lakhani, 2024). Off-site construction and on-site assembly can significantly shorten project timelines, reduce weather-related disruptions, and minimise material wastage, leading to higher project profitability (Gerges *et al.*, 2017a; Kamar *et al.*, 2010). For start-ups that typically have leaner budgets and tighter timelines, these digital and prefabrication innovations can serve as force multipliers, allowing them to offer competitive prices, faster delivery, and comparable or better quality when competing against established players, especially for standardised housing, education, and healthcare infrastructure (Kayser *et al.*, 2023; Adewumi *et al.*, 2024; Lakhani, 2024).

South Africa is also experiencing regulatory and policy reforms that are not yet sufficiently on the radar but present great growth opportunities (Finmark, 2025). For example, the African Continental Free Trade Agreement (AfCFTA) seeks to lower cross-border trade barriers across the African continent (Weiss *et al.*, 2021). In the longer term, construction start-ups may find it easier to cross-sell into other African countries' markets, access cheaper materials, skilled labour and even investment from neighbouring economies. Government policies are also increasingly encouraging infrastructure development, including green building (Pasquini & Enqvist, 2019). The implementation of infrastructure projects across the country, including Gauteng, is opening up new opportunities for start-ups in sustainable construction, modular housing, and smart infrastructure

solutions (Meena *et al.*, 2022). Adapting to regulatory and policy changes, and tapping into emerging opportunities as the government implements the Infrastructure Investment Plan and Strategic Integrated Projects (SIPs) (Infrastructure South Africa, 2024; Watermeyer & Phillips, 2020b), is likely to present a key success factor for start-ups.

Public works contracts, infrastructure procurement, and other similar opportunities are critical market expansion opportunities (IISD, 2016; OECD, 2021). For example, government agencies and public entities are required to allocate a certain percentage of their procurement to local suppliers through the Preferential Procurement Policy Framework Act (PPPFA) (DTIC, 2019). The new scoring criteria represent a significant intervention in creating an enabling environment for small players. However, start-ups must have the capacity to take full advantage of such opportunities (Bhorat & Asmal, 2022). Collaboration with government agencies, including through mentorship, and technical partnerships, can also provide support and avenues for participating in larger and more complex infrastructure projects (Justus *et al.*, 2010; Ajayi-Nifise *et al.*, 2024). South Africa has a number of large-scale public infrastructure projects in the pipeline under the Infrastructure Investment Plan and Strategic Integrated Projects (SIPs), which seek to mobilise private-sector investment and delivery capacity to close the backlog in service delivery (Infrastructure South Africa, 2024; Watermeyer & Phillips, 2020a).

Beyond procurement, another defining feature of South Africa's construction sector is its fragmented market structure, which is characterised by numerous start-up contractors competing for limited projects (Hove, 2016a; ACF, 2020). Although fragmentation is often viewed as a structural weakness that leads to inefficiencies and inconsistent project pipelines, it can also present unique opportunities for start-ups (Windapo & Cattell, 2014; Nawi *et al.*, 2014). When strategically managed, fragmentation allows construction start-ups to build strong industry networks, specialised in niche markets, and position themselves within established supply chains, thereby securing a steady flow of work (Farhana & Swietlicki, 2020; Hokmabadi *et al.*, 2024). While fragmentation may result in higher client turnover, it simultaneously offers diversification of experience and broader market exposure (Nawi *et al.*, 2014; Ke *et al.*, 2022). By leveraging this fragmented landscape, start-ups can cultivate resilience, enhance adaptability and expose their presence across different construction segments (Li *et al.*, 2024; Hokmabadi *et al.*, 2024).

Public procurement remains a key opportunity space for scaling up in the short to medium term, given the predictable project pipeline and long-term contracts associated with government infrastructure delivery projects (OECD, 2024). However, to fully participate in such opportunities, start-ups must strengthen their internal capabilities in terms of compliance requirements, project documentation, financial management, and stakeholder engagement (Gutterman, 2023). Government has been amending South Africa's Preferential Procurement Policy Framework Act (PPPFA) and B-BBEE scoring criteria to level the playing field for new market entrants (DTIC, 2019; CIDB, 2022a). While this is laudable, start-ups still need to demonstrate both technical and administrative capability to fully participate and bid successfully for such tenders (Talebi *et al.*, 2021).

Despite the persistent challenges within the South African built environment, the construction industry is increasingly characterised by a growing and diverse ecosystem of opportunities. These

opportunities are being driven by technological advancements, shifts in regulatory frameworks, and evolving market forces (van Wyk *et al.*, 2021a; Omotayo *et al.*, 2024b). However, for construction start-ups to effectively access these opportunities, there is a need for a responsive and well-aligned ecosystem of support systems. Such an ecosystem should include enabling policies, accessible financing mechanisms, inclusive procurement practices, and initiatives for internal capacity development (Corvello *et al.*, 2023).

2.6.1 Technological Opportunities and Adoption Constraints

While Section 2.6 highlights technology as an enabler, this sub-section expands on the uneven adoption of construction technology and the barriers that constrain diffusion and scaling among construction start-ups in South Africa. In South Africa, the spread of technological innovation remains nascent and uneven among construction start-ups. Structural and contextual barriers limit the extent of technology diffusion, constraining the capabilities of construction start-ups to achieve competitive advantage and scale operations (Kubjana *et al.*, 2024b; van Wyk *et al.*, 2021a).

Evidence suggests that digital tools like BIM, drones for site inspection, automated scheduling software, or real-time project tracking systems have been adopted by less than 30% of construction start-ups in South Africa (Tambwe *et al.*, 2021; Jane, 2024). The reasons for low take-up are various but interrelated. The first and often-cited reason is the high upfront and maintenance costs of construction technologies, creating financial barriers for start-ups with limited access to affordable credit (Windapo & Cattell, 2013; Gerges *et al.*, 2017b; van Wyk, 2021). The second reason is the low digital literacy levels of construction workers and business owners. A lack of technical skills and confidence prevents construction start-ups from effectively integrating digital tools into their operations (Ofori, 2020). The third reason is scepticism or inertia towards untested and unfamiliar technology. Perceived risk of failure, lack of local technical support, and uncertainty about ROI can disincentivise start-ups from experimenting with new digital tools (Kubjana *et al.*, 2024a). However, the promise of technological innovation is significant for start-ups. Emerging construction technologies can be transformative for businesses by speeding up construction time, lowering costs, and improving design accuracy (Dagou *et al.*, 2025). In particular, modular construction, 3D printing, and automation offer clear benefits through efficiency, cost reduction, and enhanced design precision (Ghosh & Karmakar, 2024). Modular construction has been measured to result in gains from standardisation, off-site fabrication, and lower on-site labour intensity (Kamar *et al.*, 2010; Chen, 2023). A recent example is the Govan Mbeki Municipality pilot project which has demonstrated the viability of a localised, low-cost, and scalable approach to rapidly deploy modular housing in under-serviced urban settlements (CIDB, 2022b).

At the same time, smart construction technologies, including Internet of Things (IoT) sensors, AI, and data analytics, can enhance safety, and real-time monitoring, predictive maintenance, and performance analytics for infrastructure (Marzouk & Abdelkhalek, 2020). Although these innovations are still in early stages of local deployment, they can be early entry points for proactive start-ups to differentiate their value proposition and capture higher-value segments of the construction value chain (Adewumi *et al.*, 2024). Crucially, technology is not just an operational enabler, but a strategic foundation for growth and positioning in a competitive market (Meena *et*

al., 2022). Construction start-ups that embrace ConTech and build digital capabilities can respond more readily to clients' expectations and demands, comply with the heightened sustainability standards, and enter modern procurement processes that demand efficiency, transparency, and digital integration (Podder *et al.*, 2022; Kayser *et al.*, 2023).

2.7 Public-Private Partnerships (PPPs), Policy Frameworks and Collaborative Pathways

South Africa has long recognised the transformative potential of infrastructure-led development and, over the past two decades, has increasingly leveraged public-private partnerships (PPPs) as an innovative modality to mobilise the private sector's capital and technical skills towards the delivery of public infrastructure (Trebicock & Rosenstock, 2015; Zubair, 2023). The rationale for the PPP model has been to share risks between the government and the private sector, attract new sources of funding, and improve the efficiency and quality of service delivery with reduced fiscal burdens on the state (Burger & Hawkesworth, 2013; World Bank, 2021). The South African PPP approach is aligned with national policy frameworks such as the National Development Plan and the Infrastructure Investment Plan which underscore the prioritisation of large-scale infrastructure investment to drive inclusive economic growth, create jobs, and promote spatial transformation and development (Infrastructure South Africa, 2023).

Despite these opportunities, participation in PPPs is regulated and restricted to companies with higher levels of capacity and capability (Zubair, 2023). It has been found that there is a lack of institutional capacity among contractors, which affects their ability to meet the stringent pre-qualification criteria for these projects. Additionally, it has been argued that a pervasive exclusionary culture exists within the contractor network (Anugwo *et al.*, 2018). The CIDB itself has reported factors such as cumbersome prequalification requirements, weak institutional capacity, and a widespread exclusionary culture within the contractor fraternity (Watermeyer & Phillips, 2020a). Requirements for PPP procurement include a track record of technical capability and financial strength, as well as experience in handling projects of significant value. Smaller contractors and start-ups, especially those within CIDB Grades 1–3, may struggle to meet these stringent requirements (World Bank, 2019). This limited participation in PPPs constrains the growth potential of start-ups, as they are unable to access a significant portion of the construction market that offers lucrative and stable revenue streams, a key enabler for scaling (Seeletse, 2016; Hove, 2016b).

Start-ups also stand to lose out by being shut out of PPPs, since it prevents them from building a portfolio of large projects, securing financial backing and endorsements, and establishing a track record with government bodies and investors (Villani *et al.*, 2017; Hailu & Tshehla, 2025). By having limited access to PPPs, start-ups are relegated to taking on lower-value, short-term contracts, unable to expand into more complex and long-term projects (Watermeyer & Phillips, 2020a; Zubair, 2023). The small start-up is then more likely to end up remaining undercapitalised and trapped in this vicious cycle (Hove, 2016b). The resultant inequality is itself disadvantageous for the larger goal of broad-based transformation and competitiveness in the sector (Windapo & Cattell, 2013; CIDB, 2022a). Government has responded to the above situation by deploying instruments like the Preferential Procurement Policy Framework Act, the B-BBEE Code of Good Practice and the Construction Sector Charter (DTIC, 2019). Despite the progressive aims and

policies outlined in these instruments, in reality, many contractors face issues with implementation gaps, administrative overheads, irregular tender adjudication and payments that disadvantage smaller contractors (Mofokeng & Thwala, 2018a; McCutcheon, 2016; Rogerson, 2008).

In light of this, the adoption of technology and collaboration have been considered as possible means to facilitate the ability of start-ups to build capacity and access resources, enabling them to overcome their inherent limitations (Ikuabe *et al.*, 2020). As such, start-ups can use digital technologies and strategic partnerships to enhance their operational capabilities, reach, and access to larger portions of the construction value chain (Chen *et al.*, 2021). Collaborations with larger and more established contractors, suppliers, and investors can help build credibility, as well as enable the start-up to take on larger projects (Farmer, 2016; Giglio *et al.*, 2025; Loosemore & Dainty, 2003). Partnerships with government or public agencies can be a viable option for start-ups looking to transition out of CIDB Grades 1–3 and access opportunities in the form of developmental PPPs or other programs, where they stand to gain mentorship, risk-sharing, and market access support (Liu *et al.*, 2023; Infrastructure South Africa, 2023).

For the purposes of this study, such cooperative approaches which are anchored in innovation, technology and inclusive policy reforms are considered essential in enabling Gauteng-based construction start-ups to move beyond start-up status. By strengthening collaboration between public institutions and construction start-ups, these strategies can promote scalability, sustainability and a more equitable contribution to South Africa's infrastructure and economic development.

2.8 Theoretical Frameworks

2.8.1 Introduction

The challenges that construction start-ups in South Africa face can be investigated through many theoretical lenses, each of which provide a possible solution on how to address the challenges of construction start-ups' scaling (Zajko, 2017; Hausmann *et al.*, 2023). Theory guides the progression of a study, supporting the basis for and justification of its validity (Adom *et al.*, 2018). The study employs four theories which will be utilised. The theories used are (1) Diffusion of Innovation (DOI), (2) Resource-Based View (RBV), and (3) the Dynamic Capabilities Framework (Nagano, 2020; Kim *et al.*, 2014), as discussed below.

2.8.2 Diffusion of Innovation (DOI) Theory

The Diffusion of Innovation (DOI) theory describes the process through which new ideas, products, or technologies are adopted and spread within a social system (García-Avilés, 2020). In construction, diffusion can be defined as the process of the widespread industry-level adoption of an innovation, through various mechanisms, including market demand, regulatory frameworks, and competitive pressures (Sartipi, 2020). Diffusion differs from Innovation Scaling, as it often happens organically or through a formalised process of knowledge and experience sharing across companies and regions, rather than a planned and controlled process of expansion (Chatterjee *et al.*, 2021). For instance, BIM was first adopted by large companies and then gradually diffused to smaller companies and different construction sectors as the value became more recognised and policies mandated its use (Tiza and Jiya, 2024). Diffusion is often triggered by external stimuli such as government regulations, industry standards, or early adopters who demonstrate the value

of an innovation and persuade others to adopt it (Schweber, 2013). In the case of the studied construction start-ups, diffusion of innovations such as modular construction, automation, and digital project management tools could be impacted by the existing industry practices, regulatory barriers, and lack of technical expertise (Lim *et al.*, 2022). Measures to facilitate adoption could include demonstration projects, industry collaborations, and government incentives to encourage diffusion and scaling of the innovations in the sector (OECD, 2020; Dede *et al.*, 2022).

In the context of this study, the DOI theory is used to explain how construction start-ups in Gauteng can acquire and spread new construction practices despite systemic barriers (van Wyk *et al.*, 2021b). Through examining the factors that facilitate or impede the diffusion of innovation, such as new technologies like digital tools, modular construction, and green building practices, the study illuminates how the process of innovation diffusion can act as an accelerator for scaling and enhance the competitiveness of construction start-ups, in South Africa's emerging construction ecosystem (van Wyk *et al.*, 2021b; Moghayedi *et al.*, 2022; Prinsloo & Bekker, 2025).

2.8.3 Resource-Based View (RBV)

The Resource-Based View (RBV) (Barney, 1991) proposes that companies maintain a competitive advantage by utilising their own resources and capabilities that are valuable, rare, imperfectly imitable, and non-substitutable (VRIN). RBV is grounded in the assumption of resource heterogeneity and immobility, meaning that companies differ in the resources they control and that these resources cannot be easily transferred or replicated by competitors (Madhani, 2010). Pertinent resources for construction start-ups in South Africa encompass financial capital, human expertise, intellectual property, and strategic networks (Sucena *et al.*, 2023). In the construction sector, where projects are complex and risk-intensive, intangible resources such as managerial competence, reputational capital, learning routines, and relational trust are particularly important for securing contracts and scaling operations (Alexandra, 2025). Nonetheless, challenges like limited access to funding, skills gaps, and weak institutional support may impede their scalability (Brunello, 2021).

RBV further distinguishes between resources and capabilities, with capabilities referring to the company's ability to integrate, coordinate, and reconfigure resources to achieve desired outcomes (Barney, 1991; Teece, 2022a; Cavusgil & Deligonul, 2024). For construction start-ups, this includes the ability to manage projects efficiently, control costs, comply with regulatory requirements, and adopt new technologies (CIDB, 2022b; Omotayo *et al.*, 2024a; Chen *et al.*, 2021). By leveraging unique value propositions, optimising resource utilisation, and forging strategic partnerships, construction start-ups can enhance scalability and competitiveness within the South African construction industry (Madhani, 2010; Adewumi *et al.*, 2024). However, RBV alone has been criticised for its relatively static view of competitive advantage, particularly in volatile environments such as the construction industry (Barney, 1991; Bleady *et al.*, 2018; Cavusgil & Deligonul, 2024). This limitation underscores the need to complement RBV with dynamic perspectives, such as the Dynamic Capabilities Framework, which explains how companies adapt and renew their resource base over time (Teece, 2022a; Cavusgil & Deligonul, 2024).

2.8.4 Dynamic Capabilities Framework

The Dynamic Capabilities Framework (DCF) (Teece, 2022a) further refines the RBV by focusing on the company's ability to sense opportunities, seize resources, and transform capabilities to sustain competitive advantage (Winter, 2003; Cavusgil & Deligonul, 2024). Examples of dynamic capabilities in start-up companies include strategic agility, innovation management, and adaptability to regulatory changes (Teece, 2018; Pigola *et al.*, 2022). In South Africa, start-ups must develop learning mechanisms, strategic foresight, and robust supply chain adaptability to scale their operations (Pillay, 2017). Enhancing dynamic capabilities enables start-ups to navigate market uncertainties, attract investment, and optimise operational efficiencies (Mokogwu *et al.*, 2024).

This study will utilise the DCF as its theoretical lens, which is grounded in the idea that a company's competitive advantage and long-term growth are dependent on its ability to sense, seize, and transform in response to changing market conditions and external opportunities (Cavusgil & Deligonul, 2024). The construction industry is highly volatile, with frequent changes in market demands, technological advancements, and regulatory landscapes (Chen *et al.*, 2021; Omotayo *et al.*, 2024a). Start-ups in this sector are not only required to have financial and technical resources, but also need to exhibit an adaptive and proactive approach to sustain and grow (Omotayo *et al.*, 2024c). Unlike static theories such as the Resource-Based View, which primarily focus on the possession of valuable resources, the DCF emphasises the company's active role in adapting and reconfiguring itself in a changing environment (Teece, 2022b). This framework is appropriate because the volatility of the construction industry requires start-ups to be more dynamic and capable of addressing both existing and emerging challenges to effectively transition from one CIDB grade to another (ACF, 2019). The DCF is particularly pertinent to the context of construction start-ups, primarily due to the following reasons.

- a) Sensing - The ability to identify and interpret emerging market opportunities, such as new government infrastructure initiatives, shifts in housing demands, or emerging technologies like modular construction and BIM, is crucial for any start-up. For those in lower CIDB grades, recognising such opportunities can be the difference between stagnation and breaking into more lucrative project markets (McLaughlin, 2017).
- b) Seizing - The mobilisation of financial, technical, and human resources to take advantage of identified opportunities is also key. For construction start-ups, this could involve securing affordable financing options, forming strategic joint ventures, and developing managerial skills to take on progressively larger and more complex projects (Pillay, 2017; Mokogwu *et al.*, 2024).
- c) Transforming - This aspect captures the reconfiguration of organisational structures, upgrading of operational systems, and embedding of learning processes to support the scaling process. This is particularly relevant to the South African context as many start-ups stagnate at the lower CIDB grades due to a lack of adaptability, weak governance structures, and an inability to innovate (Cavusgil & Deligonul, 2024).

In adopting the DCF, this study will not only focus on traditional constraints such as access to finance or technical expertise, but also consider how these start-ups can develop the necessary

adaptive capacities to navigate and overcome systemic challenges. The chosen theoretical framework offers a comprehensive way of understanding how construction start-ups transition from Grades 1–3 to Grades 4–6 by building the capacity to continuously align their strategies with the dynamic conditions of the industry.

2.9 Conclusion

The literature review has revealed the various barriers to scaling up construction start-ups in Gauteng, including finance, technology adoption, regulation, skills, and market access, which are often intertwined. These issues are compounded by the industry's unique characteristics, such as cyclical demand, project-based revenue, and capital intensity, which can pose specific challenges for construction start-ups compared to established contractors (Watermeyer & Phillips, 2020b; Mofokeng & Thwala, 2018b). The RBV and DCF theories provide a useful theoretical lens to understand how internal resources, capabilities, knowledge, networks, and innovation can drive scalability and competitive advantage (Barney, 1991; Teece, 2022a). The Diffusion of Innovation Theory can also help to explain the adoption and impact of new technologies, such as modular construction and digital project management platforms, which can influence competitiveness and industry dynamics (Rogers, 2003). However, the South African context also presents various structural constraints, such as financial exclusion, skills shortages, payment delays, and policy gaps that can limit the direct applicability of these theories (CIDB, 2022b; McCutcheon, 2016; Kubjana *et al.*, 2024a; Gounden, 2021). In conclusion, the literature highlights the complex and multi-faceted nature of the barriers to scaling up construction start-ups in Gauteng and the need for context-specific, evidence-based solutions. This may require a combination of company-level interventions, such as financial literacy and digitalisation (Kayser *et al.*, 2023), and systemic reforms, such as procurement and policy, to unlock the potential of construction start-ups for inclusive and sustainable development in South Africa. The following chapter will present the research methodology used for this study.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology used for this study. It includes the research approach, research design, research philosophy, sampling method, data collection methods, data analysis techniques, and data presentation procedures (Saunders *et al.*, 2019; Creswell, 2014). The study's research design is informed by its underlying philosophical assumptions, the selected research approach, and the overall objectives of the study (Creswell, 2014). A well-structured methodology is therefore required to help shape the research focus, methods, and data collection and analysis techniques (Davis, 2014; Saunders *et al.*, 2019). The “Research Onion”, a methodological model developed by Saunders, Lewis, and Thornhill (2019) was used to guide the development of the research methodological framework of this study. The study primarily adopts a qualitative research approach, as its focus is to explore and understand the contextual factors that influence the scaling of construction start-ups in Gauteng (Creswell, 2014; Ruggieri *et al.*, 2018). Qualitative techniques were therefore required to collect relevant data for the study (Saunders *et al.*, 2019).

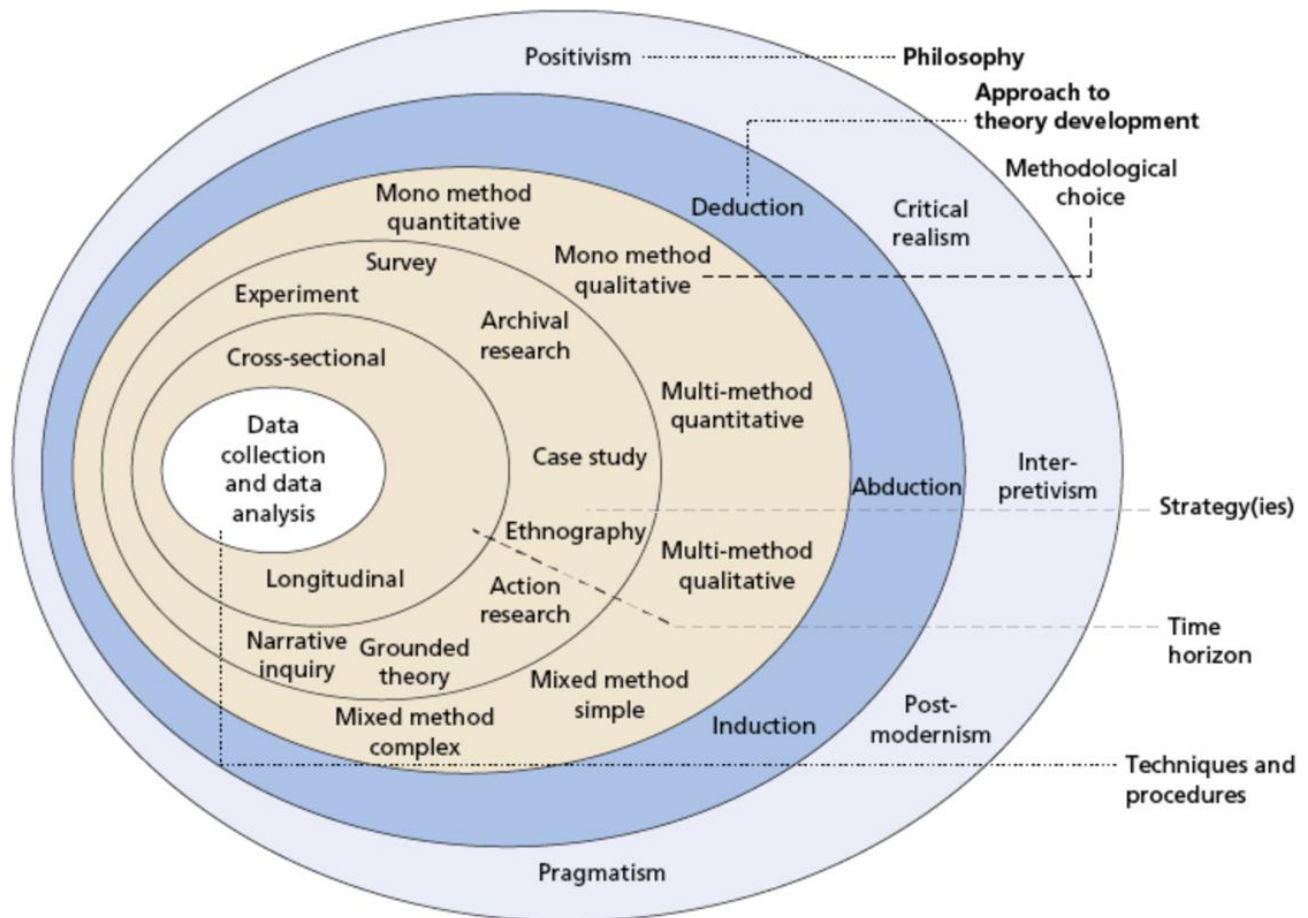


Figure 3.1: The Research Onion

Source: Adapted from Saunders *et al.*, (2019)

3.2 The Research Onion Framework

The Research Onion Framework is the research model offered by Saunders, Lewis, and Thornhill (2019) that provides guidance and helps plan and prepare the methodology for research. The Research Onion Framework includes six mutually dependent and successively refined layers which are namely (1) the Research Philosophy, (2) the Research Approach, (3) Methodological Choice, (4) Research Strategy, (5) Time Horizon, and (6) Techniques and Procedures as illustrated in Figure 3.1 below. The Research Onion shows how the philosophy at the center of the model influences every other stage. In addition, by combining all the elements in the layers of the research onion, one can construct a logical, consistent, and complete methodology, moving from general and abstract elements to specific and more detailed ones, such as the type of data collection.

The first layer of the onion is the Research Philosophy, which sets the ground for research work through epistemological and ontological underpinnings of knowledge acquisition and interpretation. It is followed by the second layer, the Research Approach, which further differentiates between inductive and deductive reasoning. The third layer is the Methodological Choice which can either be qualitative, quantitative, or mixed methods. The fourth layer is the Strategy, which is the exact technique used for collecting and interpreting data and information, and the fifth layer is the Time Horizon, which defines the temporal span of the study. The final and sixth layer is Techniques and Procedures, which refers to the particularities of data gathering and interpretation (Saunders *et al.*, 2019).

Adopting the Research Onion framework in this study ensured that each methodological decision was thoughtfully connected and logically aligned with the overall research objectives. This structured approach provided a clear, transparent rationale for each stage of the research process, enhancing both the rigor and reliability of the study. Additionally, the use of this framework contributed to the transparency of the research design, making the methodology replicable and adaptable for future research endeavors (Saunders *et al.*, 2019). The application of this framework also aligns with best practices in research methodology, as it allows for a systematic exploration of the research problem while ensuring that each methodological choice is justified by the underlying philosophical stance.

3.3 Research Philosophy

The research is grounded in an interpretivist philosophical paradigm, which emphasises the understanding of social realities as constructed by individuals. Interpretivism posits that human experiences, behaviors, and actions are subjective, shaped by context, values, and personal perceptions (Thanh & Thanh, 2015; Saunders *et al.*, 2019). This philosophical stance is particularly relevant to this study, as it allows for an in-depth exploration of the experiences, decisions, and motivations of entrepreneurs operating within the construction industry (Khoso *et al.*, 2017). Within research philosophy, interpretivism is commonly discussed alongside other paradigms such as positivism, post-positivism, pragmatism, and critical realism, each of which reflects different assumptions about what constitutes valid knowledge and how it should be generated (Saunders *et al.*, 2019). In contrast to positivism, which views social phenomena as objective and measurable, interpretivism acknowledges the complexity of human experiences and the influence of context on decision-making processes (Saunders *et al.*, 2019; Creswell, 2014). Positivism is referenced here

specifically as a direct and widely recognised contrasting paradigm because it represents an objective, measurement-oriented approach that is less suited to capturing the nuanced meanings and lived experiences that this study seeks to understand. The study does not adopt the assumptions of pragmatism or critical realism because its primary aim is not to combine methods for practical problem-solving or to explain underlying causal mechanisms, but rather to interpret participants' perspectives and meanings within their real-world context (Saunders *et al.*, 2019).

In the context of construction start-ups in Gauteng, South Africa, interpretivism is a fitting approach because the growth and success of these businesses are influenced by more than just financial and structural conditions (Hailu & Tshehla, 2025). The values, motivations, and personal decisions of entrepreneurs, along with the perceptions of key stakeholders, play a crucial role in shaping business practices and determining the challenges faced by these start-ups (Kah *et al.*, 2020). These subjective elements are difficult to capture through purely quantitative methods and require a qualitative approach to provide a deeper understanding of the lived experiences of entrepreneurs (Creswell, 2014). Moreover, the socio-economic conditions, regulatory challenges, and historical inequalities within South Africa create a complex environment that construction start-ups must navigate. Entrepreneurs in Gauteng face unique hurdles that cannot be reduced to simple statistical data but must instead be understood through the lens of their personal and contextual experiences (Maboya & McKay, 2019a). Interpretivism allows for a rich exploration of these challenges, offering insights into how individual companies interpret and respond to the factors influencing their growth (Pervin & Mokhtar, 2022). By focusing on the subjective realities of these entrepreneurs, this philosophical approach enables a nuanced understanding of the dynamics shaping the construction industry in Gauteng (Muchineripi & Chinyamurindi, 2025). Ultimately, interpretivism provides a robust framework for understanding the multi-dimensional nature of start-up challenges and growth strategies within the construction sector, allowing for the capture of deep, contextual insights that quantitative methods may overlook (Pervin & Mokhtar, 2022).

3.4 Research Approach

The study adopted an inductive research approach. Inductive research is a process of gathering and analysing information by starting with specific observations, drawing pattern inferences, and making generalisations that lead to a theoretical insight from data (Leedy & Ormrod, 2015; Saunders *et al.*, 2019). It is essentially the opposite of the deductive or hypothesis-testing approach, emphasising the generation of new ideas and theories from lived experiences and data, as opposed to testing already established theories or ideas in a given field (Miessler, 2020). The inductive approach was chosen as the most suitable for this study, as the social phenomenon in this case has not been explored in a contextually specific manner in the Gauteng region of South Africa (Hove, 2016a; Kumbhat & Sushil, 2018; Witkowsky & Bingham, 2021; Mohammed, 2024). An inductive approach is thus helpful in identifying the themes and relationships of relevant variables as they emerge in the realities of South Africa's construction industry, in order to understand how start-ups are meeting financial, institutional, and technological barriers and challenges to attain scalability (Windapo & Cattell, 2013; van Wyk *et al.*, 2021b).

The inductive research process allowed the data to be contextualised, meanings to be conceptualised by the respondents, and for patterns to be identified and described by the researcher, in ways that lead to a broad understanding of how construction start-ups are developed, adjusted, and scaled in an industry market that has been found to be both dynamic and restrictive (Witkowsky & Bingham, 2021; Mohammed, 2024). This process allowed the researcher to generate information that is relevant to the research question, the emerging theory, and possible theoretical and practical implications.

3.5 Choice of Methodology

Methodology refers to the overall research design, including the selection and application of methods and techniques used to collect, analyse, and interpret data to answer research questions (Saunders *et al.*, 2019). In research design, three broad methodological approaches are commonly employed which are quantitative, qualitative, and mixed methods (Sarwono, 2022). The quantitative approach emphasises the use of numerical data and statistical analysis to test hypotheses and measure relationships between variables (Rana *et al.*, 2021). This approach often aligns with a positivist paradigm, which assumes that reality is objective and can be observed and measured (Creswell, 2014). Quantitative methods are commonly used when researchers seek to generalise their findings to a larger population or to test existing theories (Ghanad, 2023).

In contrast, the qualitative approach aims to provide an in-depth understanding of a phenomenon from the perspective of the participants themselves, in their natural settings (Ugwu & Eze, 2023). This approach often involves the use of non-numerical data, such as interviews, observations, and documents, and is closely aligned with an interpretivist paradigm, which assumes that reality is socially constructed and best understood through human interaction and lived experience (Pervin & Mokhtar, 2022). Qualitative methods are especially valuable when studying complex, context-dependent phenomena that cannot be easily reduced to numbers or measurements (Silverman, 2021). The last commonly used approach is the mixed-methods approach, which is a research design that combines elements of both quantitative and qualitative approaches to capitalise on the strengths of each method (Ahmed *et al.*, 2024). This type of design can provide both numerical precision and contextual depth, as it often involves the use of both quantitative tools, such as surveys and experiments, and qualitative techniques such as interviews and focus groups (Ghanad, 2023). Mixed-methods research is useful when seeking to answer a complex question that requires both measurement and understanding (Ahmed *et al.*, 2024). Each of the above methods can be operationalised through mono-method, mixed method or multi-method designs depending on the number and combination of data collection techniques applied (Creswell & Creswell, 2018).

For this study, a mono-method qualitative research strategy was adopted (Saunders *et al.*, 2019). This choice was informed by the exploratory nature of the research and the relatively understudied context of construction start-up scalability in Gauteng (Yucel & Azhar, 2023; CIDB, 2022b). A qualitative research strategy was considered most appropriate as it enabled the study to capture the experiences, perceptions, and strategies of construction entrepreneurs operating within a complex and highly contextual industry environment (Creswell, 2014; Ruggieri *et al.*, 2018). Accordingly, data were collected using a single methodological approach, namely qualitative inquiry through semi-structured interviews (Saunders *et al.*, 2019). This design was compatible with the study's

interpretivist philosophy and objective, which sought to understand the lived experiences of construction entrepreneurs (Thanh & Thanh, 2015). The qualitative approach provided the necessary tools for the researcher to explore the subtleties of how start-up founders perceive, interpret, and act upon growth-related challenges in Gauteng's construction industry, information that would not have been possible through quantitative methods (Silverman, 2021; Denzin & Lincoln, 2018).

Semi-structured interviews were chosen as the main data collection instrument because it affords both structure and flexibility. A pre-prepared set of guiding questions was used to maintain consistency across the interviews, while probing follow-up questions allowed the participants to expand on their unique experiences and viewpoints (Adams, 2015). This format enabled in-depth probing of central themes, including innovation adoption, scaling strategies, and ecosystem enablers/barriers to growth for construction start-ups (Bryman, 2016; Ojebode *et al.*, 2018).

Quantitative methods were deemed inappropriate for this study, as there is no attempt to generalise the findings to the broader population or to explore statistical or numerical relationships between variables. The research design method aimed to explore and understand how participants interpret and respond to growth-related challenges in the construction industry, which is specific and contextual in nature (Rana *et al.*, 2021). Attempting to numerically generalise would not add any value and would also be inappropriate (Almeida *et al.*, 2017). Additionally, the mono-method qualitative approach provided the researcher with an opportunity for continuous reflection and iteration throughout the data analysis process and the chance to process, allowing the researcher to build on previous data as this research progressed to the thematic analysis stage (Nowell *et al.*, 2017).

3.6 Time Horizon

This study employed a cross-sectional time horizon, whereby data was collected at a single point in time rather than over an extended period. A cross-sectional research design is most frequently applied in qualitative studies when there is a need for a deep understanding of a given phenomenon within a clearly defined temporal boundary (Saunders *et al.*, 2019). Although a longitudinal time horizon, which would look at changes and developments in a given phenomenon across multiple time periods, would have been a preferred choice from the perspective of theory building, it would have required significantly more time and resources to complete this project.

Cross-sectional studies, in general, are known to suffer from challenges associated with a single temporal boundary. They do, however, have their advantages, particularly when a range of subjects at different levels of development are included in the research at the time of the study (Wang & Cheng, 2020). In order to extend the benefits of the single time-point design, the interview protocol was constructed in a way that prompted research subjects to provide not only a description of the situation at the time of the interview, but also a historical account of their prior experiences, growth path, and developmental decisions (Coker & Akande, 2025). In this way, by supplementing current situational factors and immediate insights, retrospective comments helped extend the analytical power of the present experience by providing access to a temporal dimension, that would otherwise not be as easily available (Ritchie *et al.*, 2014). The resulting data, in turn, provided a more well-

rounded and detailed set of information about the structural, financial, and business process factors influencing the scalability of start-ups in Gauteng’s construction sector.

3.7 Data Collection Methods

3.7.1 Primary Data

The main source of information for this study was semi-structured interviews with senior decision-makers within construction start-ups, including founders, managers, and other individuals occupying strategic or managerial roles (Saunders *et al.*, 2019; Creswell, 2014). While not all participants were founders, all interviewees were directly involved in strategic decision-making processes that influence business operations and growth trajectories within construction start-ups (Omotayo *et al.*, 2024a; Yucel & Azhar, 2023). The semi-structured interview format was chosen for several reasons. Firstly, the current study is qualitative in nature, and semi-structured interviews are a common method of approach in qualitative research (DiCicco-Bloom & Crabtree, 2006; Kallio *et al.*, 2016). Semi-structured interviews are an appropriate choice for research topics that benefit from the context-specific experiences and perceptions of research participants. This method of data collection is typically guided by a set of predetermined questions to which participants respond. However, they also allow the interviewer to “adapt the wording of questions as they go along” and “seek elaboration on answers given” thereby enabling a deeper insight into complex organisational realities (DiCicco-Bloom & Crabtree, 2006, p. 543). For the current study, this balance of structure and flexibility was ideal for examining real-world, complex cases that are likely to be affected by a variety of moderating or mediating factors.

The interview guide was developed to ensure the interviewer could probe participants on all core themes identified during the literature review as being of high relevance to the scalability of construction start-ups. These themes were framed to capture perspectives from a range of senior roles, not limited to founders, but inclusive of those responsible for operational and strategic decision-making. The key themes are presented in Table 3.1 below:

Table 3.1: Core Themes and Areas of Inquiry in the Study of Construction Start-Up Scalability.

Theme	Focus of Inquiry
Access to Finance and Capital	Examining barriers to securing funding for operations and growth opportunities
Regulatory Compliance and Policy Impact	Understanding how government regulations, procurement policies, and CIDB requirements influence business operations
Innovation and Technological Adoption	Assessing the extent to which technological tools, Contech, modular methods, and other innovations are leveraged for competitive advantage
Human Resources Constraints	Identifying challenges related to skills availability, workforce retention, and leadership capacity within start-ups
Scaling Strategies and Growth Aspirations	Exploring entrepreneurial visions, tactics and pathways pursued to achieve sustainable business growth

Source: Adapted from DiCicco-Bloom & Crabtree (2006)

Interviews were conducted face-to-face as well as remotely, depending on the participants' preference and availability (Saunders *et al.*, 2019). Interviews were audio-recorded after receiving consent from participants (Creswell, 2014). The audio-recorded interviews were then transcribed verbatim and prepared for analysis (Silverman, 2021). The primary method of data collection enabled the researcher to explore the lived experiences of the entrepreneurs in the construction industry of Gauteng, and therefore aligns with the study's interpretivist paradigm and purpose of understanding the subjective lived experiences that may affect scalability of their business (Thanh & Thanh, 2015; Saunders *et al.*, 2019). This approach was essential for uncovering the lived experiences of start-ups within Gauteng's construction industry, thereby aligning with the study's interpretivist paradigm and its goal of capturing the subjective realities influencing business scalability (Yucel & Azhar, 2023; Omotayo *et al.*, 2024a).

3.7.2 Secondary data

Secondary sources were utilised only to support the literature review and theoretical grounding of the study, rather than as a separate data collection method (Saunders *et al.*, 2019). These sources included official reports from the CIDB, government policy documents such as the NDP, industry white papers, and peer-reviewed academic journals (CIDB, 2022a; National Planning Commission, 2012). Their purpose was to provide background context on the construction sector, SMME development, and start-up scalability in South Africa (Windapo & Cattell, 2013; World Bank, 2022).

The secondary literature informed the development of the study's conceptual framework based on the Resource-Based View (RBV), Diffusion of Innovation (DOI) Theory, and the Dynamic Capabilities Framework (DCF) (Barney, 1991; Rogers, 2003; Teece, 2022a). It also guided the formulation of the interview questions and the interpretation of the themes that emerged from the empirical data (Creswell, 2014; Saunders *et al.*, 2019). In this way, secondary sources functioned as theoretical and contextual references, rather than as an additional source of analysed data. Research articles and empirical studies relating to entrepreneurship, SMME development, and construction management were reviewed to provide academic and policy-based insights relevant to the research topic (Fatoki, 2014a; Omotayo *et al.*, 2024a). These sources helped to frame the findings within existing knowledge and to highlight how the challenges and enablers experienced by Gauteng-based construction start-ups align with broader industry and institutional trends (CIDB, 2022b; Satish *et al.*, 2024).

3.8 Sampling Strategy

3.8.1 Background

Sampling is one of the main methodological decisions that a researcher must make when designing a research project (Saunders *et al.*, 2019). The sampling method does not determine the population itself but rather, the researcher defines the population, and the sampling method determines how participants are selected from that population (Creswell, 2014; Makwana *et al.*, 2023; Ahmed, 2024). Table 3.2 provides a brief overview of commonly used probability and non-probability sampling techniques in qualitative research, along with their main strengths and limitations (Saunders *et al.*, 2019).

Table 3.2: Comparison of Sampling Methods

Sampling Method	Type	Strengths	Limitations
Simple Random Sampling	Probability	High generalisability; minimises bias	Not practical for qualitative, small-sample studies
Stratified Sampling	Probability	Ensures representation of all sub-groups	Requires detailed population data; time-consuming
Convenience Sampling	Non-probability	Easy and low-cost	High risk of bias; low credibility
Purposive Sampling	Non-probability	Focused and relevant; enables depth of insight	Subject to researcher bias; limited generalisability
Snowball Sampling	Non-probability	Useful for reaching hidden or marginalised populations	Network-based; may produce homogenous sample

Source: Adapted from Etikan *et al.*, (2016)

This research used non-probability purposive sampling (Saunders *et al.*, 2019). Probability sampling methods, such as simple random sampling and stratified sampling, were designed for generalisability (Etikan *et al.*, 2016; Saunders *et al.*, 2019). In contrast, in qualitative research, where the research goal is a deep, context-specific understanding rather than a statistically representative estimate, purposive sampling is commonly used (Palinkas *et al.*, 2015; Creswell, 2014). Convenience sampling and snowball sampling are other non-probability sampling methods (Saunders *et al.*, 2019). Convenience sampling is associated with a risk of superficiality and bias, and snowball sampling can cause a reduction in diversity and overreliance on respondents' networks, and neither was considered suitable for the research (Etikan *et al.*, 2016; Saunders *et al.*, 2019). Purposive sampling, on the other hand, does not present the aforementioned risks and allowed the researcher to select the most information-rich cases in alignment with the research objectives, hence it was chosen for this study (Palinkas *et al.*, 2015).

The sample consisted of founders, managers, and other senior decision-makers of construction start-ups registered with CIDB Grades 1 to 6 as well as key industry stakeholders. These CIDB grades were chosen as they include emerging and mid-level construction companies most likely to experience the scaling barriers of interest (CIDB, 2022a). Inclusion and exclusion criteria were as summarised in the Table 3.3 below:

Table 3.3: Inclusion vs Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
1. Start-ups and successful construction companies actively operating within Gauteng Province 2. Registration within CIDB Grades 1-6 3. Involvement in public or private sector construction projects 4. Demonstrate experience with growth-related barriers or initiative	1. Construction companies registered in CIDB Grades 7-9, as these were considered established companies rather than start-ups. 2. Entities operating outside Gauteng Province

	3. Stakeholders with limited or no decision or no decision-making authority within their companies.
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Source: Adapted from Etikan et al. (2016) & CIDB (2022)

The purposive sampling strategy was chosen to select informants that were likely to have insights into the lived experiences of Gauteng construction start-ups, especially with regard to the sensing, seizing, and transforming capabilities necessary for overcoming scalability challenges (Saunders *et al.*, 2019; Omotayo *et al.*, 2024a). This sampling approach complements the DCF and DCF-predicted capabilities because it ensures that the chosen participants are likely to have direct knowledge of and experience with the relevant phenomena under study (Palinkas *et al.*, 2015; Kgoale & Phahlane, 2023). This alignment with the theoretical underpinnings of the research is expected to enhance its validity and reliability (Saunders *et al.*, 2019). By involving participants with hands-on experience in construction start-ups, the research is more likely to capture the intricacies of the actual processes of adaptation and reconfiguration that are central to the DCF (Teece, 2022a; Cavusgil & Deligonul, 2024). This should, in turn, contribute to the development of a rich and nuanced understanding of the phenomenon under study, thus supporting the contribution of the research to theory.

The purposive sampling also enhances the researcher's ability to pursue theoretical saturation and to follow up on patterns from case to case until the themes cease to emerge in a novel way (Guest *et al.*, 2006). In keeping with the principles of the interpretivist paradigm, this ensures that the study stays close to the informants' personal and professional realities and lived experiences as decision-makers in start-up ventures grappling with scalability-related issues (Pervin & Mokhtar, 2022).

3.8.2 Data Saturation

Saturation is a term used in data collection to describe the stage when “no new information, themes, or insights are observed in the data” (Guest *et al.*, 2006; Saunders *et al.*, 2018). It occurs when additional data collection no longer contributes to a fuller or deeper understanding of the research topic or question (Saunders *et al.*, 2018). In other words, saturation is the point at which sufficient data has been collected to fully understand the phenomenon being studied (Fusch & Ness, 2015). Saturation is a critical concept in qualitative research, as it helps ensure the completeness and depth of the analysis (Saunders *et al.*, 2018; Creswell, 2014). To ensure saturation, data collection in this study was carefully monitored throughout the semi-structured interview process (Saunders *et al.*, 2019). The researcher conducted the interviews consecutively and reviewed emerging themes after each round of transcription and preliminary coding (Silverman, 2021). Data saturation was reached by the thirteenth participant. The saturation point was reached when no new conceptual insights or patterns emerged in subsequent interviews, and when recurring patterns stabilised (O'Reilly & Parker, 2013). This iterative process allowed the researcher to ensure that themes captured reflect participants' full experiences and perspectives of scaling and growth in construction start-ups in Gauteng (Yucel & Azhar, 2023; Omotayo *et al.*, 2024a).

Achieving data saturation is important for the trustworthiness and credibility of the study, as it ensures that the data collected are both comprehensive and sufficient for meaningful analysis

(Fusch & Ness, 2015; Saunders *et al.*, 2019). It also contributes to the methodological rigor of the research by ensuring that the study's findings and conclusions are grounded in a complete representation of participants' lived experiences within the target population (Saunders *et al.*, 2019).

3.8.3 Number of Participants

Qualitative research does not aim for a statistically representative sample, but rather seeks a deep, rich, and contextual understanding of a given phenomenon (Creswell & Poth, 2018). In keeping with this approach, the sample size for the current study was considered sufficient for research purposes if it provided a data pool that met the principle of information sufficiency, rather than numerical sufficiency (Patton, 2015). The number of participants included was therefore determined by the scope of the research objectives, the complexity of the study topic, and the point at which data saturation was achieved (Guest *et al.*, 2006; Saunders *et al.*, 2018). In total, fourteen participants were interviewed for the purposes of this study. They were founders, managers, and other senior decision-makers of construction start-ups and established companies registered in CIDB Grades 1–6 and operating in the Gauteng Province. These groups were chosen because they constitute the emerging and mid-tier companies, most of which face financial, institutional, and operational barriers to growth (CIDB, 2022a). The institutions sampled for industry stakeholder perspectives included the CIDB, a civil consulting company, and a commercial bank with specialised experience in financing and risk assessment for construction start-ups, as these entities play a direct role in shaping access to projects, technical capacity, and funding for construction start-ups (CIDB, 2022a; Windapo & Cattell, 2013; Fatoki, 2014b; World Bank, 2022). The participants were purposefully chosen so that each person included in the study had first-hand experience of entrepreneurship and business growth in the South African construction context (Palinkas *et al.*, 2015).

The sample size of fourteen participants is justified for three reasons. First, in qualitative research, the goal is to seek depth, not breadth. A relatively small number of well-selected participants can provide the researcher with the opportunity to gather detailed and context-rich data (Ritchie *et al.*, 2014). Second, the semi-structured nature of the interviews allowed for flexibility and probing, which in turn ensured that complete and nuanced information was received from each participant. Third, data saturation was reached by the thirteenth interview, with no new themes or insights arising, therefore, no new information that would allow the researcher to address the study objectives and research questions (Fusch & Ness, 2015).

Although a larger sample could have provided the study with a more diverse range of perspectives, the chosen number of participants allowed for the required analytical depth while being feasible, coherent, and in line with the study's interpretivist underpinnings (Saunders *et al.*, 2019; Creswell, 2014; Fusch & Ness, 2015). Finally, since the group of participants was quite homogeneous, being construction entrepreneurs working in a similar institutional and geographic context, fourteen interviews were sufficient to achieve variation and thematic completeness for rigorous qualitative analysis (Guest *et al.*, 2020; Palinkas *et al.*, 2015).

3.9 Data Analysis

Thematic analysis was used to analyse the qualitative data obtained from the semi-structured interviews. Thematic analysis is often used to identify, interpret, and report patterns (themes) in a qualitative dataset. It is characterised by flexibility, a focus on rich and detailed description, and in its ability to provide insights into a given phenomenon (Braun & Clarke, 2006; Fereday & Muir-Cochrane, 2006). This study was guided by the six phases of thematic analysis procedure as described by Braun and Clarke (2006). This process involved the following phases, which are (1) familiarising self with the data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and finally, (6) producing the report.

To aid and improve the management of the qualitative data obtained, NVivo data analysis software together with Microsoft Excel was used to organise, code, and retrieve data segments (Linneberg & Korsgaard, 2019). The use of data analysis software supports the auditability of the study's data analysis process. Coding, memoing, and visualising themes and sub-themes through the software package make the process transparent, efficient, and systematic (Zamawe, 2015). The data analysis software was used for efficient cross-referencing of codes and themes across the various transcripts. It also aided the mapping of emergent themes to the study's theoretical framework (RBV, DOI, and DCF).

Thematic analysis was chosen because it is broadly suitable for an interpretivist research paradigm (Naeem *et al.*, 2023). It has the flexibility to be utilised in both data and theory-driven modes of inquiry, which can enrich findings and provide context (Naeem *et al.*, 2023). The approach is also flexible, as it allows the researcher to identify and review recurring or significant patterns of meaning from qualitative data (Rosairo, 2023). This study's thematic analysis followed an inductive approach because it formed categories based on the data instead of predefined theoretical frameworks (Braun & Clarke, 2012). These categories arose through the participants' descriptions and experiences (Christou, 2023). However, the approach was also deductive as the topics were aligned with the study's purpose, the frameworks such as the RBV, DOI, and DCF, as well as the literature (Witkowsky & Bingham, 2021). This helped to provide context and theoretical grounding to the new insights gleaned from the interviews. The approach resulted in an explanatory (rather than simply descriptive) and a theoretically integrated set of findings that can inform the understanding of construction start-ups scaling in the developing economy context (Rosairo, 2023; Fife & Gossner, 2024). A summary of the data analysis process is presented in Table 3.4 below:

Table 3.4: Summary of the Data Analysis Process

Stage	Description of Process	Key Activities Undertaken	Outcome/Contribution to Analysis
1. Familiarisation	Immersing in the raw data to develop a holistic understanding of participant experiences	• Transcribed all interviews verbatim • Read and re-read transcripts multiple times • Noted recurring ideas, tone and context	Developed a comprehensive understanding of participants' narratives and context; identified initial patterns and key concepts related to scalability challenges.

		Recorded reflective memos to capture int	
2. Data Coding	Systematically identifying and labelling meaningful units of data.	- Highlighted relevant text segments. - Assigned descriptive codes to phrases and ideas (e.g., “delayed payments,” “access to finance,” “mentorship gaps,” “skills shortage,” etc.). - Used NVivo Software and Microsoft Excel for coding. - Iteratively refined codes across transcripts.	Generated an organised list of key concepts and experiences shared across participants, forming the foundation for theme development.
3. Theme Development and Categorisation	Grouping similar codes into broader categories and patterns reflecting the main research objectives.	- Clustered related codes into sub-themes and overarching themes (e.g., <i>Financial Constraints, Institutional Support, Technological Adoption, Human Capital</i>). - Reviewed for internal coherence and external distinctiveness.	Produced a structured set of themes and sub-themes that captured the major challenges and enablers influencing start-up scalability.
4. Interpretation and Theoretical Integration	Linking the empirical findings to theoretical frameworks and literature.	- Interpreted themes using RBV, DOI, and DCF. - Compared findings with CIDB, SEDA, and academic studies. - Identified cause–effect linkages between internal and external factors.	Provided deeper understanding of how internal company resources, innovation behaviour, and dynamic capabilities shape the scalability of construction start-ups.

5. Validation and Credibility	Ensuring the trustworthiness and accuracy of the analysis	• Compared primary data with secondary literature. • Maintained reflexive journals and peer debriefing. • Applied thick description to illustrate evidence.	Enhanced reliability, transparency, and validity of the findings; ensured conclusions were grounded in authentic participant perspectives.
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Source: Author's own construction

3.9.1 Familiarisation with the Data

As per Table 3.3 above, the first step of data analysis was the stage in which the researcher familiarised themselves with the data as presented in its raw format. The interviews were transcribed verbatim immediately after data collection to prevent transcription errors and loss of meaning. The researcher read and re-read all the transcripts several times to get a sense of what participants were saying, their tone of voice, and the contexts of the data. Notes and reflective memos were written during this stage to record overall impressions, recurrences, striking words and phrases, and significant ideas relevant to the scaling of construction start-ups experiences. Taking such notes enabled the researcher to remain close to the data and to have some initial hunches about the emerging patterns.

3.9.2 Data Coding

The second step of the analysis involved the process of coding, whereby units of text were assigned short and meaningful labels or “codes” that summarised the content of each statement or idea (Saunders *et al.*, 2019; Silverman, 2021). Coding was performed using NVivo and Microsoft Excel software, which enabled greater flexibility and sensitivity to context in the analysis (Bazeley & Jackson, 2013; Saunders *et al.*, 2019). The transcripts were read line-by-line and key phrases/parts of passages that were related to the research questions were highlighted and assigned to categories depending on their meaning and relationship (Creswell, 2014). Examples of codes include “delayed payments”, “access to finance”, “regulatory compliance”, “skills shortage”, “mentorship”, “technological barriers”, and “institutional support”. This process resulted in a list of preliminary codes that captured both semantic meanings (explicit content) and latent meanings (assumptions or implications) (Braun & Clarke, 2006). Coding was an iterative and reflexive process, which means codes were revised, collapsed, or expanded as new insights were gained from analysing subsequent transcripts (Saunders *et al.*, 2019; Braun & Clarke, 2006). The aim was to ensure that the codes reflected both the commonalities and variations across participants’ responses, allowing for a comprehensive view of the factors affecting the scaling of construction start-ups (Omotayo *et al.*, 2024a; Yucel & Azhar, 2023). The data coding framework is summarised in Table 3.5 below.

Table 3.5: Data Coding Framework

Sample Raw Data Extract (from Interviews)	Initial Code	Sub-Theme	Main Theme (Six Themes)	Interpretive Meaning	Linked Research Objective	Associated Theoretical Lens
“Accessing loans is almost impossible without collateral. We mostly depend on family savings or small deposits from clients.”	Limited funding; reliance on informal finance	Limited funding opportunities	1. Financial Constraints and Access to Capital	Reveals structural financial exclusion and weak liquidity affecting scalability.	To examine how financial access and liquidity influence the scalability of construction start-ups.	Resource-Based View (RBV) — Financial capital as a core resource influencing competitive advantage.
“Banks ask for audited financials we don’t have; the paperwork itself discourages you.”	Bureaucratic lending requirements	Collateral and guarantee barriers	1. Financial Constraints and Access to Capital	Highlights systemic bias in formal lending frameworks against small companies.	Same as above.	RBV — Companies’ inability to mobilise tangible resources limits scalability.
“CIDB grading is very strict; you need multiple documents and certifications before you can even tender.”	Complex regulatory requirements	Complex compliance requirements	2. Regulatory and Institutional Barriers	Shows administrative rigidity that constrains entry and participation in public tenders.	To analyse institutional and regulatory constraints affecting start-up performance and growth.	Dynamic Capabilities Framework (DCF) — Ability to adapt and respond to institutional pressures.
“By the time you renew tax, COIDA, CIDB and safety files, half the year is gone.”	Excessive compliance workload	Bureaucratic inefficiency	2. Regulatory and Institutional Barriers	Illustrates how compliance consumes time and resources that could be used for productivity.	Same as above.	DCF — Institutional adaptability and learning under administrative uncertainty.
“Finding skilled artisans is difficult; most workers learn on-site.”	Lack of skilled workforce	Shortage of skilled labour	3. Human Capital and Skills Development	Indicates insufficient training systems and reliance on informal skill acquisition.	To determine how skill levels and human resources affect start-up competitiveness and	RBV & DCF — Human capital as a valuable and inimitable resource driving adaptability.

					project performance.	
“We invest in young people, but they leave once trained.”	High labour turnover	Workforce retention challenges	3. Human Capital and Skills Development	Shows weak retention strategies and instability in workforce development.	Same as above.	RBV & DCF — Loss of company-specific human capital reduces competitive advantage.
“We still rely on Excel and WhatsApp; BuildSmart or BIM are too expensive.”	Limited digitalisation	Limited access to digital tools	4. Technological Adoption and Innovation	Highlights cost and knowledge barriers to adopting modern technologies.	To explore how innovation and technology adoption influence scalability and efficiency.	Diffusion of Innovation (DOI) — Adoption influenced by cost, complexity, and compatibility.
“Technology helps manage costs, but most systems are priced in dollars.”	Technology affordability barriers	Cost of software and machinery	4. Technological Adoption and Innovation	Illustrates how currency fluctuations and foreign technology costs limit innovation.	Same as above.	DOI — Relative advantage and affordability affect adoption decisions.
“There’s no real coordination between SEDA, CIDB and SEFA; everyone works in isolation.”	Fragmented institutional ecosystem	Ineffective coordination among agencies	5. Institutional Support and Ecosystem Development	Reflects weak policy coordination and fragmented support ecosystem.	To evaluate the role of institutional and policy frameworks in supporting start-up growth.	Dynamic Capabilities Framework (DCF) — Environmental alignment and learning from institutional interaction.
“Government programmes are announced but never followed up.”	Poor follow-up mechanisms	Limited post-incubation assistance	5. Institutional Support and Ecosystem Development	Shows weak continuity and monitoring of enterprise development programmes.	Same as above.	DCF — Learning and feedback loops needed to sustain capability development.
“We collaborate with bigger companies to qualify for projects.”	Strategic partnerships	Market access and tendering opportunities	6. Strategic Growth and Competitive Positioning	Demonstrates strategic collaboration as a means to overcome financial and	To identify strategies that enable start-ups to transition from	RBV & DCF — Partnerships as resource-combining mechanisms to enhance

				capacity limitations.	survival to sustainable growth.	competitiveness.
“We focus on small maintenance and renovation jobs because the big ones are out of reach.”	Niche market targeting	Competitive differentiation	6. Strategic Growth and Competitive Positioning	Illustrates adaptive strategy through focusing on accessible and stable markets.	Same as above.	RBV & DCF — Niche focus as a strategic reconfiguration of limited internal resources.

Source: Author’s own construction

*Note: The complete Theme Development and Coding Framework is shown in Annexure F

3.9.3 Theme Development and Categorisation

During the theme development and categorisation stage, the coded data was systematically examined and grouped into broader sub-themes and overarching themes that directly reflected the study’s research objectives (Braun & Clarke, 2006; Saunders *et al.*, 2019). Related codes were clustered under key thematic areas such as financial constraints, institutional support, technological adoption, and human capital (Omotayo *et al.*, 2024a; CIDB, 2022b). Each theme was then reviewed to ensure internal coherence and clear distinction from the others (Creswell, 2014; Braun & Clarke, 2006). This process resulted in a structured set of themes and sub-themes that captured the primary challenges and growth enablers influencing the scalability of construction start-ups in Gauteng (Yucel & Azhar, 2023; Satish *et al.*, 2024).

3.9.4 Interpretation and Theoretical Integration

At the interpretation and theoretical integration stage, the developed themes were analysed in relation to the study’s theoretical frameworks and relevant literature (Saunders *et al.*, 2019; Creswell, 2014). The findings were interpreted through the lenses of the Resource-Based View (RBV), Diffusion of Innovation (DOI) theory, and the Dynamic Capabilities Framework (DCF) to explain how company-level resources, innovation adoption, and adaptive capacity influence scalability (Barney, 1991; Rogers, 2003; Teece, 2022a; Cavusgil & Deligonul, 2024). The emergent results were also compared with national construction sector reports from the CIDB and SEDA, as well as existing academic research (CIDB, 2022b; SEDA, 2023; Omotayo *et al.*, 2024a; Yucel & Azhar, 2023). This process enabled the identification of cause-and-effect linkages between internal organisational capabilities and the broader external environment, providing a deeper, theory-informed understanding of the factors shaping the scalability of construction start-ups in Gauteng (CIDB, 2022a; World Bank, 2022).

3.9.5 Validation and Credibility

During the validation and credibility stage, the trustworthiness and accuracy of the thematic analysis were strengthened by comparing the primary interview data with the reviewed literature and industry reports (Saunders *et al.*, 2019; Creswell, 2014). Reflexive journals were maintained throughout the process to document analytical decisions and minimise researcher bias, while peer debriefing was used to ensure the consistency and credibility of the coding and theme development (Denzin & Lincoln, 2018; Silverman, 2021). In addition, thick descriptive evidence from

participant responses was applied to substantiate each theme (Creswell, 2014; Braun & Clarke, 2006). These steps enhanced the reliability, transparency, and overall validity of the study's findings, ensuring that the conclusions drawn were grounded in authentic stakeholder perspectives (Saunders *et al.*, 2019; Fusch & Ness, 2015).

3.10 Ethical Considerations

This research was conducted with high ethical standards to ensure that the rights of the participants were guaranteed, and their protection, autonomy, and dignity were upheld (Mirza *et al.*, 2023). Ethical clearance was obtained from the university Research Ethics Committee on the 30th of April 2025 before fieldwork, in accordance with the internal and national research governance frameworks. The ethical clearance reference number for this study is M.1000425.

The participants were informed of the research, its purpose and scope through the Participant Information Sheet. The online consent form was signed before the commencement of the interview, ensuring that consent was provided in written format in line with the principles of autonomy and respect (Israel, 2014). The respondents were informed that their participation was voluntary, and they could withdraw from the research study at any stage and for any reason without negative consequences or sanctions.

The main ethical issues were addressed through the following measures:

- Confidentiality: transcripts were anonymised (all identifying details removed), and pseudonyms were used when reporting findings to protect the identities of the participants.
- Voluntary participation: interviewees were informed that they could refuse to answer a question or end the interview at any point in time.
- Data protection: all recordings, transcripts, and documents were stored in encrypted password-protected files on the researcher's computer, accessible only to the researcher.
- Legal framework: the study was conducted in line with the Protection of Personal Information Act (POPIA) of South Africa, which regulates how personal information can lawfully be processed to protect the right to privacy (Republic of South Africa, 2013).

In addition, ethical reflexivity was ensured throughout the research study to order to identify, acknowledge, and address any possible biases or power relations between the researcher and the participants (McLeod, 2024a). Reflexivity is an ongoing process of self-examination that requires the researcher to question and critically reflect on their own positionality, assumptions, and potential influence on data collection, analysis, and interpretation (Haynes, 2012). Reflexivity was built into the study in a number of ways, including keeping a research journal to record decisions, challenges, and potential sources of bias, critically examining how the researcher's professional and academic background might influence interactions with participants, and ensuring that the analysis remained grounded in the participants' views rather than in the researcher's assumptions (Olmos-Vega *et al.*, 2022). By engaging in this iterative process of reflection, the researcher ensured not only the validity and reliability of the data but also enhanced the transparency, trustworthiness, and ethical quality of the study (Korstjens & Moser, 2017).

3.11 Reliability, Validity and Dependability

In qualitative research, validity and reliability are used interchangeably with the terms of trustworthiness, consistency, and credibility (Lincoln & Guba, 1985; Nowell *et al.*, 2017). They are considered important in quantitative studies, but have equivalent forms in qualitative research. The four validity and reliability criteria which are, credibility, transferability, dependability, and confirmability were used for this research (Korstjens & Moser, 2017; Shenton, 2004). The application of these criteria demonstrated that the study results were rigorous, transparent, and based on participants' real experiences, rather than the researchers' assumptions or biases.

Credibility indicates how much trust can be placed in the truth of the research findings (Lincoln & Guba, 1985). In the study, credibility was enhanced by comparing primary data obtained from semi-structured interviews with secondary data from CIDB reports, industry documents, and existing studies. Cross-verifying the data using multiple sources increased confidence in the authenticity of the evidence (Flick, 2018). In addition, through constant comparison of information received from the interviewees with other sources, it was possible to achieve balanced and complete representation of different views. This was further aided by verbatim transcription of the interviews and compilation of detailed field notes (Braun & Clarke, 2006). This ensured that the exact meanings and subtleties of participants' statements were preserved. Dependability is the consistency of a study over time (Korstjens & Moser, 2017). In this study, it was ensured by keeping an audit trail of all stages of data collection and analysis. This included coding decisions, changes to themes, and analytical notes on each step of the data analysis. Audit trails allow anyone reviewing the research to see each stage of data collection and processing, and repeat the process with similar results if conditions remain the same. The researcher used NVivo data analysis software together with Microsoft Excel that allowed for uniform coding and retrieval of themes across all transcripts and further increased the dependability of the study (Zamawe, 2015). Additionally, dependability was reinforced through the use of consistent interview procedures and systematic thematic coding, ensuring that the analytical process remained stable and traceable throughout the study (Saunders *et al.*, 2019; Creswell, 2014; Denzin & Lincoln, 2018).

Transferability is the extent to which findings can be generalised or applied to other situations, contexts, or groups (Lincoln & Guba, 1985). In qualitative research, the aim is not to conduct statistical generalisation of the findings. To support potential transferability of results, this study provided rich contextual information and description of the setting and participants. This, according to Tracy (2010), should give readers sufficient information to judge the similarity between the research setting and the context they are interested in. Detailed information on the participants, their companies, and the overall context of the South African construction industry enables readers to understand the degree to which this ecosystem is similar or different from others.

Confirmability, or objectivity, is the neutrality of the findings or the degree to which they are free from researchers' biases (Nowell *et al.*, 2017). In this study, confirmability was ensured by reflexivity, or the process of researchers' critical reflections on their assumptions, positionality, and influence on the data collection and interpretation (Haynes, 2012). The use of reflexive journaling, along with transparent coding decisions, ensured that the study conclusions were based on the information given by the participants and not on the researcher's beliefs (Denzin & Lincoln,

2018; Saunders *et al.*, 2019). These practices also strengthened the dependability of the study by making the research process transparent and repeatable (Saunders *et al.*, 2019; Silverman, 2021). Together, these measures helped to ensure that the results of the study are truthful and accurately reflect the real experiences of participants (Creswell, 2014; Fusch & Ness, 2015).

3.12 Conclusion

In conclusion, this chapter provided a comprehensive description of the approach followed in this study and the methods used to collect and analyse data. The first section on research philosophy discussed the ontological, epistemological, methodological, and method choices underpinning the study, and how these were linked to and coherent with each other using the layers of the Research Onion (Saunders *et al.*, 2019). The section on research strategy and design detailed the interpretivist research paradigm and the inductive qualitative approach adopted in the study. Both of these were positioned as aligning with the in-depth, contextual, and rich insights the study aimed to gain about the scalability challenges and growth paths of construction start-ups in Gauteng, South Africa. In terms of research strategy, a mono-method qualitative research design was chosen, with semi-structured interviews as the main data collection method, supported by secondary sources such as CIDB reports, government policy documents, and relevant scholarly articles as a data validation strategy. The sampling technique used for this study was purposive sampling, and criteria were developed for including founders, managers, and decision-makers from companies that fell under CIDB Grades 1–6 and had personal experience with growth challenges. This section also discussed how these choices were tied to the DCF, which guided this study. The last section on data analysis described how the data was analysed using thematic analysis (Braun & Clarke, 2006) and both inductive and deductive coding processes, that allowed for emergent themes from the data and alignment with the DCF, RBV, and DOI, which were the main theoretical frameworks for this study. Ethical considerations were also discussed in this section, such as informed consent, confidentiality, and adherence to data protection laws and regulations such as South Africa's POPIA Act. The role of ethical reflexivity in the research process was also highlighted as a means of ensuring ethical awareness and reduce bias. Overall, this chapter set the stage for a rigorous and ethically sensitive study that aims to produce credible and meaningful insights into the challenges and strategies of construction start-ups in Gauteng. The next chapter will present the findings of the study based on the data analysis.

CHAPTER FOUR: DATA PRESENTATION AND ANALYSIS

4.1 Introduction

Chapter four presents, interprets and discusses the findings from the semi-structured interviews conducted with construction start-up founders, managers, and key industry stakeholders in Gauteng, South Africa. As described in Chapter Three, data was collected through semi-structured interviews with purposively selected participants who could provide first-hand information on their lived experiences, perceptions, and strategies relating to the growth and scalability of construction start-ups in the context of this research. The purpose of this chapter is to explore the contextual factors affecting start-up scalability, the challenges constraining growth, and strategies and enabling conditions for sustainable expansion within South Africa's construction ecosystem. The chapter reports the empirical results derived from the interview data and presents the key themes that emerged from the analysis. The interpretation of these results is informed by the coding structure developed in the methodology and is grounded in the participants' responses. The structure of the current chapter is as follows. After the introduction, the profile of the respondents (sample size and demographics) is provided, along with a description of the characteristics of the sample. Subsequently, the identified themes are presented and discussed in more detail.

4.2 Overview of Participants

Interviews were conducted with fourteen (14) respondents, which included construction start-up founders, managers and key industry stakeholders which were a representative of the CIDB, a representative of an engineering consulting company, and a representative of a commercial bank providing construction finance. Respondents were selected from those enterprises where at least one of the key participants had a background in civil engineering, construction management, or other construction-related training, with a minimum of two years and a maximum of twenty years of experience in construction practice.

The selected enterprises included General Building (GB) and Civil Engineering (CE) sub-sectors, and participants had practical experience across the various construction activities, such as paving, stormwater drainage construction, building of boundary walls, renovations, plumbing, and municipal maintenance, among others. The small and micro enterprises (start-ups), classified as CIDB Grades 1–3, had between four to fifteen employees, while the established enterprises, classified as CIDB Grades 4–6, had between twenty-five and seventy employees. The respondents were located in Gauteng, and their construction enterprises operated in business areas located in Johannesburg, Pretoria, Ekurhuleni, and surrounding towns and municipalities. In total, the study included a diverse range of respondents to offer a multi-level and multidimensional perspective of the construction start-up ecosystem and contexts. The participants' accounts, provided an opportunity to reflect on aspects related to internal organisational issues, as well as looking at scalability within and across external constraining institutional factors and enabling policies and systems. Table 4.1 below presents an overview of the participants.

Table 4.1: An overview of the participants

Category	Respondent Description	CIDB Grade	Experience in Years	Primary Business Focus
Start-up Owner/Manager 1	Founder and managing member of small civil works and general building company	2GB, 1CE	3	Renovations, boundary walls, pavings, municipal maintenance
Start-up Owner/Manager 2	Managing Director of a civil works start-up specialising in stormwater and paving	3CEPE	8	Municipal maintenance and road works
Start-up Owner/Manager 3	Founder of a small construction business based in the East Rand handling civil maintenance works and RDP works	1GB, 2CE	13	Building repairs, maintenance, minor civil jobs
Start-up Manager 4	Operations Manager of small contractor focusing on civil works and light building	3CE, 3GB	6	Paving, drainage, small municipal infrastructure
Start-up Manager 5	Managing Director of a small construction company in Pretoria West	2GB, 2CE	5	Renovations, concrete works, minor civil projects
Start-up Manager 6	Project and Site Manager at small road and maintenance company	3CE	12	Road maintenance, stormwater repairs, concrete works
Successful Contractor Rep 1	Managing Director of medium scale civil works company	5GB, 5CE	9	Road upgrades, concrete structures, small building
Successful Contractor Rep 2	Operations Director of mid-tier construction company	6GB, 6CE	12	Civil works, water infrastructure, building projects
Successful Contractor Rep 3	Founder & Managing Director of civil and building contractor	5GB, 5CE	15	Civil and general building; public maintenance
Successful Contractor Rep 4	Founder & CEO of established civil and building company	6GB, 6CE	11	Municipal infrastructure, roads and buildings
Successful Contractor Rep 5	Contracts manager for a growing company in Pretoria	5CE, 4GB	8	Civil works, paving, public infrastructure
Industry Stakeholder 1 (CIDB)	Senior Development Officer, CIDB Gauteng	Policy Role	12	Contractor registration and capacity development
Industry Stakeholder (Engineer)	Civil Engineer/Project Director in consultancy	Professional role	18	Infrastructure design, contractor supervision
Industry Stakeholder 3 (Bank)	Head SMME Construction Finance, major bank	Finance role	17	Bridging finance, guarantees, supplier credit

Source: Author's own construction

4.3 Data Trustworthiness and Reliability

Qualitative research should be trustworthy and dependable. Steps must be taken to ensure that the findings are what they appear to be (Lincoln & Guba, 1985; Saunders *et al.*, 2019). In order to ensure trustworthiness, participants were allowed to provide detailed responses to each question without deviation, thereby allowing respondents to present realities as they experience them (Thanh & Thanh, 2015). Interviews were transcribed to allow for multiple reviews of participants' responses (Silverman, 2021). Interviews were coded to condense similar meanings and concepts to reduce large volumes of text for analysis and identify patterns in meanings amongst groups of data (Braun & Clarke, 2006). Coding reliability was ensured through methodical steps followed in identifying themes throughout Chapter Three (Saunders *et al.*, 2019). The following steps were taken to ensure the trustworthiness of this study.

Establishing credibility was of utmost importance during the research process and ensured through purposeful sampling of experienced individuals operating within the construction start-up ecosystem (Palinkas *et al.*, 2015; Saunders *et al.*, 2019). In order to collect credible data, semi-structured interviews were conducted that asked participants questions specifically related to scaling up their construction start-ups (Creswell, 2014). Respondents were asked about financial access, regulatory barriers, skills development and innovation capability; topics that directly relate to the research question at hand (CIDB, 2022b; Omotayo *et al.*, 2024a). The research process was dependable as procedures outlined in Chapter Three were strictly adhered to throughout data collection and analysis (Saunders *et al.*, 2019). Transcripts were completed for each interview conducted and all qualitative data was coded and analysed manually in NVivo as well as with Microsoft Excel spreadsheets (Bazeley & Jackson, 2013; Saunders *et al.*, 2019). Steps taken throughout the coding and analysis process were recorded to ensure an audit could be done from raw data to categories to themes (Saunders *et al.*, 2019). The steps outlined in Chapter Three can be reviewed by other scholars should replication of this study be needed.

To establish confirmability, steps were taken to ensure reflexivity on behalf of the researcher and transparency in our analysis process (Denzin & Lincoln, 2018; Saunders *et al.*, 2019). As the researcher, I noted my own professional background and experiences when conducting each interview to ensure meanings identified in data collected were participant responses and not my own interpretation of what was said (Saunders *et al.*, 2019). An initial code book was used for all interviews to eliminate flexibility in coding practices and, when in doubt, I referred back to raw data to confirm emerging codes and categories (Braun & Clarke, 2006). The characteristics of the sample interviewed in this study are described throughout Chapter Four to allow readers to evaluate transferability of this study's findings (Lincoln & Guba, 1985). Should another researcher wish to replicate this study or compare findings from similar research, they can use the sample description to conclude whether or not the findings of this study can be transferred to their research context (Creswell, 2014; Saunders *et al.*, 2019). The sampling strategy included both start-ups and contractors who have been in operation for longer than three years to account for a range of scalability challenges and growth opportunities (CIDB, 2022a; Omotayo *et al.*, 2024a). Taken together, these steps confirm that the findings discussed in are trustworthy (Fusch & Ness, 2015).

4.4 Research Objectives and Analytical Framework

This section outlines the objectives that guided the study and provides the analytical lens through which the empirical findings are organised and interpreted.

Primary Objective

- To examine how key challenges, influence the scalability and sustainability of construction start-ups in Gauteng, South Africa.

Secondary Objectives

1. To identify the major financial, regulatory, human capital, technological, and institutional challenges faced by construction start-ups in Gauteng.
2. To explore the perceived effectiveness of growth and coping strategies employed by CIDB Grade 4–6 construction start-ups in addressing industry-specific constraints.
3. To provide actionable recommendations for start-ups, policymakers, and industry stakeholders to foster an enabling environment for start-up scaling and long-term sustainability.

The empirical data presented in this chapter is analysed in relation to these objectives. The thematic structure reflects the key areas where construction start-ups experience both constraints and opportunities for growth (Braun & Clarke, 2006). The themes therefore represent the lived realities of the respondents and demonstrate how start-ups leverage internal capabilities and external support systems to navigate their operating environment (Barney, 1991; Rogers, 2003; Teece, 2022a).

The analytical framing of the findings is informed by three core theoretical perspectives, namely the RBV, DOI, and the DCF (Barney, 1991; Rogers, 2003; Teece, 2022a). The six themes derived from the data coding process are financial constraints, regulatory and institutional barriers, human capital and skills development, technological adoption and innovation, institutional support and ecosystem development, and strategic growth and positioning. These themes are presented as the primary outcomes of the thematic analysis (Omotayo *et al.*, 2024a; Yucel & Azhar, 2023). Together, they provide a coherent explanation of the factors influencing the scalability of construction start-ups in Gauteng.

4.5 Thematic Analysis and Findings

A thematic analysis of the data was conducted as outlined in Chapter Three (See Section 3.10), drawing from Braun and Clarke's (2006) six-stage methodological approach, in order to ensure the coding, categorisation, and identification of key themes in the dataset were as methodical, rigorous, and objective as possible (Braun & Clarke, 2006; Saunders *et al.*, 2019). Although insights were gathered from representatives of established construction companies and institutional stakeholders, their responses were excluded from the primary thematic analysis. These perspectives were instead used for contextual interpretation, to validate findings from start-up participants (Saunders *et al.*, 2019; Creswell, 2014). This approach ensured that the analysis remained focused on lived experiences and scalability challenges of emerging construction

companies, consistent with the study's objectives (Thanh & Thanh, 2015; Yucel & Azhar, 2023). In keeping with the methodological framework discussed in the previous chapter, the stages of thematic analysis used were familiarisation with the dataset, generation of initial codes, and the identification and review of themes (Braun & Clarke, 2006; Saunders *et al.*, 2019). Overall, the following six major themes were identified in the data.

1. Financial Constraints and Access to Capital
2. Regulatory and Institutional Barriers
3. Human Capital and Skills Development
4. Technological Adoption and Innovation
5. Institutional Support and Ecosystem Development
6. Strategic Growth and Competitive Positioning

For each theme, selected verbatim quotations (provided by participants P1–P6) are included, along with interpretation and coding based on the research questions and the study's theoretical frameworks.

4.6 Empirical Findings

The presentation and discussion of the empirical findings below are based on the key themes that emerged from the thematic analysis of the qualitative data (Braun & Clarke, 2006; Saunders *et al.*, 2019). These themes are explicitly linked to the research objectives, as they encapsulate important aspects of the real-life experiences of construction start-ups and construction ecosystem stakeholders in Gauteng (CIDB, 2022b; Omotayo *et al.*, 2024a). The themes are also rooted in the data-analysis process detailed in Chapter Three (See Section 3.9) and further illustrated in Annexure F. Data were coded, categorised, and synthesised into themes in NVivo and Microsoft Excel, following an iterative and rigorous analytical process (Bazeley & Jackson, 2013; Saunders *et al.*, 2019).

The main themes correspond with the key challenges and enablers of scalability in the core theoretical literature frameworks, namely the RBV, DOI, and DCF (Barney, 1991; Rogers, 2003; Teece, 2022a; Cavusgil & Deligonul, 2024). Each theme reflects an important aspect of start-up growth and embodies the processes of how construction entrepreneurs' sense, seize, and transform resources under the pressure of both markets and institutions (Teece, 2022a; CIDB, 2022a). The sections that follow present and discuss these key themes in detail, illustrating how they collectively explain the dynamics of scaling construction start-ups in Gauteng.

4.6.1 Theme 1: Financial Constraints and Access to Capital

This theme reveals the prevailing financial challenges and constraints faced by construction start-ups in Gauteng that hinder their growth prospects. Entrepreneurs in this research commonly cited issues of restricted funding access, delayed payments from clients, and barriers to obtaining guarantees or collateral. These factors collectively affect their ability to scale operations, maintain cash flow, and remain competitive in the industry. The insights presented in this section draw a certain degree of coherence with Fatoki (2014a) and CIDB (2022). The two studies concur on the current challenges facing the construction start-ups within the local industry with regard to access to credit and delayed payments, which ultimately strain the liquidity of these start-ups. From a

theoretical perspective, RBV of the company positions' financial capital as a critical asset that impacts a company's capacity to leverage other resources and capitalise on potential business opportunities. The DCF, on the other hand, posits that the ability of companies to stay flexible in their liquidity management enhances their survival, as they become able to both identify and take advantage of available opportunities and reconfigure their activities in case of changing market dynamics (Teece *et al.*, 1997; Teece, 2022b). Overall, four interrelated sub-themes emerged under this overarching theme, each reflecting a distinct dimension of the financial challenges experienced by construction start-ups. These sub-themes are discussed in detail in the sections that follow.

4.6.1.1 Sub-theme 1 - Restricted Access to Funding and Credit Facilities.

Construction start-ups in South Africa face a myriad of difficulties in securing financial support from banks and investors due to lack of collateral, poor credit history or perceived business risk (Hove, 2016b). With regards to this first category the participants had the following statements to say:

Quote 1: *"Banks want collateral that we don't have."* (P1)

Quote 2: *"We apply for funding but never get feedback."* (P3)

Quote 3: *"Government funds exist but the process is long and political."* (P5)

Quote 4: *"Financial institutions do not understand the cash flow of the construction industry. They expect a steady income like retail."* (P4)

This first quote by participant (P1) highlights the key challenge that small businesses face in obtaining credit facilities when approaching conventional banks. When start-ups fail to provide collateral security in the form of company cars or commercial buildings, they are denied access to formal financing from traditional financial institutions. Consequently, these contractors are left with no option but to self-finance, use loan sharks, or resort to non-formal loan products through relatives (Falkena *et al.*, 2001). In the second quote, the respondent (P3), indicates the lack of efficiency among public-sector financing institutions such as Small Enterprise Finance Agency (SEFA) and Small Enterprise Development Agency (SEDA) in following up on and attending to funding applications. Institutional bottlenecks such as bureaucratic formalities and poor follow-up strategies become major causes of entrepreneurs losing hope and shying away from the formal funding application processes (Emmanuel *et al.*, 2023). In the third quote, the respondent laments what they perceived as unfairness and bureaucracy in accessing government-linked funding schemes. Funding programmes promoted or directed by state actors require the companies applying for such funds to have some form of political or administrative networks, a requirement that participants believe is out of reach for construction start-ups. Participant (P4) reveals the prevailing industry-unfriendly financing models within the banking sector, that are mostly suited for retailers or companies working in more formal industries. In this case, because construction companies experience extreme periods of capital depletion and expansion within any given project period, conventional banks are least responsive to the needs of contractors.

4.6.1.2 Sub-theme 2 - Delayed Payments and Cash-Flow Constraints.

Start-ups face heavy financial strains when clients postpone payments which disrupts the steady flow of cash needed to cover operational expenses and sustain day to day business activities (Watermeyer & Phillips, 2020a). In relation to this, participants expressed the following views:

Quote 1: *“We wait months for client payments.”* (P3)

Quote 2: *“Even after submitting invoices, we still have to follow up and motivate for payments. The process can take up to 3 months.”* (P6)

Quote 3: *“Sometimes we have to borrow to finish a job because of unpredictable payments.”* (P4)

Quote 4: *“When clients delay, everything grinds to a halt. You cannot pay your salaries or buy your material.”* (P5)

This statement mentioned by participant (P3), reveals the cash flow challenges caused by delayed payments from clients, most of which are municipalities and public-sector clients. Extensive payment periods from end-user's cause disruption of important business functions such as payroll, material procurement, and project timelines. In the second quote, the participant (P6) complains about the way in which poor administrative efficiency by clients result in lengthened payment periods that in turn tie down the working capital that would otherwise be available for bidding new jobs. The third quote mentioned by participant (P4), affirms the cash-flow challenges that most construction companies experience. Payments are often difficult to predict, especially in the case of small companies. Volatile cash flow is likely to see a start-up borrowing to complete a project, hence incurring unnecessary and expensive interest payments that accumulate to make the company unprofitable in the long run. To sum up participant (P5), indicates the complete operational paralysis that arises in most start-ups, in the event of late payment. The unpredictability of pay cycles results in mistrust and poor working relationships between contractors and clients.

4.6.1.3 Sub-theme 3 - Collateral and Guarantee Requirements.

Many construction start-ups fail to provide financial security and suitable contract performance or loan repayment guarantees needed to secure financial assistance from mainstream players (ACF, 2019). Concerning this issue, the participants provided the following insights:

Quote 1: *“You need a guarantee before you can get a contract, but you cannot get a guarantee without a contract.”* (P2)

Quote 2: *“Guarantees and surety bonds favour big companies and reject small ones who do not have the balance sheets.”* (P3)

Quote 3: *“We have tried partnering with other companies to meet the guarantee requirements, but the big ones take all the profits.”* (P4)

Quote 4: *“The CIDB should provide start-ups with guarantee facilities or bridging finance.”* (P5)

The quotes from the participants present a wide range of perspectives. In the first quote, participant (P2) aptly summarises the circular financing dilemma facing most South African companies when it comes to pre-financing the execution of a project. Companies require some form of security from

clients in order to access the financial backing of a bank, and this security is mostly provided in form of a bank guarantee, hence the irony. Participant (P3), aptly brings out the systematic exclusion that has been built into the typical financial protection schemes used in construction procurement. The financial safeguards required by most clients, in the form of guarantees and surety bonds, are practically limiting the number of companies that are allowed to bid for projects. In the third quote, participant (P4) points out the other unbalanced partnership strategies that start-ups have attempted as a stop-gap measure for meeting the pre-financing requirements. Joint ventures have been used as a workaround strategy for accessing work. However, the start-up is always at a disadvantage as they receive a smaller portion of the profit. To conclude, participant (P5) aptly affirms the institutional role that they expect the CIDB to play in helping small companies meet such requirements. Through guarantee facilities or bridging finance, the government institution has a great opportunity to intervene and level the playing field.

4.6.1.4 Sub-theme 4 - Adaptive Financial Management Practices.

Due to funding constraints, many start-ups construction companies, resort to flexible and strategic ways of managing their limited financial resources, such as adjusting budgets, diversifying income sources and reinvesting profits to sustain operations and remain competitive (Watermeyer & Phillips, 2020a; Lazopoulos, 2020). When discussing this, participants made the following comments:

Quote 1: *“We plan our projects in smaller phases to manage cash flow better.”* (P4)

Quote 2: *“We have learned to negotiate part-payments during the progress instead of on completion.”* (P2)

Quote 3: *“We use spreadsheets and mobile banking to help us track our expenses.”* (P6)

Quote 4: *“We have to cut our overheads immediately when we feel the crunch. Adaptability is key to survival.”* (P1)

In the first quote, participant (P4) aptly points out the adaptive reconceptualisation of project structuring and costing practices undertaken by some companies. In a bid to avoid complete capital depletion before project handover, some companies choose to break up their project scopes into smaller phases to improve their liquidity. In the second quote, the participant (P2) clearly demonstrates the developed and negotiated contractual bill payment capabilities that the company has attained through learning. Improving liquidity by way of alternative billing arrangements has become an emerging dynamic capability that can be further developed and enhanced. The third quote from participant (P6), is able to bring to light another form of financial control innovation that companies have been adapting through the use of basic digital cost tracking mechanisms. The last quote, mentioned by participant (P1), broadly but truly summarises the whole concept of entrepreneurial resilience, as an ability for cost alignment, which is dynamic and flexible in nature, and reacts instantaneously to cash-flow crunches.

4.6.2.5 Synthesis of Theme 1 Findings

It is clear from the above quotes and their respective interpretations that the most prominent business-level challenge facing construction start-ups at present is that of financial constraints with

specific reference to access to credit and liquidity constraints. The financial challenges of liquidity and capital-access experienced by start-ups in the study can be interrogated from the RBV perspective (Khan *et al.*, 2022). On one hand, financial capital is a visible yet equally strategic asset to any start-up as it serves to unlock the utilisation and mobilisation of other, possibly human resources, such as labour and skills, and other fixed assets like equipment and technology (ACF, 2019; Watermeyer & Phillips, 2020b). On the other hand, DCF explains that financial liquidity flexibility are equally important features of an organisation's capabilities, enabling it not only to take full advantage of business opportunities that arise in the industry, but also in terms of its capacity to rapidly reconfigure its existing capabilities to align itself with prevailing market forces (Teece *et al.*, 1997; Teece, 2022a). While these theoretical perspectives emphasise the strategic role of finance, the participant responses highlight how these challenges manifest differently across the sampled groups. These findings are echoed by a successful Grade 5 Managing Director who noted that *"Access to finance has improved since we reached Grade 5". However, late client payments still create liquidity gaps that affect subcontractors and suppliers.*" This perspective reflects the experience of scaling start-ups, who have begun to overcome credit access barriers but remain constrained by systemic cash flow delays. Likewise, an industry stakeholder from the CIDB observed that *"Most small contractors can't secure bridging finance because they lack financial records or collateral, which limits their ability to mobilise even when awarded tenders."* In contrast, this stakeholder view reflects the structural and institutional realities facing lower-grade contractors (Grades 1–3), where limited financial documentation and collateral restrict their growth and scalability.

This position is further reinforced by the commercial bank representative, who indicated that *"Financial institutions struggle to assess construction start-ups because their cash flows are irregular, project-based, and highly dependent on client payment cycles, which increases perceived lending risk."* The bank representative further noted that *"Without reliable financial statements, guarantees, or predictable revenue streams, it becomes difficult for banks to justify extending credit facilities to small contractors."* When compared, the Managing Director's account represents internal business-level challenges within scaling construction start-ups, whereas the CIDB stakeholder highlights broader systemic and policy-driven constraints affecting early-stage contractors. The commercial bank perspective adds a third layer by revealing how financial institutions' risk assessment models and lending criteria further entrench these constraints. These statements reinforce that both access to credit and liquidity flexibility remain strategic enablers of growth and resilience in construction start-ups.

4.6.1.5 Discussion of Theme 1 Findings

Financial limitations were repeatedly cited as the predominant barrier to start-ups' scalability, in line with the research objectives. This directly addresses the primary objective of examining how key challenges influence start-up scalability. Insufficient access to credit from financial institutions due to a lack of collateral, short track records, and low liquidity forces many start-ups to depend on client advances, informal loans, and supplier credit, which hinders their ability to grow beyond minor projects (Fatoki, 2014b; CIDB, 2022b). This finding supports the secondary objective of identifying the core challenges faced by start-up construction companies in Gauteng. This is consistent with the secondary research by Okanga and Groenewald (2017) and Windapo and

Cattell (2013), who identify liquidity constraints as significant factors contributing to stagnation among South African SMEs.

Drawing from the RBV theory (Barney, 1991), financial capital is fundamental for acquiring equipment, attracting and retaining skilled employees, and investing in technology and innovation to achieve scalability. The findings suggest that many start-ups operate with insufficient financial buffers, which constrain their ability to compete for tenders requiring guarantees or performance bonds (CIDB, 2024). This also relates to the objective of assessing the effectiveness of growth strategies employed by CIDB Grade 4–6 companies, as companies with stronger financial capacity demonstrated greater adaptability and resilience.

The Dynamic Capabilities Framework (Teece, 2022a) explains how financial flexibility, demonstrated through strategic partnerships, collaborations, or incremental growth, serves as a coping mechanism rather than a sustainable competitive advantage. Delayed payments from clients, particularly in the public sector, exacerbate financial fragility. The CIDB (2023) confirms that late payments trigger a ripple effect of problems that ultimately affect labour retention and material purchases. A few participants employed creative financial measures, such as phased billing or negotiating prepayments, but these were short-term coping strategies for deep-rooted structural issues.

The alignment of this theme with the research objectives is evident, as limited access to finance presents a significant obstacle to scalability and the long-term sustainability of start-ups, supporting the first secondary objective (CIDB, 2022a; Omotayo *et al.*, 2024a). Furthermore, the third secondary objective, which addresses credit guarantee schemes and timely payment policies, is linked to the financing challenges (CIDB, 2024; SEDA, 2023). It is therefore reasonable to conclude that the proposed practical implications such as credit guarantees, policy enforcement, and accessible micro-financing can play a significant role in the development and upskilling of emerging contractors, thereby fulfilling the objective of providing actionable recommendations for start-ups, policymakers, and industry stakeholders (World Bank, 2022; Satish *et al.*, 2024).

4.6.2 Theme 2: Regulatory and Institutional Barriers

This second theme explores how the complex regulatory landscape and rigid institutional frameworks present significant challenges to construction start-ups in Gauteng seeking to grow and scale. While public policy instruments like the CIDB grading system and Broad-Based Black Economic Empowerment (BBBEE) requirements aim to formalise and include more enterprises in the sector, they are often reported by participants as being unduly complex, duplicative, and disadvantageous to start-ups as articulated by the participants (Musabayana & Mutambara, 2022). The CIDB (2023) also notes that in South Africa, administrative inefficiencies and inconsistent enforcement within the regulatory and registration frameworks for the construction industry reduce participation among emerging contractors. From a theoretical standpoint, the DCF theory emphasises that the ability of companies to conform to these institutional pressures is critical to their survival (Cavusgil & Deligonul, 2024). On the other hand, Institutional Theory (North, 1990) argues that institutional environments which are regulatory, shape the behaviour of companies and in this case, constrain rather than enable growth. The sub-themes related to the theme are further expanded below:

4.6.2.1 Sub-theme 1 - Complex Compliance Requirements

The sub-theme highlights the extensive and often burdensome regulatory, financial, and administrative obligations that construction start-ups in South Africa must satisfy in order to qualify for tenders and operate within the constraints of the law. These requirements place considerable strain on their limited financial capacity and resources (ACF, 2019). In discussing this aspect, the following responses were noted from the participants:

Quote 1: *“CIDB renewal and compliance take too long.”* (P1)

Quote 2: *“Each client wants different documents. COIDA, tax clearance, BBBEE, safety file all with different expiry dates.”* (P3)

Quote 3: *“Compliance is expensive; we hire consultants just to prepare tender documents.”* (P4)

Quote 4: *“If one certificate expires, the system blocks you out. You can’t even submit.”* (P2)

Participant (P1) describes the lengthy turnaround time of the CIDB registration and renewal process, which takes away resources and delays new project opportunities. Participant (P3) details their struggles with the duplication of compliance processes, noting that the non-alignment of the institutions such as the CIDB, Central Supplier Database (CSD), South African Revenue Service (SARS) and the Department of Labour forces contractors to repeatedly produce similar documents for each tender. This third quote, from participant (P4), explains how cost-based exclusion as the payment of compliance services have become an additional financial burden that start-ups cannot bear. The final participant (P2) highlights the zero-tolerance nature of the system where administrative errors, rather than performance standards determine who is allowed to participate. These participants’ views are consistent with Amoah & Mlenzana (2022), who found that compliance was complex and consumed much of the time and resources of start-ups. Within the DCF, the adaptability of start-ups to deal with this administrative burden through building systems like documents tracking systems, or strategic partnering with compliance services providers can enhance their institutional adaptability (Cavusgil & Deligonul, 2024).

4.6.2.2 Sub-theme 2 - CIDB Grading Limitations and Market Segmentation.

The CIDB grading system places constraints on construction start-ups by restricting them to projects within their financial and work capacity limits. This system effectively excludes them from higher value opportunities thereby creating a market segmentation that favours established companies (Doman, 2023; CIDB, 2025). In relation to this, participants expressed the following views:

Quote 1: *“Tendering favours established companies. Small contractors cannot move up because grading depends on past projects.”* (P3)

Quote 2: *“Bigger contractors dominate higher-value projects and sublet small portions to us.”* (P4)

Quote 3: *“We tried upgrading our CIDB grade, but they asked for financial statements which we cannot produce.”* (P1)

Quote 4: *“Government should consider capacity and skills, not just past contract values.”* (P2)

In the first quote, participant (P3) notes how the CIDB grading system is self-reinforcing. Companies need experience to level up, but they need a higher grade to access bigger contracts and gain that experience. This second participant (P4) discusses tiered exclusion, whereby, start-ups end up as dependent subcontractors and never principal contractors, which reinforces structural inequality. In the third quote, the participant (P1) highlights documentation-based exclusion as micro-enterprises often lack professional accounting services to prepare financial statements. Finally, participant (P2) is suggesting a solution that departs from the status quo where competency-based evaluation can take a developmental rather than a transactional approach to grading. Watermeyer and Phillips (2020a) posited similar arguments that CIDB's current system is fostering and perpetuating market segmentation. A DCF viewpoint, would explain that start-ups have to develop institutional navigation skills. These skills are understanding the procedural rules, aligning the supporting documents and developing partnerships to overcome grading barriers and gain new opportunities (Cavusgil & Deligonul, 2024).

4.6.2.3 Sub-theme 3 - Bureaucratic Procurement and Institutional Inefficiency

This hinders construction start-up scaling by causing project delays, disrupting cash flows and causing missed growth opportunities due to slow tendering processes, and delayed payments (Oshungade & Kruger, 2017). The participants reflected on this issue as follows:

Quote 1: *"Paperwork discourages small players. It is too much for one person to handle."* (P3)

Quote 2: *"Tenders take months to be awarded. By then our compliance documents have expired."* (P5)

Quote 3: *"When tenders are re-advertised, we lose more money on printing and preparation."* (P1)

Quote 4: *"Sometimes it feels like tenders are already decided before they close."* (P2)

In the first quote participant (P3), summarises the administrative burden that micro-enterprises experience and how the need for tender documents and compliance requires tender staff. Participant (P5) explains that the slow adjudication processes compound the compliance costs as expired documents have to be constantly re-submitted and re-renewed. The third quote from participant (P1) laments how resources get wasted because of the lack of procedural efficiency, which is more debilitating to start-ups with limited budgets. Finally, in the last quote, the participant is voicing a perception of corruption and partiality, which erodes trust in public procurement systems and discourages engagement. Windapo (2020) had similar findings that bureaucratic inefficiency and corruption discourage start-ups from bidding for public work opportunities. The DCF explains these issues as examples of institutional volatility that requires adaptability and learning by companies (Cavusgil & Deligonul, 2024). For example, companies that can develop networks, forge informal alliances or find alternative market channels are said to have dynamic capabilities and can survive, even in the midst of systemic constraints (Mushangai, 2023).

4.6.2.4 Sub-theme 4 - Institutional Fragmentation and Policy Incoherence.

This creates overlapping mandates, inconsistent regulations, and unclear support frameworks for construction start-ups, which hinder coordinated growth and effective access to industry

opportunities (Nawi *et al.*, 2014). With respect to this sub-theme, participants articulated the following opinions:

Quote 1: *“Different agencies do not talk to each other. You go to SEDA or SEFA and get different answers.”* (P4)

Quote 2: *“We attended training with CIDB, but after that, no one followed up.”* (P2)

Quote 3: *“Government keeps changing the tender rules. By the time we understand them, they update again.”* (P5)

Quote 4: *“We need one-stop centres for compliance and funding instead of running between institutions.”* (P3)

In the first quote, participant (P4) alludes to the fragmented institutional support provided by different government agencies, which have overlapping mandates and cause confusion and duplication. The second participant (P2) is describing the short-term development support that has limited sustainability or follow-up results. The third quote from participant (P5) highlights the issue of regulatory instability, which negatively impacts long-term planning and confidence among emerging contractors. In the last quote participant (P3), articulates a plea for policy coordination and simplification, which is what CIDB (2024) recommends for reform. SEDA (2023) reported similar findings, noting that there was poor coordination between development agencies and a lack of an integrated support mechanism. The DCF argues that companies have to learn to reconfigure institutional relationships, and this involves building cross-agency linkages and leveraging the programmes strategically for an adaptive advantage (Mushangai, 2023; Cavusgil & Deligonul, 2024).

4.6.2.5 Synthesis of Theme 2 Findings

The findings reveal that there are regulatory and institutional barriers that continue to frustrate the scaling of construction start-ups in Gauteng. Formalising through obtaining CIDB registration and putting compliance systems in place and visible were processes mostly alluded to as unduly complex, leading to administrative duplication of efforts and placing start-ups at a disadvantage, as expressed by the participants (Watermeyer & Phillips, 2020b; Amoah & Mlenzana, 2022; CIDB, 2022b). From the Institutional Theory perspective (North, 1990), the concept of “institutional misalignment” can be used to interpret these as the formal rules such as tender laws and informal norms such as slow adjudication or partial enforcement, which at best are conflicting and constraining the participation of entrepreneurs. These findings align with broader literature on small business formalisation in developing economies, where compliance complexity and regulatory fragmentation are known to hinder start-up growth and survival (Rogerson, 2008; OECD, 2022).

The DCF also explains that institutional adaptability is an important response mechanism required for start-ups to survive (Winter, 2003; Cavusgil & Deligonul, 2024). In essence, this is the ability to interpret the requirements and signals from the institutional environment and respond to the compliance demands, pressures and build relationships with key stakeholders (Gutterman, 2023). Companies that exhibit institutional adaptability are therefore considered to have the dynamic

capability to survive bureaucratic environments (Cordero *et al.*, 2022; Cavusgil & Deligonul, 2024). As a successful Grade 6 contractor reflected, “*Compliance becomes a lifestyle at this level... smaller contractors struggle because compliance costs can consume up to 10% of project value,*” underscoring how complex administrative systems erode competitiveness and redirect scarce resources from productive activities. This perspective highlights the internal, operational burden experienced by scaling SMMEs, who have already formalised but continue to struggle with rising compliance costs (CIDB, 2024). Similarly, a CIDB development officer noted that “*Procurement documentation and OHS (Occupational Health & Safety) compliance are most time-consuming... there’s duplication between CIDB grading, CSD registration, and tax compliance,*” reaffirming the institutional inefficiencies that stifle start-up growth and responsiveness (CIDB, 2022a). In contrast, this stakeholder perspective reflects the systemic and structural barriers faced by lower-grade construction start-ups, who are still attempting to formalise and enter the regulated market. Together, these responses demonstrate that while established companies struggle with the cost and sustainability of compliance, early-stage start-ups face barriers of access and administrative complexity, showing how institutional misalignment affects construction companies differently along the CIDB lifecycle.

Start-ups need this type of dynamic capability to navigate policy changes and uncertainty, maintain their compliance with registration requirements, and strategically access and utilise developmental programmes (Winter, 2003; Teece, 2022a). In conclusion, this theme shows that scaling up construction start-ups in South Africa will require less bureaucratic engagement and a simplification of institutions to reduce administrative burdens, time and resources used on unproductive activities so that companies can focus on activities that would drive innovation, capability building and the long-term sustainable growth of construction start-ups (Aigbavboa, 2014; CIDB, 2024). Therefore, this theme and its associated categories demonstrate that financial liquidity flexibility is just as important as access to capital (Fatoki, 2014a; Nkwini, 2023). Construction start-ups that have learnt to continuously renegotiate their payment and billing arrangements with clients, and which are able to plan their project execution in terms of phased disbursement of the lump-sum contract fees, in addition to applying proactive cash-flow management practices, emerge as the most competitive and adaptable in the challenging South African context (Peters *et al.*, 2019; ACF, 2019).

4.6.2.6 Discussion of Theme 2 Findings

Respondents pointed out that complex regulatory settings, together with CIDB grading restrictions and bureaucratic procurement processes, constrain growth opportunities for small contractors. This finding directly supports the primary objective of examining how key challenges influence scalability. Participants described the CIDB registration and renewal process as time-consuming and confusing, and noted that it often caused start-ups to miss tender submission deadlines. This also fulfils the first secondary objective by identifying specific regulatory challenges faced by start-up construction companies. This finding is supported by Mhlongo and Daya (2023), who found that administrative inefficiency and institutional inflexibility contribute to the marginalisation of small and medium-sized players in the South African construction industry. From an Institutional Theory perspective (North, 1990; Scott, 2014), these barriers arise when formal institutions do not align with the realities and capacities of new market entrants. Participants

perceived the procurement landscape as tilted towards large companies, thereby reinforcing a two-tiered system where established players secured most lucrative contracts while start-ups were left to compete for small works. The persistence of this imbalance suggests institutional voids that are highlighted by gaps between policy intent and implementation, which impede inclusive participation (Andrews & Luiz, 2024). However, a few participants noted that compliance, despite its challenges, can lead to increased credibility and competitiveness in the long run. This aligns with the DCF framework, which posits that companies with the capability to develop administrative and regulatory competencies can transform compliance burdens into a long-term strategic asset (Teece, 2022a). This relates to the second secondary objective, which focuses on how companies use strategic and operational capabilities to overcome institutional barriers. This theme further supports the primary objective by identifying institutional and regulatory inefficiencies that impede scalability. Additionally, it partially contributes to the first secondary objective by pinpointing regulatory barriers, and it also partially contributes to the third secondary objective by emphasising the need for policy simplification, digital tendering platforms, and CIDB decentralisation to mitigate exclusionary practices, thereby reinforcing the study's goal of providing actionable recommendations for policy and practice.

4.6.3 Theme 3: Human Capital and Skills Development

The third key theme extracted from the collected data is the scarcity of skilled labour and managerial capacity in construction start-ups and the challenges they encounter in retaining and training their workforce. The absence of competent artisans, limited supervision capacity, and high staff turnover emerged as significant issues in the perspectives of all participants, which impede efficiency and growth (ACF, 2019). Despite the identified skills gaps and constraints in construction start-ups, the study findings also show that some entrepreneurs are exploring investment in on-the-job learning and mentoring as an internal solution (Justus *et al.*, 2010). The significance of this theme is that while technical proficiency forms the foundation of construction operations, human capital development and effective workforce management are critical to sustaining scalability and competitiveness (Omotayo *et al.*, 2024a).

4.6.3.1 Sub Theme 1 - Skills Shortages and Workforce Reliability

This affects construction start-ups by limiting access to qualified labour, increasing rework and supervision costs which undermine overall productivity and project quality (Windapo, 2016; SA Building Review, 2025). The participants had the following comments to make:

Quote 1: *“Qualified artisans are hard to find. A lot of the people we end up using for artisanal positions have no training or knowledge of safety requirements.”* (P1)

Quote 2: *“Skilled workers do not want to work for small companies like us. We have never had an engineer that has worked for us for more than six months. Most prefer the bigger companies with job security.”* (P4)

Quote 3: *“We mostly end up hiring semi-skilled workers and then training them on site. It affects our productivity and meeting deadlines.”* (P2)

Quote 4: *“Sometimes they just leave in the middle of the project in search of higher paying jobs.”* (P3)

This sentiment revealed in the first quote by participant (P1), shows that the participant struggles to find formally qualified artisans to employ for small projects, with the result of hiring semi- or unqualified labour from the informal job market. This, according to the respondent, leads to low productivity and a high incidence of rework due to skills shortages on the job and the requirement for higher supervision which become additional cost burdens. The second quote above by participant (P4) shows the mobility issue for labour sourcing. Small construction start-ups have challenges in attracting and retaining adequate numbers of good artisans and engineers as compared with larger contractors. This reflects a preference for job security, benefits, and working conditions offered in bigger companies. In the third quote, the participant describes how time and effort is lost in the initial informal training of artisans on site. The on-the-job learning by construction start-ups fills the gap in skills sourcing and access to certified artisans but also slows down the progress of project execution, revealing the productivity trade-off in company upskilling efforts. The final quote from the interview extracts above indicates the high turnover and low retention of skilled workers by construction start-ups which is an industry norm in the informal labour market for construction. It represents a barrier to the continuity and quality of work. Taken together, these quotes corroborate CIDB (2023) and Windapo and Rotimi (2012) who found that poor skills development and the absence of qualified artisans are barriers to productivity for new entrants. In the RBV theoretical model, human capital, in this case skilled labour and artisan knowledge, is a valuable and non-substitutable company resource that supports long-term competitiveness (Mailani *et al.*, 2024). In this study, its absence is constraining the ability of start-ups to carry out projects at speed and to compete for larger tenders (Windapo, 2016; ACF, 2019).

4.6.3.2 Sub-Theme 2 - Supervision, Management, and Leadership Capability

This influence construction start-ups by determining their ability to plan effectively, coordinate teams, make strategic decisions and drive sustainable growth in a competitive industry (Watermeyer & Phillips, 2020a). On this sub-theme participants had this to say:

Quote 1: *“Leadership and record-keeping are important for success. In our business, I wear many hats in the company. I am site supervisor, buyer, accountant...”* (P2)

Quote 2: *“We do not have a foreman or a qualified supervisor. The owner must supervise every aspect.”* (P3)

Quote 3: *“Leadership and planning are key. You must manage people, the client, and the budget at the same time.”* (P4)

Quote 4: *“I’ve only learned to manage people through experience, not something we are taught.”* (P6)

In the first response, the participant illustrates how limited staff capacity compels owners to take on multiple management and leadership roles within the company. It is a testament to their personal commitment and resourcefulness, but it also means that the entrepreneur is overburdened and less effective over time. The second quotation is from a participant who laments the lack of mid-level management structure and staff to delegate to within small construction start-ups. This limits the scope of resourcing site operations and slows administrative decision-making and response time. In the third quote, the participant is not only acknowledging the different elements of managerial

capacity needed for operations, but also bemoaning the pressure it exerts on leadership quality and delivery. The final excerpt from participant (P6), is an example of entrepreneurial leadership being built through learning and trial and error on site. This reflects a process of self-development in the absence of training and mentoring. Overallly the quotes reflect an awareness that including technical capability, leadership and team coordination are important to scaling. In these instances, the respondents confirm Amadi and Higham (2016) and Ismail et alia (2021) a, who mentioned that leadership competence and other managerial aspects are key to success in start-up construction companies. According to the DCF, learning about leadership and management is an example of the sensing and transforming dynamics that can be activated for a company to adapt and reconfigure internal processes and resources to increase its scalability (Leemann *et al.*, 2021).

4.6.3.3 Sub-theme 3 - Informal Training, Learning, and Knowledge Transfer

This enables construction start-ups to build practical skills and industry experience through on-the-job experiences, peer mentoring and collaborative learning rather than structured programmes and formal education (Justus *et al.*, 2010; O'Neil *et al.*, 2022; Prummer *et al.*, 2023). On this point, participants shared the following perspectives:

Quote 1: *“Every project teaches us something new. We get better at how we quote and plan for the next project.”* (P6)

Quote 2: *“I train my workers on site about safety and simple measurements.”* (P3)

Quote 3: *“We mostly rely on trial and error. Sometimes we lose money but gain experience.”* (P1)

Quote 4: *“Mentorship from bigger contractors helped me to understand tendering and controlling costs.”* (P2)

In the above responses, the first quote shows the participant (P6), sharing their experience of experiential and reflective learning on the job, where every new construction project undertaken contributes to knowledge accumulation and strengthens management and planning systems over time. The second quote above from participant (P3) is an example of the informal knowledge transfer that happens within construction start-ups. In the absence of accredited training schools, entrepreneurs take it upon themselves to impart knowledge and skills to their workers and staff within the operations. On the third quote, here the participant (P1), is also highlighting the costly nature of experiential and on-the-job learning as a stop-gap for the absence of a structured training system. Experience leads to financial loss and waste on some projects in construction start-ups. The final and fourth quote, has the participant (P2) is showing how peer-to-peer mentorship becomes an alternative way of learning for entrepreneurs as they engage with similar projects. It partially plugs practical and administrative gaps in business understanding and operations. The above findings echo Becker (2009), who emphasises that company performance is also based on the human capital development of entrepreneurs through learning by experience on the job. The RBV further highlights that tacit knowledge gained through experience becomes a hard-to-imitate resource in the RBV that competitors cannot easily acquire (Mailani *et al.*, 2024). The DCF also points out that continuous adaptive learning and adjustment transform experience and ability into company capability and capacity (Cavusgil & Deligonul, 2024).

4.6.3.4 Sub-theme 4 - Retention and Workforce Motivation

This sub-theme affects construction start-ups by influencing the loyalty, productivity and performance levels of employees as motivated and stable teams are essential for maintaining quality of work, meeting project deadlines and achieving overall business growth (Thwala, 2012; Sharfuddin *et al.*, 2025). With regards to this the participants had the following to say:

Quote 1: *“When workers leave us in the middle of a project, it really messes up everything from timelines, quality, and our reputation.”* (P1)

Quote 2: *“We try our best to pay workers as and when we can. We even delay other expenses to pay them on time just to keep them with us.”* (P3)

Quote 3: *“It is difficult to motivate workers, especially when jobs are short term. They feel they have no future.”* (P4)

Quote 4: *“We have to build a relationship with our good artisans and engineers so that they come back for the next project.”* (P2)

The first quote above from a participant’s interview excerpt illustrates how labour turnover, common in the construction sector, becomes a source of instability for small construction start-ups. In project work, it poses the risk of contractual non-compliance and lost client trust. In the second quote above, the participant is showing how construction start-ups use financial incentives, even at the expense of other operating needs, to retain good labour and workers who can be relied upon on site. In the third excerpt, the participant is expressing a lack of long-term employment security for construction labour employed on project basis. This weakens employee loyalty and is also a factor behind the high turnover rate. The fourth excerpt from a participant’s interview, shows the respondent is illustrating the use of relational retention strategies, where the entrepreneur has to maintain and leverage informal networks with artisans and engineers to ensure continuity of labour supply in subsequent projects. Taken together, these experiences highlight the human-capital paradox in that construction start-ups are willing to invest in the development of workers but lack the institutional or other systems to retain them (Hove, 2016a; Mkhonza *et al.*, 2025). The lack of retention and motivation mechanisms or incentives reduces the return on investment in staff training (Khadka *et al.*, 2024). In the RBV, this also weakens the ability of companies to protect and use the capabilities they have built internally (Mailani *et al.*, 2024).

4.6.3.5 Synthesis of Theme 3 Findings

In summary, this third theme that emerged in the study reveals that while technical skills and informal know-how form the basis of construction start-up operations, it is the weakness of human-capital management systems, limited skills development opportunities, and the absence of structured leadership training that threatens the sustainability and scalability of such operations (ACF, 2019). High staff turnover, the lack of formal supervision, and the need to work with untrained labour from the informal economy drain productivity and limit potential to scale (CIDB, 2015). In terms of theoretical insight, in the RBV model, skilled labour and artisanal knowledge, leadership, and organisational knowledge form a set of valuable, rare, and inimitable intangible company resources that are the source of long-term competitiveness (Mailani *et al.*, 2024). In the present study, the lack of human-capital development blocks the ability of construction start-ups

to leverage such resources for growth (Hove, 2016b). The DCF further holds that human capital must change over time and be constantly shaped through learning and adaptation to remain relevant and drive sustained scalability in a turbulent and competitive construction environment (Cavusgil & Deligonul, 2024; Faugoo, 2024). These theoretical perspectives are reinforced by the participant responses, which show that start-ups that actively invest in skills development and leadership capacity are better positioned for scaling and long-term resilience.

As one successful Grade 6 founder observed, *“We’ve built an internal mentorship programme for foremen and site agents... it’s about creating a pipeline of leaders from within,”* highlighting that strategic investment in people and internal capacity building enhances adaptability and long-term competitiveness. This reflects the lived experiences of scaling SMME leaders who recognise that strengthening internal human-capital systems directly supports sustainable growth. Similarly, a representative from the consulting engineering company emphasised that *“The most successful start-ups invest in training, project management using seasoned project management professionals and software programs, and partnerships with consultants,”* reinforcing that learning and continuous upskilling are central to dynamic capability development. In contrast, this stakeholder perspective highlights the broader institutional and industry expectations placed on start-ups, showing that while founders focus on internal mentorship, industry stakeholders stress formal training, professionalisation, and external partnerships. Together, these viewpoints demonstrate that both internal leadership development and external technical training pathways are critical for enabling construction start-ups to scale effectively within the Gauteng construction ecosystem. Thus, from a practical implication perspective, scaling construction start-ups in Gauteng needs investment in vocational training, mentorship, and leadership development to address the constraints of skills shortages and lack of managerial capacity (Liphadzi *et al.*, 2018; Watermeyer & Phillips, 2020b). Collaboration between the government, industry associations, and educational institutions may offer a way of providing structured pathways for the much-needed capacity building among construction start-ups, which would enable them to translate technical skills into managerial competence, operational resilience, and long-term growth (Odonkor *et al.*, 2024a; Odonkor *et al.*, 2024b; Sogaxa, 2024).

4.6.3.6 Discussion of Theme 3 Findings

The main obstacles to scalability included skill shortages, together with managerial deficiencies and insufficient mentorship opportunities (Ntuli & Allopi, 2014; ACF, 2019). This finding contributes directly to the primary objective by showing how human resource limitations affect start-up scalability. Respondents further explained that workers were “learning on the job” due to an absence of formal training programmes, which, in turn, resulted in inconsistent quality and productivity. Ntuli and Allopi (2014) and Mphahlele (2020) similarly reported widespread human capital constraints across construction start-ups. Human capital, which includes skills and knowledge along with leadership, serves as a unique internal resource that establishes competitive advantage according to the RBV framework (Barney, 1991). However, the study found that a lack of financial and institutional capacity has prevented investment in formal training by many start-ups. This supports the first secondary objective by identifying workforce development challenges faced by emerging contractors. Workers often leave for higher-paying positions in established companies, thereby reinforcing an underdevelopment cycle. A shortage of qualified supervisors

and project managers was also mentioned by some respondents, further supporting previous findings by CIDB (2023) that management deficiencies have hampered operational efficiencies. The DCF lens, on the other hand, suggests that start-ups can still develop adaptive human capital through mentoring, experiential learning, and peer-to-peer collaboration (Teece, 2022a). Some respondents spoke about utilising online tutorials, networking groups, and subcontractor partnerships as informal learning platforms. These approaches align with the second secondary objective, which examines the effectiveness of the growth and learning strategies used by start-ups. The participants reported that these initiatives lacked systematic coordination, as they were driven by spontaneous individual efforts rather than organisational support. This theme supports the main objective by demonstrating that the lack of human capital limits scalability. It contributes to the first secondary objective by identifying skill and leadership shortages as growth barriers, and it advances the second secondary objective by demonstrating that mentorship and experiential learning are adaptive strategies being utilised by start-ups. For the third secondary objective, the findings suggest that policy responses should prioritise sustained mentorship, accredited training, and leadership development for small contractors, as targeted institutional support is necessary to close the human capital and leadership gaps identified in this study.

4.6.4 Theme 4: Technological Adoption and Innovation

Theme 4 aimed to explore how and to what extent construction start-ups in Gauteng Province adopt, adapt or fail to adopt digital tools or other technologies as part of the growth and development process. The data presented in this theme have been categorised according to how and in what way they indicate incremental or disruptive innovation practices.

4.6.4.1 Sub-theme 1 - Limited Adoption, Cost and Accessibility Issues

This hinders construction start-ups by restricting their ability to implement modern technologies and digital tools due to initial high costs of implementation, lack of technical expertise and limited access to affordable innovative resources (van Wyk *et al.*, 2021a). With regards to this the participants had this to say:

Quote 1: *“We use WhatsApp and Excel for costing. BIM is too expensive for small companies.”* (P1)

Quote 2: *“Google Sheets and Builder’s Diary improved record-keeping and reduced losses.”* (P2)

Quote 3: *“Most of these advanced tools are for big companies. We cannot afford licences or training.”* (P3)

Quote 4: *“We would like to use software for project management, but subscriptions and training are expensive.”* (P4)

The first participants quoted in this sub-theme indicates a technology gap in their operations, specifically, a lack of uptake of construction management or business intelligence technologies such as BIM. They identify cost as a key barrier to technology adoption for small contractors. The second participant highlights how incremental innovation in the form of digital tools improved the administrative and financial management in their business. Using affordable software to track and audit site operations increases accountability and reduces errors and losses. These innovations

reflect the DOI theory by Rogers (2003), according to which compatibility and cost are key drivers of adoption decisions. The third participant quoted suggests that emerging construction start-ups are systematically excluded from the benefits of the digital transformation agenda unfolding in the sector. They describe a situation of technological under-inclusion, where high entry costs, limited demand and lack of training further marginalise start-ups from competitive markets. The final quote echoes the earlier sentiments, showing that, without affordable solutions, uptake of technology tools by small and micro-enterprises will remain limited. Cost is again identified as a major adoption barrier. These experiences by participants in this research support the findings by Aghimien et al., (2021) who found that the cost of innovation and technical know-how of personnel were primary adoption barriers for construction start-ups. From a Resource-Based View (RBV) of innovation and company development, technology tools and software are strategic resources that enable efficiency gains and competitive advantage (Mailani *et al.*, 2024). However, without the financial and human capacity to access and deploy them, their advantages are not realised (Kero & Bogale, 2023).

4.6.4.2 Sub-theme 2 - Digital Tools for Communication and Cost Management

This enhances coordination transparency and financial control for construction start-ups by streamlining project communication, budgeting and expenditure tracking across teams and stakeholders (Ogunbukola, 2024; Lakhamraju, 2025). When discussing this, participant made the following comments:

Quote 1: “*We now use Google Sheets to monitor labour and materials daily.*” (P2)

Quote 2: “*WhatsApp helps us communicate with site teams and clients instantly.*” (P1)

Quote 3: “*I have started using a mobile app for quotations and expense tracking. It is simple and saves time.*” (P3)

Quote 4: “*Using online invoicing has helped me appear more professional to clients.*” (P4)

In the first quote, the participant shows how they are using technology to facilitate visibility of cost data. Daily monitoring of material, labour and equipment expenses in online sheets provides real-time insights to the owner for better decision-making and cost control. The second participant describes an innovation adoption practice of low cost and high compatibility with existing communication routines. Digital chat and file transfer speeds up interactions with clients and on-site staff and reduces downtime and coordination errors. The use of a technology tool for generating quotations and tracking project expenses is described by the third participant as a micro-innovation. The tool’s simplicity and speed improve productivity and accuracy in the owner’s key administrative tasks. Digital adoption as in the final quote is used to facilitate relationships with clients and improve how they the company is perceive. The innovation generates indirect effects of professionalism and credibility that are instrumental for building trust and competitiveness. These examples suggest that technology adoption is still at an incremental and adaptive stage in construction start-ups, characterised by gradual changes rather than a complete overhaul of the production and management system (Kanojia, 2024; Faruque *et al.*, 2024). Consistent with the DOI theory, entrepreneurs adopt innovations only when they are seen to be simple, affordable and compatible with existing practices and work cultures (Rogers, 2003; Faruque *et al.*, 2024). The

DCF can be used to explain these responses as “micro-foundations” of learning and reconfiguration that build companies’ operational efficiency (Cavusgil & Deligonul, 2024).

4.6.4.3 Sub-theme 3 - Barriers to Technological Learning and Integration

This limits the ability for start-ups to adopt and effectively use new digital systems due to inadequate training, internal resistance to change and insufficient technical support and systems (Ebrahim & van den Berg, 2024). The participants had the following statements to say with regards to this:

Quote 1: *“Most of our workers do not have digital skills, so it is hard to implement new systems.”* (P3)

Quote 2: *“We do not have IT support. If something goes wrong, we just stop using the system until we can outsource IT support.”* (P4)

Quote 3: *“Even when we attend training, sometimes it is too short and not practical, so in the end it feels as if we are just wasting our time with these free training programmes.”* (P5)

Quote 4: *“I want to try drones or project tracking software, but I do not know where to start.”* (P1)

This first participant’s response reveals an internal human-resource barrier that constrains technology diffusion in the company. This is another form of the digital divide, in this case based on skills and competence. Technical dependency of start-ups is described in the second quote, where a lack of in-house expertise and a narrow margin for mistakes in production and administration render digital systems vulnerable to abandonment. In the third quote, the participant expresses frustration with free technology training programmes as shallow and not linked to immediate business needs. For small entrepreneurs and their staff, the practical utility and continuity of learning are important for digital literacy. With participant (P1) quoted in quote 4, the use of technology is seen here as an aspiration, a wish to adopt innovative tools but with no pointers for how to go about it. This suggests a need for structural guidance in the form of mentorship and advisory support for construction start-ups to adopt technology safely and productively (Yan *et al.*, 2024). These quotes from the participants confirm the findings by Bozkuş (2023), who noted that while the technology and software are available, the full digital transformation of construction production and management still requires extensive training and organisational culture change (Kayser *et al.*, 2023). These issues in the DCF are seen as barriers to the final step of innovation adoption known as transforming that is, a process of embedding and institutionalising a new tool or system in the company’s routines and operating procedures (Codeiro *et al.*, 2022).

4.6.4.4 Sub-theme 4 - Incremental Innovation and Sources of Competitive Advantage.

This enables construction start-ups to achieve gradual improvements in processes, products and service delivery allowing them to differentiate themselves from competitors, enhance the efficiency of their operations and strengthen their market position over time (Zhang *et al.*, 2022; Toto *et al.*, 2024). With regards to this sub-theme, the participants had this to say:

Quote 1: *“Using simple apps has helped us estimate costs faster and look more professional.”* (P4)

Quote 2: *“I am exploring low-cost project management software like Monday.com to improve oversight.”* (P6)

Quote 3: *“Technology helps small contractors compete better. We can show clients progress updates easily.”* (P3)

Quote 5: *“Digital tools save us time and reduce mistakes. We can do more with less.”* (P1)

This first participant (P4) reflection suggests that a frugal approach to innovation using widely available apps and platforms is proving to be useful in their company. These small-scale innovations bridge a gap in professionalism and allow the business to do more with less. The second response shows a strategic awareness on the part of an entrepreneur about the role of digital tools in process reconfiguration. Experimentation with cloud-based and scalable solutions that can grow with the business is key to efficiency gains. The third participant makes the connection between using technology and market competitiveness in a crowded industry. Digital tools enable start-ups to improve their client relationships and service quality by offering more transparency and responsiveness. The benefits of technology adoption are summarised in the final quote, as an efficiency gain that saves time and errors and therefore frees resources for other tasks. The emerging pattern from the above experiences is the emergence of incremental innovation that is adaptive to needs, challenges and affordability and is aimed at solving concrete production and management problems faced by construction start-ups (Zhang, 2022). Tidd and Bessant (2014) note that in resource-constrained environments, innovation rarely occurs as a radical leap but instead emerges slowly through learning-by-doing and doing-by-learning.

4.6.4.5 Synthesis of Theme 4 Findings

In summary, the data in this theme suggest that technological adoption or innovation in construction start-ups is incremental, adaptive, and driven by cost considerations. Participants acknowledge the value of digital tools for improving communication, project tracking and financial management, but face structural barriers to change that include limited budgets, digital illiteracy and lack of institutional support (Omowole *et al.*, 2024). The theory of DOI can explain this situation more clearly. According to the DOI theory, the rate and extent of adoption depend on how users perceive the compatibility, complexity and relative advantage of a new tool or practice (Rogers, 2003). The findings suggest that start-ups will take up digital tools and software when they are affordable and easy to use and when they can be integrated with existing practices (Kayser *et al.*, 2023; Oyeyemi *et al.*, 2024). A successful Grade 5 company representative illustrated this incremental adoption, stating that *“We use MS Project, BuildSmart, and Sage Pastel for project tracking and cost control... Digitising our workflows has reduced disputes and improved reporting accuracy.”* This response reflects the perspective of a scaling SMME, demonstrating how companies at higher CIDB levels are able to formalise and systematise their operations through digital innovation. Similarly, a start-up owner explained, *“We use WhatsApp and Excel for communication and costing, but advanced systems like BIM are too expensive for us.”* In contrast, this highlights the challenges experienced by early-stage start-ups, whose technology adoption remains limited to low-cost and informal tools due to financial and capacity constraints. These contrasting perspectives show that while scaling companies adopt structured

and professional digital systems, start-ups are still reliant on basic digital communication tools, reinforcing the uneven pace of digital transformation across the construction company lifecycle.

These perspectives align with the RBV view that digital tools, though often basic, represent valuable strategic resources when effectively deployed, and with the DCF view that adaptability and learning determine whether such tools translate into sustainable competitiveness (Cavusgil & Deligonul, 2024). The RBV of company development positions technology tools as strategic resources that can be sources of competitive advantage if harnessed effectively (Mailani *et al.*, 2024). The DCF offers a process-based explanation, suggesting that the companies' ability to learn, adapt and embed these resources and practices in their operations is key to long-term growth (Cavusgil & Deligonul, 2024). Therefore, technological adoption by construction start-ups in Gauteng Province can be said to represent an early but promising step towards digitally-enabled growth and development (Ikuabe *et al.*, 2020; Kayser *et al.*, 2023). However, the findings suggest that targeted institutional support is required if start-ups are to progress from basic digital tools towards more advanced construction technologies that improve efficiency and competitiveness. Targeted support for these companies in the form of digital-skills training, access to subsidised software and mentorship would be a significant intervention to promote innovation and uptake (Justus *et al.*, 2010; Mofokeng, 2012; Gina *et al.*, 2022).

4.6.4.6 Discussion of Theme 4 Findings

The research findings revealed that technology adoption in construction start-ups remained minimal and unplanned. This finding supports the primary objective by illustrating how limited technological capability constrains the scalability of construction start-ups. Respondents cited using basic digital tools like Microsoft Excel, WhatsApp and Google Drive, and few owned or had skills to use advanced project management software. The research findings validate the position of Khamaksorn (2018) and CIDB (2023), indicating that high cost requirements, combined with complexity and the necessary skills, present barriers to digitalisation in South Africa's construction sector. This also fulfils the first secondary objective by identifying digital literacy and technology access gaps among emerging contractors. Based on the DOI Theory (Rogers, 2003), adoption is guided by compatibility, affordability, and relative advantage. Start-ups are late adopters because of cost, complexity, and integration with existing systems (García-Avilés, 2020). However, it was also shown that the participants were using incremental innovations for their operations, such as free mobile apps for timesheets, YouTube tutorials for estimating, and using cloud platforms for document sharing. These innovations were clearly in line with the DCF's concept of learning under constraint, where companies accumulate digital competence over time (Teece, 2022b). These examples align with the second secondary objective, which examines how companies adopt adaptive and innovative strategies to overcome industry challenges. From an RBV perspective, digital capability is an intangible company resource that improves efficiency, competitiveness, and credibility (Madhani, 2010; Mailani *et al.*, 2024). These findings show that while small contractors recognise and see the benefits of technology, they often lack institutional or financial support for its application (Hove, 2016a; Agenbag & Amoah, 2021). The lack of digitalisation not only affects efficiency but also limits data-driven decision-making and tender competitiveness (Aghimien *et al.*, 2023). This theme directly supports the primary objective by outlining how low innovation capability acts as a limitation to scalability. It also ties to the first secondary objective of mapping

technological and digital literacy gaps, while the second secondary was supported in terms of the different approaches' construction start-ups have to adopt incremental innovations. In terms of the third secondary objective, these insights suggest actions to address digital gaps, such as upskilling and digital capability programmes, subsidised software packages, and public-private innovation incubators for sector transformation, thereby providing practical and policy-relevant recommendations emerging from the empirical findings.

4.6.5 Theme 5: Institutional Support and Ecosystem Development

Theme 5 explores the presence and accessibility of institutional support systems and their role in construction start-up development. Despite several existing enterprise development programmes in South Africa, including SEDA, SEFA, CIDB Contractor Development Programmes, and BBBEE-linked incubators, the overall consensus from the participants was that the institutional support system for small business start-ups is still fragmented, slow, and uncoordinated. This theme has the following sub-themes or categories.

4.6.5.1 Sub-theme 1 - Fragmented and Uncoordinated Support Programmes

Start-ups struggle to access sustained funding, mentoring and capacity-building support due to fragmented and uncoordinated support programmes resulting in duplication, gaps and confusion among government and industry initiatives (ACF, 2019). When discussing this, the participants had the following comments to make:

Quote 1: *"We applied for funding but never got feedback."* (P1)

Quote 2: *"Different agencies do not talk to each other. You go from SEDA to SEFA and still get nothing."* (P3)

Quote 3: *"You attend a workshop, but there is no follow-up after that."* (P2)

Quote 4: *"We were promised mentorship and funding, but the process just stopped."* (P5)

Quote 5: *"There should be one place where contractors can get compliance help, finance and training together."* (P4)

This first reflects a lack of responsiveness and follow-up from institutional support agencies, causing disillusionment and discouragement from pursuing available programmes. The second participant's experience highlights the fragmented nature of the institutional system, where multiple agencies operate in silos with little communication or collaboration. The third quote shows that training and capacity-building programmes often have short-term engagement, with little continuity or tangible post-training outcomes. The fourth participant's experience of broken promises and non-delivered support services is a common implementation gap between policy and practice. This fifth quote encapsulates a suggested solution from the participant's perspective, where a one-stop-shop would streamline access to institutional services. The collective experience of the participants in this category reflects the disconnect between South Africa's support infrastructure and its beneficiaries, which echoes CIDB (2023) and Windapo (2020) on the fragmentation and institutional voids in support mechanisms. From a DCF perspective, companies that learn to engage with and/or bypass broken institutions build adaptive capacity and resilience over time (Cavusgil & Deligonul, 2024).

4.6.5.2 Sub-theme 2 - Limited Post-Incubation and Long-Term Assistance

This means that construction start-ups may face stagnation or even business failure in the growth stage after not having long-term and continuous support in terms of mentorship, financing, and market access after certain programmes or initiatives have come to an end (Clayton, 2024). In this category the participants made the following comments

Quote 1: *“We joined an incubation programme for six months, but once it ended, there was no further help.”* (P2)

Quote 2: *“After training, there is no monitoring or assistance to implement what we learned.”* (P6)

Quote 3: *“We need ongoing support, not just workshops.”* (P1)

Quote 4: *“Once you graduate from a support programme, it feels like you are on your own again.”* (P3)

The first quote highlights the lack of sustainability and continuity in institutional support programmes, with a focus on short-term incubation instead of longer-term follow-up. The second participant’s experience of post-training isolation shows that most programmes neglect to measure learning outcomes or provide follow-up support for practical application. The statement from participant (P1) reflects a common theme in the data that workshops and short-term training raise awareness but often lack to contribute to measurable business capability building or growth. The quote in the sub-theme alludes to institutional disengagement, where there is a lack of structured progression pathways to grow beyond incubation stages. The findings in this category are consistent with the literature by Ramasimu *et alia.*, (2023), which indicate that South African start-up support programmes focus on input-based development instead of long-term and outcome-driven growth pathways. From a DCF perspective, the lack of long-term and sequenced engagement with institutions prevents companies from building dynamic capabilities such as continuous learning, adaptation, and resource reconfiguration in response to environmental changes (Cavusgil & Deligonul, 2024).

4.6.5.3 Sub-theme 3 - Access Barriers and Policy Implementation Gaps.

This impedes construction start-ups by preventing them from fully benefiting from government initiatives and industry policies due to poor execution, limited awareness, and unequal access to opportunities (ACF, 2019). The participants had the following statements to say with regards to this category:

Quote 1: *“The system is not friendly to small contractors. There’s too much paperwork.”* (P4)

Quote 2: *“You need to know someone to get noticed, otherwise your application sits forever.”* (P1)

Quote 3: *“We tried to apply for SEFA funding, but the website was down for weeks.”* (P3)

Quote 4: *“Government talks about supporting small contractors, but in practice the system favours big players.”* (P2)

The first participant points to an administrative barrier and red tape exclusion, which deter the participation of small contractors in government support programmes. The second quote implies

informal gatekeeping and potential favouritism in accessing support services and development programmes. The third quote highlights the digital inefficiency in systems management, with outdated websites and lack of online support capabilities. The final quote summarises the perception of policy hypocrisy, where intended beneficiaries are not. Overall, the accounts in this category mirror the challenges noted in Chinomona and Sandada (2013) and SEDA (2023) that excessive bureaucracy, opaque selection processes, and poor communication erode trust between small entrepreneurs and support institutions. In DCF terms, complex institutional systems impair the development of relational capabilities (linking with external actors) and environmental scanning to navigate institutional spaces (Cavusgil & Deligonul, 2024).

4.6.5.4 Sub-theme 4 - Entrepreneurial Adaptation and Self-Reliance

This reflects the ability of construction start-ups to remain resilient and innovative by adjusting to market challenges developing internal solutions and remaining on their own initiatives to sustain and grow their businesses (Enwereji *et al.*, 2024). The participants had the following comments to say with regards to this theme:

Quote 1: *“We can’t wait for government help, we build our own networks and share leads.”* (P2)

Quote 2: *“We started a WhatsApp group of contractors to share opportunities.”* (P4)

Quote 3: *“Some of us mentor each other. We don’t wait for formal programmes.”* (P6)

Quote 4: *“Support would be nice but we’ve learned to survive without it.”* (P1)

The first quote shows the participant using informal networks to create a substitute system for institutional and formal support services whilst the second quote reflects grassroots, informal ecosystems of contractors supporting each other in the absence of institutional networks. The third participant’s response reveals a self-organised mechanism for peer-to-peer learning and knowledge transfer that supplements formal programmes. The final quote reveals both resilience and entrepreneurial self-reliance in response to institutional weaknesses and challenges. These quotes from the fourth category highlight the entrepreneurial and adaptive practices that some participants engage in to substitute for the institutional and support gaps they experience. These peer support mechanisms, strategic partnering, and independent learning have echoes in the DCF, where entrepreneurial companies reconfigure resources and networks to overcome environmental deficiencies and systemic weaknesses (Teece, 2022a). Start-up construction companies that learn to substitute formal support services with informal learning and networks can continue to develop dynamic capabilities even within institutional voids (Webb, 2019).

4.6.5.5 Synthesis of Theme 5 Findings

The findings from Theme 5 illustrate that despite a well-intentioned and largely progressive institutional environment for enterprise development in South Africa, the policy and regulatory framework for construction start-ups still face implementation inefficiencies, fragmentation, and short-termism. These issues compromise the ability of construction start-ups to access and leverage formal institutional support services for their growth and development needs. Institutional Theory (Scott, 2001) explains this as an institutional void, where there is a gap between the policies, norms, and formal support mechanisms and their implementation, communication, and efficacy on the

ground. DCF theory (Amit & Zott, 2012; Teece, 2022b) offers a second lens by mentioning that as companies continuously learn and adapt to institutional challenges, they develop alternative support ecosystems and dynamic capabilities to survive and even thrive. These theoretical insights are reflected differently by the various respondent categories, showing both operational and systemic dimensions of the support gap. This dynamic is evident in the reflections of a successful Grade 5 contractor who remarked, *“CIDB’s mentorship programme helped us with compliance and performance monitoring... however, institutions like SEFA and SEDA remain slow and bureaucratic. Their support needs to be aligned with construction realities.”* This contractor’s view represents the lived experience of scaling companies that have benefitted from certain support mechanisms, yet still encounter operational inefficiencies in accessing finance and technical assistance. Similarly, an industry stakeholder from the CIDB confirmed that *“coordination between CIDB, SEDA, SEFA, and the Department of Public Works is still fragmented,”* highlighting how institutional misalignment and duplication hinder start-up growth. In contrast, this stakeholder perspective points to broader structural and policy-level weaknesses within the enterprise support ecosystem, rather than company-level operational challenges. Together, these responses show that while contractors focus on the practical delivery of support services, institutional stakeholders emphasise systemic fragmentation and governance challenges.

As such, the construction start-ups in Gauteng are both vulnerable to and capable of circumventing systemic weaknesses. In other words, these start-ups experience significant support deficits and ecosystem gaps but have developed informal support mechanisms to compensate (Sanga & Mselle, 2018). They build their own networks and create grass-roots ecosystems for peer learning, sharing opportunities, and accessing strategic resources from larger and more established companies in the industry (Yucel & Azhar, 2023). This demonstrates that start-ups are not only recipients of support but also active creators of their own adaptive ecosystems. As such, they substitute for their unmet institutional support needs and overcome systemic bottlenecks in a way that increases their learning agility and dynamic capabilities (Rajasekharan, 2025). For this study, these entrepreneurial practices and institutional realities point to the need for systemic interventions such as institutional integration, one-stop-shop for contractor support, administrative simplification, and long-term monitoring of training and development programmes (CIDB, 2022a; OECD, 2022). This aligns with existing literature calling for stronger coordination between financial, developmental, and regulatory institutions to support construction SMME scalability (Rogerson, 2008; World Bank, 2022). An integrated support system between the CIDB, SEFA, SEDA, and BBBEE-linked institutions, with strong communication, post-training follow-up, and mentorship would improve the ability of new construction start-ups to develop dynamic capabilities and increase their sustainability and growth potential (Mofokeng, 2012; Teece, 2022a; Cavusgil & Deligonul, 2024).

4.6.5.6 Discussion of Theme 5 Findings

One prominent theme that recurred repeatedly was the fragmentation of institutional support systems. Informants mentioned duplications in the roles of agencies such as SEDA, SEFA, and CIDB, along with inconsistent messaging and one-off training programmes with little to no follow-up. These findings echo both Rogerson (2018) and SEDA (2023) who both lamented the lack of coordination and long-term mentoring initiatives in South African SME development. This can be

explained using the Institutional Theory framework, which argues that the lack of robust policy alignment and siloed operations leads to such fragmentation (Scott, 2014). Although government policies advocate for start-up empowerment and support, their implementation remains ineffective (Dembe *et al.*, 2022). Informants recounted losing faith in institutional programmes, noting, “*you attend a workshop, but there’s no follow-up.*” As a coping mechanism, most start-ups have turned to informal networks, suppliers, and collaborations with peers for support (Mlinga & Wells, 2002). This finding aligns with the DCF perspective, which posits that companies adapt by fostering informal ecosystems when formal ones are lacking (Teece, 2022a). However, overreliance on informality can never replace formal institutional mechanisms that provide regular funding, mentorship and oversight (Justus *et al.*, 2010; Finmark, 2025). This theme supports the primary objective by establishing that institutional fragmentation impedes start-up scalability. It further supports the second secondary objective by pinpointing gaps in the ecosystem, and the third secondary objective by underscoring the need for coordinated multi-agency support structures and sustained mentorship to bolster start-up growth.

4.6.6 Theme 6: Strategic Growth and Competitive Positioning

This theme investigates how the construction start-ups in Gauteng navigate and strategise for growth, market positioning, and competitiveness within an industry characterised by fragmentation and intense competition. The data indicates that many start-ups resort to short-term survival strategies like subcontracting, small-scale tendering, and cost minimisation. However, some entrepreneurs are articulating longer-term visions and strategies of partnerships, niche specialisation, and quality differentiation.

This supports Windapo and Cattell (2013) and CIDB (2023), who observed the increasing reliance on collaboration, innovation, and differentiation among emerging contractors as a strategy for growth. This phenomenon is well-explained by the RBV, which posits that a company’s competitive advantage ultimately hinges on its capacity to identify, acquire, and leverage unique internal resources that are valuable, rare, inimitable, and non-substitutable (Kero & Bogale, 2023). This can take the form of tangible resources like equipment and systems or intangible ones like expertise, relationships, and reputation (Mailani *et al.*, 2024). The DCF offers a complementary explanation of how construction start-ups use the resource base to continuously adapt and transform in response to market dynamics (Cavusgil & Deligonul, 2024). As Teece (2022) argued, this involves the ability to sense and interpret signals, seize emerging opportunities, and reconfigure operations and resources. This theme presented the following categories.

4.3.6.1 Sub-theme 1 - Market Access and Tendering Opportunities

This determines the construction start-ups ability to secure projects and generate revenue. With regards to this category the participants had this to say:

Quote 1: “*We collaborate with bigger companies to qualify for projects.*” (P1)

Quote 2: “*We focus on small maintenance and renovation jobs because the big ones are out of reach.*” (P3)

Quote 3: “*Sometimes we bid as a consortium to share costs and increase our chances.*” (P2)

Quote 4: “*We tender mainly for municipal work, but delays and re-advertisements make it hard to plan.*” (P5)

The first quotation exemplifies strategic partnering as a means of circumventing CIDB and financial constraints. Partnerships may provide access to higher-value tenders as well as legitimacy by association with established companies. The second quote reveals a niche market segmentation strategy, with the start-ups deliberately positioning themselves in a segment that offers small, frequent, and consistent contracts to provide a more manageable risk profile. The third quote shows collective bidding as a strategy of sharing financial and administrative burden as well as leveraging more competitive chances of winning tenders and the final sentiment reflects uncertainty and volatility in public procurement, which undermines reliability and thus forces companies to diversify sources of income. The above quotes are consistent with Watermeyer & Phillips (2020a), who found that strategic partnerships and market diversification improve small contractors’ ability to compete. These choices are further interpreted by the RBV, which conceptualises alliances and cooperation as a resource-sharing mechanism, and by the DCF (Cavusgil & Deligonul, 2024), which would explain this behaviour as a form of seizing opportunities (Mailani *et al.*, 2024). This is done by mobilising external resources to mitigate companies’ internal inadequacies.

4.3.6.2 Sub-theme 2 - Strategic Partnerships and Collaboration

This helps construction start-ups to expand their capabilities, share resources and access new markets by forming alliances with established companies, suppliers and government entities (Giglio *et al.*, 2025). With regards to this theme the participants had this to say:

Quote 1: “*Partnering with experienced contractors helps us learn and grow.*” (P2)

Quote 2: “*Joint ventures help us meet compliance and financial requirements.*” (P1)

Quote 3: “*We prefer long-term relationships with reliable subcontractors instead of new ones each time.*” (P4)

Quote 4: “*Some partnerships are unequal. Big companies take most of the profit.*” (P5)

The first quotation shows learning-based collaboration as a prevalent strategy of emerging construction start-ups. Collaborations are presented as informal mentorship relations, where they transfer both technical and administrative know-how. The second respondent highlights a complementary resource integration as a collaboration motivation, where combining with other companies bridges gaps in equipment, experience, or financial capacity. The third quotation is consistent with a relational efficiency strategy, where cultivating long-term and stable relationships builds trust and thus cuts the coordination and transaction costs of finding new and unknown partners each time. The final quotation signals a caution against opportunistic relationships and the observed power asymmetry where start-ups end up with less bargaining power. The above reflections are consistent with Ofori (2017), who documented the learning benefits of collaboration and the value of relational contracting in the development of small contractors. The RBV has an implicit explanation of this, which is that accessing complementary resources or assets via partnerships can be a competitive advantage. The DCF takes this further to

frame these relationships as dynamic, explaining how they enable learning, continuous reconfiguration, and value creation (Cavusgil & Deligonul, 2024; Mailani *et al.*, 2024).

4.3.6.3 Sub-theme 3 - Niche Specialisation and Quality Differentiation

This allows construction start-ups to build a competitive edge by focusing on specialised services or superior workmanship that distinguish them from larger and more generalised competitors (ACF, 2019). The participants made the following comments with regards to this:

Quote 1: *“Because the market is saturated, we specialise in prefab and modular housing.”* (P6)

Quote 2: *“We focus on plumbing and building boundary walls. It is not glamorous, but it keeps us consistent.”* (P3)

Quote 3: *“We are known for finishing projects on time. That is our selling point.”* (P1)

Quote 4: *“Clients recommend us because we communicate well and solve problems fast.”* (P5)

The first quotation clearly illustrates differentiation through innovation, as the respondent shows a specialisation in emerging trends that give the company a unique identity and market value. The second quotation above is an example of focused specialisation as a start-up strategy. Start-ups can secure a stable client base by carving a special niche within the highly fragmented subcontracting market. The third quotation is an example of reputation-based competitiveness, with timeliness and quality of service being used as intangible differentiation levers. In the final quotation, the respondent highlights the role of relationship marketing. The data shows that trust and superior customer experience strengthen competitiveness more than competing on prices. The above findings are consistent with Farhana and Swietlicki (2020), who argued that in fragmented markets, specialisation can allow construction start-ups to thrive. These statements can be interpreted within the RBV by viewing brand reputation and specialised technical knowledge as intangible resources that are difficult to imitate and are rare (Mailani *et al.*, 2024). This can be further explained by the DCF. For instance, the DCF would use them to show how adaptation to market signals and client needs is what transforms capabilities into strategic assets (Cavusgil & Deligonul, 2024).

4.3.6.4 Sub-theme 4 - Strategic Learning and Continuous Improvement

This enhances performance and competitiveness by systematically reflecting on past projects, adopting best practices and integrating new knowledge into their operations (Cristache *et al.*, 2025). In relation to this, participants expressed the following views:

Quote 1: *“Every project teaches us something new. We adjust our pricing and planning next time.”* (P3)

Quote 2: *“We benchmark against bigger companies and try to apply similar systems on a smaller scale.”* (P4)

Quote 3: *“We use customer feedback to refine our services.”* (P1)

Quote 4: *“We have learned to price better, plan better, and communicate better. Growth is all about learning.”* (P6)

The first quotation is an example of experiential learning from successes and failures in completed projects to inform improvement in future ones. The second quotation shows imitative learning as a strategy of observation and replication of best practices to improve internal operations. In the third quotation, the respondent draws attention to customer-driven adaptation as a common small business strategy, with responsiveness to client needs and expectations fostering repeat business. In the final quotation, the respondent concisely encapsulates the role of learning mechanisms as the force that informs growth over the long term. These patterns are consistent with Eisenhardt and Martin (2000), who provided a theoretical conceptualisation of learning and process refinement as central to the DCF. In this regard, the DCF uses learning mechanisms to explain how companies sense environmental changes that is, market awareness, seize them through applying internal and external best practices, and transform internal routines to enhance their competitiveness (Cavusgil & Deligonul, 2024).

4.3.6.5 Sub-theme 5 - Long-Term Vision and Growth Orientation.

This enables construction start-ups to plan strategically for sustainable expansion by setting clear goals, anticipating industry trends and investing in capabilities that support future competitiveness (Omotayo *et al.*, 2024b). The participants had the following comments to make with regards to this theme:

Quote 1: *“Our goal is to move from Grade 3 to Grade 6 in five years.”* (P5)

Quote 2: *“We are building internal systems so the business can run without me.”* (P2)

Quote 3: *“We want to diversify into property development eventually.”* (P4)

Quote 4: *“Scaling is about thinking beyond tenders. It is about creating a brand that lasts.”* (P3)

The first quotation in this sub-theme expresses a growth trajectory mindset that goes beyond a focus on the immediate project. The respondent is showing proactive goal setting and vision beyond the short term. In the second quotation, the respondent articulates a notion of succession and systems thinking, which signals a move from owner-dependent to institutional or formal business. The third quotation is an expression of strategic diversification, with a long-term view of moving beyond just contracting to broader value chains. In the third quotation, the respondent synthesises a move from survival to sustainability via strategic foresight and brand building. These quotations are in line with Mhlongo and Daya (2023), who found a correlation between visionary planning and the development of internal systems with growth orientation and progress. The former is explained by the RBV as the formalisation of systems and structures into durable, inimitable resources and the latter is an example of the DCF’s transforming capability (Cavusgil & Deligonul, 2024; Mailani *et al.*, 2024).

4.3.6.6 Synthesis of Theme 6 Findings

This theme has demonstrated that strategic growth and competitiveness among Gauteng’s construction start-ups are a product of an interaction between collaboration, market focus, differentiation, and learning. While many remain in a survival mode, companies that also engage in strategic positioning and planning through partnerships, quality focus, and niche specialisation show signs of the entrepreneurial agility required to scale. The RBV explains these strategies by

the use of internal resources which are both tangible (partner networks, systems, equipment) and intangible (reputation, specialised know-how, leadership qualities), to create value. This theoretical lens is extended by the DCF, which adds how companies use the resource base to continually adapt to market opportunities. This is through three sub-processes which are, first, sensing environmental signals and changes (market awareness and information), second, seizing emerging opportunities (collaboration, differentiation, and experimentation) and third, transforming internal operations (learning and innovation). These theoretical insights are reflected across the different respondent groups, each highlighting distinct pathways through which strategic growth and scalability are achieved. This adaptability was emphasised by a successful Grade 5 Managing Director who stated, *“Our growth strategy is built on three pillars which are equipment ownership, long-term client relationships, and digital transformation,”* underscoring how internal resource development and proactive market positioning foster sustainable competitiveness. This perspective reflects the lived experience of scaling SMMEs, where deliberate investment in resources and structured strategy has enabled growth beyond the start-up stage. Similarly, a Grade 6 contractor affirmed that *“We reinvest profits into equipment and build relationships with suppliers and other contractors. Scaling is about structure and consistency, not shortcuts,”* highlighting that collaborative learning and disciplined planning underpin long-term scalability. In contrast, this stakeholder view emphasises how industry-level collaboration and external relationships influence start-up competitiveness and resilience. When compared, the Managing Director’s statement reflects internal company capability and strategic resource planning, while the Grade 6 contractor’s perspective illustrates the external relational and network-based dynamics that support scaling.

In conclusion, this theme has presented evidence that the route to successful scalability in South Africa’s fragmented construction industry depends on more than just access to capital or contracts. It also requires a strategic mindset, which guides resource development and internal learning and proactive positioning in a rapidly changing and volatile industry (Cavusgil & Deligonul, 2024; Mailani *et al.*, 2024). The empirical data shows that the scalability of construction start-ups in Gauteng is influenced by the complex interplay of internal and external factors. Financial constraints, bureaucratic inefficiencies, human resource shortages, technological gaps, and fragmented support are constraining growth (ACF, 2019). However, the responses of participants across different sectors suggest that companies that invest in partnerships, mentorship, and digital innovation demonstrate greater adaptability and scaling potential (Keyser *et al.*, 2023). By integrating the findings with the RBV, DOI, and DCF theoretical frameworks, it is shown that successful scaling hinges on the ability of construction start-ups to leverage resources, adopt innovations, and continuously learn and adapt to changing market and institutional dynamics.

4.3.6.7 Discussion

The final theme focused on how start-up contractors design their strategic positioning to thrive even when operating in restricted environments. Participants reported collaborating with larger companies to bid for tenders, specialising in niche services such as modular and pre-fabricated buildings, and branching into complementary trades like plumbing, paving, or renovations. This finding suggests that start-ups use agility to adapt to a constraining environment. The RBV explains this phenomenon through the lens of relational and reputational capital, as forming

strategic partnerships can help construction start-ups access new markets and build credibility (Barney, 1991). The DCF complements this perspective by postulating that the tendency to diversify and bid for smaller tenders early on reflects dynamic capabilities, particularly the ability to sense, seize, and transform opportunities within a resource-constrained environment (Teece, 2022a). The decision to specialise in niche services such as pre-fabricated buildings is also consistent with this capability, as it requires the ability to anticipate market trends and invest in resources that provide a competitive advantage. These findings align with the results of Hailu and Tshehla (2025), who reported that start-ups in the South African construction industry used collaboration, differentiation, and innovation to survive. The authors also reported peer-to-peer collaboration in small WhatsApp groups to share tender opportunities and resources, as noted by several participants. This type of cooperation aligns with the findings of Farhana and Swietlicki (2020), who posited that in the developing economies, institutional inefficiencies create opportunities for informal company-level cooperation. This study's fifth theme contributes to the main objective of the study by providing evidence of strategic agility, which allows start-ups to overcome the constraints to scaling in the construction industry. The findings also address the second secondary objective, which is to propose practical solutions that can be adopted by emerging contractors for growth. The decision to partner with larger companies, specialise in niche services, and diversify as a means to gain traction and establish a sustainable start-up is an example of an effective growth strategy (Seppi, 2021; Kormakova *et al.*, 2023). These findings also partly fulfil the third secondary objective by suggesting that future institutional interventions should focus on building online collaborative platforms, peer-mentorship networks and market integration support structures (Omotayo *et al.*, 2024c).

Collectively, the findings support the view that scalability in Gauteng construction start-ups does not result from a single influence, but rather from a complex system of resource and capability requirements coupled with a web of institutional preconditions (Aghimien *et al.*, 2021; Hanifzadeh *et al.*, 2024). The RBV explains the gaps in capital, skills, and systems that prevent a construction start-up from creating a sustainable competitive advantage from its current capabilities (Mailani *et al.*, 2024). The DOI framework explains the slow uptake of digital technologies and process innovations, along with the challenges that come with perceived high costs and complexity (García-Avilés, 2020; Kayser *et al.*, 2023). The DCF complements both by explaining the advantages for start-ups that engage in learning, adapting, and reconfiguring their resources for growth and scaling (Cavusgil & Deligonul, 2024). Scaling results from the company's capabilities combined with the enabling environment established by the interconnected coordination of institutions, the finance system, and procurement policy. In the absence of a functioning relationship among these areas, even capable entrepreneurs remain constrained (Hove, 2016a; Nedzingahe *et al.*, 2025).

4.7 Conclusion

The discussion in this chapter confirms that construction start-ups in Gauteng experience scalability challenges linked to financial, institutional, human, and technological constraints, with access to finance being the most critical issue. Most new entrants depend on personal savings or client deposits due to limited access to credit facilities and delayed payments from government clients. This financial exclusion hinders their ability to invest in equipment, training, and

innovation, supporting the RBV by demonstrating how a lack of resources can constrain a start-up's ability to gain a competitive advantage. Redundant regulatory and compliance requirements from CIDB, SARS, and OHS pose additional barriers to growth for construction start-ups, as they have to allocate time and resources to comply with multiple, often duplicated, sets of regulations. The study highlights that only those companies with established administrative processes are better able to adapt, which resonates with the DCF by emphasising the role of organisational flexibility and learning in responding to environmental changes. The shortage of skilled human resources continues to affect the sector, with start-ups relying heavily on semi-skilled labour. Evidence of mentorship and training from larger companies that improve productivity within start-ups supports the RBV's acknowledgment of human resources as a strategic asset. Technological adoption is generally low. However, start-ups that have invested in digital systems have reported improved cost control and transparency, thereby aligning with the DOI theory. Institutional fragmentation and limited market access remain as systemic challenges, reaffirming the need for an integrated contractor development framework, small-works procurement, and mentorship-based contracting. Despite the identified barriers, many start-ups demonstrate adaptability through joint ventures, supplier credit, and asset acquisition over time. This reflects the dynamic capabilities of sensing, seizing, and transforming. Scalability, therefore, requires a dual approach that combines micro-level transformation in leadership, innovation, learning and macro-level reforms in financial inclusion, policy coordination, and equitable procurement, in order to strengthen these interconnected factors and build a more inclusive and competitive start-up ecosystem in the construction industry.

CHAPTER FIVE: CONTRIBUTIONS, RECOMMENDATIONS & CONCLUSIONS

5.1 Introduction

This chapter presents the contributions, recommendations, and conclusions of the study. It discusses the meaning and significance of the findings, as well as evidence-based recommendations for practice, policy, and future research. The chapter also indicates how the study's objectives were met, how the study used the theoretical lenses, and what are the practical guidelines are for the scaling up of construction start-ups in Gauteng and South Africa as a whole. It also provides an indication of the contribution of this research to theory, entrepreneurship, and institutional policy. The final section of the chapter indicates the study's shortcomings and possible future research directions. To ensure clarity and coherence, the chapter is structured into three major sections which are theoretical conclusions and contributions, practical content and recommendations and finally recommendations for future research. The research focused on identifying and understanding key problems and strategies affecting the scaling of construction start-ups in Gauteng, South Africa. The RBV, DOI, and DCF theories served as the underpinnings of this study to facilitate a comprehensive understanding of the internal resources, innovation, and adaptive capacities influencing business growth. A qualitative exploratory research design with semi-structured interviews involving 14 participants was utilised. Through thematic analysis of the interviews, six themes were identified. The results offered a holistic perspective on internal weaknesses and external structural factors impacting start-up performance, as well as the adaptive and entrepreneurial strategies employed by successful companies.

5.2 Theoretical Contribution

The study set out to investigate how key challenges affect the scalability and sustainability of construction start-ups in Gauteng, South Africa. It used an interpretivist qualitative approach to understand the dynamic influence of both internal and external factors influencing the scaling of construction start-ups. The analysis revealed six key interrelated themes that together underpin growth in construction start-ups. These themes are financial constraints and access to capital, regulatory and institutional barriers, human capital and skills development, technological adoption and innovation, institutional support and ecosystem development, and strategic growth and competitive positioning. These themes collectively suggest that scalability is not a straightforward process of resource maximisation, but rather a complex interaction of dynamic internal competencies, learning, and supportive institutional conditions. In theoretical terms, these findings contribute to several key streams of research on start-up scalability and sustainability, the RBV, the DCF, the DOI Theory, and Institutional Theory. First, the RBV argues that sustained competitive advantage accrues from the possession and use of unique resources that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). In line with this, the study found that internal resources such as financial capital, human resources, technical capacity, and networks are crucial to competitiveness. However, it also found that these internal resources are insufficient for scalability in contexts characterised by resource scarcity and institutional inefficiencies. In this way, the findings suggest the RBV must be complemented by theories and frameworks that better incorporate the importance of adaptability, situational contingencies and external environments.

Consequently, the DCF emphasises the need for companies to “sense, seize, and transform” (Teece, 2022a) through the reconfiguration of internal resources in response to changing external

conditions, providing a more dynamic and sensitive perspective to contemporary challenges. In the study, start-ups showed that such dynamic capabilities are not only reflected in formal systems and structures, but are also evident in informal learning, peer collaboration, and resource improvisation. The results show that even in contexts of financial and institutional constraints, nascent contractors were able to creatively combine resources, for example by forming joint ventures, learning through online platforms, and diversifying service offerings to manage continuity and incremental growth. This finding not only reinforces the DCF, but also widens its scope by challenging its resource-based assumptions, showing that in environments of resource scarcity and market exclusion, dynamic capabilities are better seen as informal improvisations in resource leveraging.

The findings also provide insights into the applicability of the DOI Theory (Rogers, 2003). This theory is commonly applied to illustrate technology adoption among start-ups. In the study, it was found that the key factors influencing adoption were perceived costs, compatibility, and complexity, which dominate the late adoption of technology in the industry. It was also observed that most companies adopt what is considered innovative only when it becomes easily accessible and free. However, this study identified low cost and almost zero-rated technologies that are being adopted. These technologies, which include mobile devices, spreadsheets, computers, and cloud and online sharing resources for cost estimating are examples of construction practices that, in their current application, represent a form of innovation and are a result of adaptation to limited opportunities. This is a major finding, as the DOI usually uses the concept of newness and relative advantage to categorise users of an innovation into innovators, early adopters and laggards (Rogers, 2003). However, in this study, the concept of innovation can be seen in technology considered ordinary, representing a shift from the traditional meaning of what an innovation should look like. This insight also speaks to the Social Interaction domain of the DOI, showing that the technologies considered innovations are socially constructed among start-ups through interaction. This represents a deviation from the existing applications of the DOI theory, which typically describe a single-sided unidirectional process from top to bottom. However, in this study, there is an inverted interaction of technology flowing from users and clients that are technologically more literate. This finding contributes to further enriching the DOI theory.

Institutional Theory (Scott, 2014) was also used to understand how state policies and supporting structures interact with start-ups and small contractors to provide an institutional environment in which to do business. The study shows the negative effects of bureaucratic inefficiencies, fragmented and duplicative support systems, and the lack of coherent alignment between enabling policies and construction start-up realities create institutional voids in which construction start-ups cannot scale easily. For example, although the government has established many institutions and development agencies to support start-ups, they have often failed to align their products with the needs of start-ups. This has resulted in the emergence of supporting agencies with little coordination, duplication of roles, poor follow-up, and unsustainable support ecosystems. The study thus further corroborates the argument that institutions must change for and not against the interest of start-ups (Tao, 2016). As, can be seen from the above, the study's findings are not only practically significant, but they also have theoretical significance in enriching the dominant

theories of RBV, DCF, DOI Theory and to a lesser extent Institutional Theory by encouraging them to take account of company-level and environmental factors in resource scarce economies.

5.3 Practical Contribution

The practical contributions of the study are related to the key challenges affecting construction start-ups and the associated need for holistic reforms to nurture progressive start-ups. This was evidenced by the central findings, which confirmed that the problems experienced by construction start-ups are multidimensional, involving financial, institutional, technological, and human resource challenges. As a result, both start-ups and policymakers need to undertake multi-faceted interventions to increase internal capabilities and address external inefficiencies. The following recommendations are, therefore, a direct product of the six themes and are linked to the three objectives of the study.

The first objective, which is to examine the nature of the challenges emerging construction companies face in Gauteng, is achieved through the presentation of the key barriers to growth that arose from the thematic analysis. These include financial exclusion and late payment, complex regulatory compliance, skill and knowledge gaps, and lack of an integrated support system. To address these issues, it is recommended that financial institutions and government agencies create targeted microcredit and guarantee schemes that better respond to the needs of CIDB Grade 1–6 contractors. The introduction of a ‘prompt payment enforcement’ clause within public procurement law will also help address chronic cash flow shortages. Digitising compliance requirements to create an online ‘one-stop-shop’ for all construction registration and tax verification requirements will reduce transactional time. The start-up human capital problem can also be addressed through a more structured mentorship approach that pairs established contractors with emerging contractors, while enhancing the Construction Education and Training Authority (CETA)’s role in delivering accredited managerial and technical skills specifically for the needs of start-ups. Institutional fragmentation should also be addressed through the development of an Integrated Construction Start-Up Support Framework (ICSSF), which would integrate the efforts of the CIDB, SEDA, SEFA, and Department of Small Business Development to improve collaboration and avoid duplication of efforts. These recommendations are designed to create a more inclusive and supportive construction ecosystem for start-ups.

The second objective, which was to assess the perceived effectiveness of different growth strategies by start-ups, has been met through the presentation of how start-ups have attempted to adapt their business to mitigate systemic barriers. The qualitative analysis illustrated how start-ups have continued to function in a complex and risk-averse industry, revealing that start-ups continue to rely on collaborations, subcontracting, and various forms of diversification to capture opportunities across the industry (Mlinga & Wells, 2002). While it is common to find these trends in the construction industry, the study also identifies how these survival-based adaptations can be made more sustainable with formal support. It is, therefore, recommended that policy reforms support more joint ventures and consortium-based approaches where start-ups can bid and work together for projects of larger value. This could be achieved through online tendering platforms that enable better visibility and coordination across companies. As the low rates of digital adoption in the industry are partly a symptom of start-ups continuing to operate in a manual environment,

government programmes should subsidise access to digital construction management software and training, thereby providing the incentive to adopt construction technology in a start-up environment. The CIDB Contractor Development Programme (CDP) could also be made more effective if the current model is further developed into a holistic innovation incubator that offers mentorship support, and intensive workshops, post-training mentoring of participants, and access to technology to improve the current training outcomes.

The third objective of the study, which is to provide actionable and implementable recommendations for both start-ups, policymakers, and other stakeholders to create an enabling environment for start-ups, was achieved through the study's discussion on institutional inefficiencies, ecosystem fragmentation, and business-as-usual approaches. The study strongly recommends the development of a Construction Start-Up Council under the Department of Public Works and Infrastructure, which would coordinate national SMME policies, funding, and training programmes. This will reduce administrative and structural fragmentation and ensure better alignment and coordination between the various agencies. The study also reiterates the importance of establishing long-term mentorship and capacity-building programmes to support start-ups beyond the short-term microcredit approach. To create meaningful long-term impact, it is recommended that performance-based development grants are developed, allowing start-ups to access funding for longer periods based on improvements in company behaviour, such as regulatory and financial compliance, digital technology adoption, and employment generation. Construction innovation hubs built in each of the major provinces would also provide physical venues for training and skills development, equipment access, mentorship, and networking as well as an entrance point for mentorship through a dedicated online platform. To complement innovation hubs and policy reform, the study suggests that the construction industry support agencies, establish a centralised contractor database to track company performance, monitor graduation rates, and allow for evidence-based policymaking and programme improvement. In summary, the practical contributions of this study have emphasised the need for a systemic approach in considering how financial systems, training, and industry development initiatives are structured and as such, consider how the experience of start-ups in the industry can be harnessed in order to inform better coordination and programme development. This conclusion is only be possible because the primary research objective of examining the constraining factors on construction start-ups was met, as well as a partial operationalisation of all three secondary objectives through specific interventions.

5.4 Contribution to Literature

By addressing the research questions outlined in section 1.6, this study makes numerous contributions to construction entrepreneurship literature, the start-up scalability literature, and the small business development literature. Primarily, the study reaffirms and builds on previous studies that have found access to finance as the number one constraint limiting the growth of construction SMMEs. Unlike existing research which discusses finance as a broad business obstacle, this study unpacks why constrained access to finance influences scalability outcomes for CIDB Grade 1–6 start-ups specifically. The findings illustrate that limitations on credit impact start-ups capacity to access guarantees, equipment, people, and technology; offering additional empirical evidence that financial capital is indeed the cornerstone of the RBV.

Secondly, this study extends the literature on dynamic capabilities by showing that start-up sensing, seizing, and transforming activities tend to be informal and unstructured rather than deliberate or institutionalised. While prevailing DCF logic argues that start-ups will scale up through sensing, seizing, and transforming activities, evidence suggests construction start-ups tend to incrementally improvise with available resources, partner with other entities, and learn-by-doing to overcome uncertain and resource-scarce business environments. As such, the practical applications of dynamic capabilities theory are broadened to include entrepreneurial activities beyond sensing, seizing, and transforming. Thirdly, by proposing spreadsheets, cloud platforms, and cellphones are referred to as “innovations” by construction start-up owners and operators even though they are clearly not new technologies, the study uniquely contributes to DOI theory. Instead, technology within these start-ups is adopted because it is accessible and serves a business need. This operationalisation of innovation within construction start-ups adds an incremental yet contextually important expansion to DOI logic, which traditionally does not account for social processes that may shape what qualifies as innovative. Furthermore, this finding furthers discussions on digital adoption within construction start-ups and positions the DOI within construction entrepreneurship research.

The study also contributes to entrepreneurial ecosystems and institutional theory literature by revealing how fragmented support ecosystems, regulatory barriers, and poor agency coordination result in limited scalability. Agency participants reported that government-linked institutions such as the CIDB contractor grading system, lenders, and development agencies directly enable or inhibit construction start-up scalability. Thus, offering supporting evidence to literature that argues that start-up performance is hindered not just by company attributes and capabilities but by also external factors. Lastly, this study adds to limited construction start-up studies in South Africa, particularly within Gauteng. By theoretically unpacking why construction start-ups are trapped within lower CIDB grades and uncovering strategies that enable construction start-ups to leapfrog into the market, this study opens the door for additional academic pursuits related to construction start-ups in South Africa.

5.5 Recommendations for Future Research

The study, while significant, also opens up several paths for future research. A future study can look at the quantitative metrics to assess the relative influence of the financial, institutional and technological factors on start-up growth. These factors were identified as the primary drivers of scalability outcomes which builds on the study’s finding that financial and institutional barriers were the most critical constraints to start-up scalability. Such an approach would allow for greater generalisability and statistical testing of the relationships uncovered in this study. A future study could also explore the longitudinal aspect of how start-ups nurture and sustain dynamic capabilities over time, particularly in responding to financial constraints, regulatory complexity, and evolving technology adoption. This will provide greater insight into the long-term learning and innovation processes as the findings highlighted the need for stronger strategic and adaptive capabilities among start-up construction companies. This will provide greater insight into the long-term learning and innovation processes.

Comparative studies across provinces and industries can also be insightful to identify contextual differences in scaling up dynamics. Comparing start-ups in KwaZulu-Natal, Western Cape, or Eastern Cape with those in Gauteng might provide a deeper understanding of region-specific scaling challenges and effective interventions, especially in relation to finance access, institutional support effectiveness, and contractor development frameworks. Cross-sector comparisons, for example between construction start-ups and manufacturing or ICT, could identify best practices and growth models that can be transferred across domain, given the similar barriers to innovation and early-stage start-up development highlighted in this research. In light of the global focus on sustainability, future studies should also explore the role of digital transformation, automation and green innovation in enhancing efficiency and environmental performance in the construction industry, since this study found that technology adoption remains limited mainly due to cost and accessibility. Programmes and interventions administered by CIDB, SEDA and SEFA could be put to empirical impact evaluations to determine what works, what does not, and why, as this study revealed that institutional support systems are fragmented and inconsistently applied. This could provide valuable feedback not only to the academic community but to policymakers as well.

5.5 Conclusion

This research was conducted to determine the internal and external factors that influence the scalability of construction start-ups, with a focus on Gauteng, South Africa. The theoretical models that informed the research were the RBV, DOI, and DCF. The research found that the most severe constraint to scaling up is the lack of access to finance, as many construction start-ups depend on personal savings, clients' deposit advances and informal loans to fund their operations. These sources of funding are often inadequate and risky, as they cannot sustain cash flow and expansion. Furthermore, regulation and compliance costs consume scarce resources and time, and the late payment culture in the industry exacerbates the liquidity challenges. However, the research also found that there are success stories of construction start-ups that have been able to scale up and grow from CIDB grades 1-3 to CIDB Grades 4–6. These start-ups have done so by overcoming the constraints through partnerships, mentorship, skills development, and financial discipline. This suggests that there is a dynamic capability among the successful construction entrepreneurs to sense opportunities, seize resources, and transform their processes in a complex and changing business environment. Theoretically, this research has made an original and significant contribution to the relatively nascent field of construction entrepreneurship. The research has synthesised the RBV, DOI, and DCF theoretical frameworks to show how the internal resources, external innovation, and capabilities interact to enable or inhibit the scalability of construction start-ups. Empirically, this research has several implications for construction contractors. First, contractors should capitalise on their internal resources and capabilities, such as skilled and experienced staff, digital tools, and customer networks, and focus on incremental innovation to improve their efficiency and competitiveness. Second, contractors should engage more with the institutions that exist to support them, such as the CIDB, SEDA and SEFA, and lobby for a more coherent and coordinated support system that includes financial inclusion, targeted skills training, and alignment with the NDP 2030 priorities. Third, scaling up construction start-ups should not be left to individual entrepreneurs or isolated initiatives, but should be a systemic and collective effort that involves government agencies, private financiers, and entrepreneurs working together to create a more conducive and integrated environment that unlocks the latent potential of emerging

contractors. This would position the construction industry as a key sector for inclusive economic growth, job creation, and infrastructure delivery in South Africa

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ANNEXURE A: SAMPLE OF DATA COLLECTION INSTRUMENT

LETTER OF INFORMATION: INTERVIEW QUESTIONS

Title of Research Study: Scaling Construction Start-ups in Gauteng, South Africa: Overcoming Challenges for Growth.

Researcher: Tafadzwa Calvin Wurayayi

Supervisor: Dr. Chanté Botha

Brief Introduction and Purpose of the Study

Good day, my name is Tafadzwa Calvin Wurayayi, currently pursuing my MBA at IIE MSA. I am busy conducting research in the Scaling of Construction Start-ups. It is with this research that I aim to investigate the challenges that hinder growth and the strategies to overcome them.

Outline of the Procedure: The procedure for data collection is an in-depth interview with a total of twenty open-ended questions. The session will also be audio recorded.

Risks or discomfort to the participants: No anticipated risks

Benefits: The results of this study are expected to contribute to a clearer understanding of the barriers to scaling construction start-ups in Gauteng and the practical strategies to overcome them.

Reasons why the participant may withdraw from the study: Participation is strictly voluntary. You have the right to choose to participate or not. So, whenever the questions become uncomfortable at any stage, please feel free to no longer participate and there will be no adverse consequence for the choice to withdraw. You may choose to end the interview session at any time.

Remuneration: There will be no remuneration for participation.

Cost of the study: There are no costs involved to participate in the study.

Confidentiality: The interview is confidential which means that there is no way of associating any interview response with the person who gave the response. Your input will only be used in combination with responses of other participants in this interview. Kindly note that all information and insights shared during these discussions will be kept confidential as it will only be used solely for the purpose of this research. Please feel free to express your feelings, opinions and experiences relating to the topic under investigation as I am not looking for any right or wrong answers.

Research related injury: The interview venue will be thoroughly inspected prior to the interview and verified as safe. Hence no health or physical harm is expected.

Questions:

Thank you for making the time to participate in this interview.

1. Can you briefly describe your role, construction industry experience and your organisation's profile?

2. In the past 3 years, what changes have you experienced in terms of project type/scale or client mix/locations?
3. What formal certifications/support mechanisms currently apply to your firm. This is for example the CIDB grade trajectory and SEDA/IDC/SEFA support.
4. Which institutional supports (e.g., CIDB, SEDA, SEFA/IDC, industry bodies, bank or government programmes) have been most or least effective in assisting construction start-ups, and why?
5. In your view, what are the top three constraints/difficulties that most limit your ability to scale? Please rank them.
6. In what ways has financial access influenced your business expansion capabilities?
7. What funding sources have you accessed and what barriers have you encountered in accessing the finance?
8. What difficulties have you experienced in attracting/retaining skilled artisans/engineers and site managers and how does this impact quality, productivity and ability to take on larger work?
9. Which regulatory requirements (procurement (CSD & CIDB), OHS, environmental, tax compliance) are the most time/ cost intensive to comply with? Where do you see duplication/ambiguity?
10. Which policy or regulatory changes would most unlock scaling potential for start-ups over the next 2–3 years? Please identify the top two or three.
11. How would you describe the nature of your bid pipeline and the success rate of secured bids, and what factors or barriers hinder access to higher-value contracts?
12. What strategies has your company used to try to grow or scale operations (e.g., partnerships, technology adoption, upskilling)? What has or hasn't worked?
13. What digital tools/technologies/software have you adopted in conducting your day to day operations and what measurable impact have you seen?
14. What internal capabilities (e.g., leadership, innovation, project management) do you believe are critical to sustaining growth?
15. Which formal or informal partnerships have proven most effective for your company's growth?
16. What is your organisation's next 12–24-month scaling priorities?
17. What practical advice would you offer to new construction start-ups seeking to scale in Gauteng?

18. Is there anything important with regards to scaling construction start-ups that we haven't covered, that you would like to speak about?

Optional Group Specific Questions

Founders & Managers (Start-ups)

1. In what ways have the skills and networks of the founder influenced the enterprise's early-stage growth and access to business opportunities?
2. Which governance structures or mentorship interventions have had the most significant influence on enhancing your decision-making processes during your growth trajectory?

Successful Company Representatives

1. Which supplier development or mentorship models have been most effective in enabling smaller contractors or subcontractors to integrate into your value chain?
2. How do you evaluate prospective partnerships with start-ups and mitigate the associated risks?

Industry Stakeholders

1. In which parts of the construction ecosystem do the most significant structural bottlenecks arise?
2. What procurement reforms or financing instruments would have the highest impact over the next 2–3 years?

Closure

I would like to thank you all for taking the time and willingness to participate in assisting me in conducting my research study.

ANNEXURE B: SAMPLE OF INFORMED CONSENT FORM



Annexure H – PARTICIPANT OR RESPONDENT INFORMED CONSENT FORM

Explanatory information sheet and consent form for participants

To whom it may concern,

My name is Tafadzwa Calvin Wurayayi and I am a student at The IIE's MSA. I am currently conducting research under the supervision of Dr. Chante Botha about Scaling Construction Start-ups in Gauteng, South Africa: Overcoming Challenges for Growth. I hope that this research will enhance our understanding of how construction start-ups can overcome challenges for growth.

I would like to invite you to participate in my study. In order to explain to you what your participation in my study will involve, I have formulated questions that I will try to fully answer so that you can make an informed decision about whether or not to participate. If you have any additional questions that you feel are not addressed or explained in this information sheet, please do not hesitate to ask me for more information. Once you have read and understood all the information contained in this sheet and are willing to participate, please complete and sign the consent form below.

What will I be doing if I participate in your study?

I would like to invite you to participate in this research because your experience and insights are valuable in understanding the challenges and opportunities in scaling construction start-ups in Gauteng, South Africa. Your participation will contribute to identifying key factors that influence growth and help develop practical recommendations for industry professionals and policymakers. If you decide to participate in this research, I would like to conduct an interview with you, where you will share your experiences, perspectives, and opinions on the challenges faced by construction start-ups and the strategies used to overcome them. The interview will last approximately 45-60 minutes and will be conducted either in person or via an online platform, depending on your preference. Your responses will remain confidential, and all data will be securely stored. Participation is entirely voluntary.

You can decide whether or not to participate in this research. If you decide to participate, you can choose to withdraw at any time or to decide not to answer particular interview questions.

Are there any risks/ or discomforts involved in participating in this study?

Whether or not you decide to participate in this research, there will be no negative impact on you. There are no direct risks or benefits to you if you participate in this study. You might, however, indirectly find that it is helpful to talk about your experiences and insights regarding the challenges and opportunities in scaling construction start-ups. Discussing these topics may provide an opportunity for reflection and contribute to broader industry knowledge. If you find at any stage that you are not comfortable with the line of questioning, you may withdraw or refrain from participating.

This study poses minimal risks, primarily related to confidentiality, emotional discomfort, and business sensitivities. To protect participant privacy, all data will be anonymized, securely stored, and access restricted to the researcher. Participants may experience discomfort when discussing

challenges, but they can skip questions or withdraw at any time without consequences. Business-sensitive information will be handled ethically, ensuring findings remain generalized and non-identifiable. Ethical considerations include voluntary participation, informed consent, and strict compliance with research ethics and the Protection of Personal Information Act (POPIA). Participants' privacy will be respected, and any third-party data sharing will require explicit consent. These measures ensure that participants are safeguarded while contributing valuable insights to the study.

Do I have to participate in the study?

- Your inclusion in this study is completely voluntary;
- If you do not wish to participate in this study, you have every right not to do so;
- Even if you agree to participate in this study, you may withdraw at any time without having to provide an explanation for your decision.

Will my identity be protected?

I promise to protect your identity. I will not use your name in any research summaries to come out of this research and I will also make sure that any other details are disguised so that nobody will be able to identify you. I would like to ask your permission to record the interviews, but only my supervisor, I and possibly a professional transcriber (who will sign a confidentiality agreement) will have access to these recordings. Nobody else, including anybody at IIE MSA, will have access to your interview information. I would like to use quotes when I discuss the findings of the research, but I will not use any recognisable information in these quotes that can be linked to you.

What will happen to the information that participants provide?

Once I have finished all interviews, I will write summaries to be included in my research report, which is a requirement to complete my Master of Business Administration. You may ask me to send you a summary of the research if you are interested in the final outcome of the study.

What happens if I have more questions about the study?

Please feel free to contact me or my supervisor should you have any questions or concerns about this research, or if there is anything you need to know before you decide whether or not to participate.

You should not agree to participate unless you are completely comfortable with the procedures followed.

My contact details are as follows:

Tafadzwa Calvin Wurayayi

073 674 5568

calwurayayi01@gmail.com

The contact details of my supervisor are as follows:

Dr. Chante Botha



Participant or respondent Informed Consent – Audio and Visual Recordings.

I agree to participate in the research conducted by Tafadzwa Calvin Wurayayi about how construction start-ups in Gauteng can overcome challenges for growth

This research has been explained to me and I understand what participation in this research will involve. I understand that: • I agree to participate in this research and be recorded for the purpose of data collection. • My confidentiality will be ensured. My name and personal details will be kept private and confidential. • My participation in this research is voluntary and I have the right to withdraw from the research at any time. There will be no repercussions should I choose to withdraw from the research. • I may choose not to answer any of the questions that are asked during the research interview. • I may be quoted directly when the research is published, but my identity will be protected.	
Signature	Date

ANNEXURE C: SAMPLE OF GATEKEEPER’S LETTER

Annexure O – Gatekeeper’s letter (institutional consent form)

2024

Consent form to conduct research at company/organisation/association	
I, [INSERT FULL FIRST AND LAST NAMES OF REPRESENTATIVE], in my capacity as [INSERT FULL TITLE/DESIGNATION] of [INSERT COMPANY/ORGANISATION/ASSOCIATION NAME], grant permission to [INSERT FULL FIRST AND LAST NAMES OF RESEARCHER] to conduct research at the [INSERT SPECIFICATIONS SUCH AS WHERE AND ON WHICH GROUP(S)] pending the outcome of the ethics committee of the IIE on the envisaged research. The student may only engage with members of the organisation/ company/ association if they can produce the Ethics Letter from the IIE. This research has been explained to me and I understand what participation in this research will involve for the people I represent. I also reserve the right to remind the people I represent that their participation in this study is completely voluntary and that this permission does not imply their participation. I reserve the right to withdraw this permission at any time. I also understand that research reports are made available in IIE Libraries as well as on the IIE Repository. The below conditions must be applied whilst writing up the research report:	
Conditions concerning the anonymity of the company/organisation/association:	
The company/organisation/association must be kept <u>anonymous</u> in the research report.	☐
The company/organisation/association may be <u>identified</u> in the research report.	☐
Conditions concerning the publication of the research report:	
The research report will be made available on the IIE Repository...	
<u>Immediately</u> after completion.	☐
<u>After</u> a specified number of months has elapsed.	☐
Number of months, if selected:	
Signature	Date

ANNEXURE D: ETHICAL CLEARANCE LETTER



Our Ref: M. 1000425
Enquiries: research@iie.ac.za

30 April 2025



Outcome of Ethical Clearance for Master of Business Administration.

Student name: Tafadzwa Calvin Wurayayi

Student number: [REDACTED]

Brand and campus: IIEMSA



Dear Tafadzwa,



Thank you for submitting ethics clearance for the study titled: *Scaling Construction Start-ups in Gauteng, South Africa: Overcoming Challenges for Growth*



We are pleased to inform you that the IIE's Higher Degrees Committee considered and granted ethics clearance with minor revisions that must be signed off by your supervisor and Head of Programme. This means that you may proceed with data collection once you have addressed the comments shared by the HDC.

You are reminded to inform the IIE's Higher Degrees Committee of any changes made to the research methodology or title of the research prior to examination. Kindly ensure that all ethical considerations are duly applied whilst collecting, analysing and interpreting the data for the completion of your research.

If you have any questions, please feel free to contact your programme team or supervisor directly.

All the best with your research studies.



Dr Reza Hosseini

Chair: Higher Degrees Committee



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ANNEXURE E: COMPLETE TABLE OF THEMES, CATEGORIES AND CODES

Sample Raw Data Extract (from Interviews)	Initial Code	Sub-Theme	Main Theme	Interpretive Meaning	Linked Research Objective / Question	Associated Theoretical Lens
"Banks want collateral we don't have." (P1)	Lack of collateral	Restricted access to funding and credit	Theme 1 – Financial Constraints and Access to Capital	Traditional lenders' asset-based models exclude start-ups.	RO1 / RQ1 – Identify challenges faced by construction start-ups.	RBV – Financial capital as strategic resource.
"We apply for funding but never get feedback." (P3)	Bureaucratic inefficiency	Restricted access to funding	Theme 1 – Financial Constraints and Access to Capital	Inefficient institutional processes and poor follow-up	RO1 / RQ1	Institutional Theory – administrative barriers.
"Government funds exist but the process is long and political." (P5)	Political bureaucracy	Restricted access to funding	Theme 1 – Financial Constraints and Access to Capital	Perceived politicisation of funding processes reinforce	RO1 / RQ1	Institutional Theory – policy bias.
"We survive through small overdrafts and help from family." (P2)	Informal financing reliance	Restricted access to funding	Theme 1 – Financial Constraints and Access to Capital	Reliance on informal sources provides survival liquidity	RO1 / RQ1	RBV / DCF – liquidity flexibility.
"Financial institutions do not understand the cash flow of the construction industry." (P4)	Sector-specific mismatch	Restricted access to funding	Theme 1 – Financial Constraints and Access to Capital	Mismatch between banking models and cyclical construction	RO1 / RQ1	DCF – financial adaptability.
"We wait months for client payments." (P3)	Delayed payments	Delayed payments & cash-flow constraints	Theme 1 – Financial Constraints and Access to Capital	Public-sector payment delays cripple cash flow and profitability	RO1 / RQ1	RBV / DCF – liquidity as operational capability.
"Cash flow kills small contractors. We pay workers and suppliers before we are paid." (P2)	Pre-financing risk	Cash-flow constraint	Theme 1 – Financial Constraints and Access to Capital	Up-front financing drains liquidity and exposes firms to risk	RO1 / RQ1	RBV – working capital as critical resource.
"Even after submitting invoices, we still have to follow up and the process can take up to 3 months." (P6)	Administrative delay	Cash-flow constraint	Theme 1 – Financial Constraints and Access to Capital	Inefficient client administration exacerbates liquidity constraints	RO1 / RQ1	Institutional Theory – procedural inefficiency.
"Sometimes we have to borrow to finish a job because of unpredictable payments." (P4)	Unpredictable cash inflows	Cash-flow constraint	Theme 1 – Financial Constraints and Access to Capital	Volatile payments force borrowing and inflate interest rates	RO1 / RQ1	DCF – reconfiguration for survival.
"When clients delay, everything grinds to a halt." (P5)	Operational paralysis	Cash-flow constraint	Theme 1 – Financial Constraints and Access to Capital	Payment unpredictability halts operations and planning	RO1 / RQ1	RBV – liquidity as enabling resource.
"You need a guarantee before you can get a contract, but you cannot get a guarantee without a contract." (P2)	Circular financing dilemma	Collateral and guarantee requirements	Theme 1 – Financial Constraints and Access to Capital	Systemic paradox excludes small firms from tender process	RO1 / RQ1	Institutional Theory / DCF.
"Guarantees and surety bonds favour big companies." (P3)	Systemic exclusion	Collateral and guarantee	Theme 1 – Financial Constraints and Access to Capital	Financial instruments reinforce inequality between firms	RO1 / RQ1	Institutional Theory.
"Insurers require a track record before they issue a bond." (P1)	Catch-22 barrier	Collateral and guarantee	Theme 1 – Financial Constraints and Access to Capital	Experience-based qualification locks out new entrants	RO1 / RQ1	Institutional Theory / RBV.
"We have tried partnering with other companies to meet the guarantee requirements." (P4)	Partnership workaround	Collateral and guarantee	Theme 1 – Financial Constraints and Access to Capital	Joint ventures mitigate risk but reduce profit share.	RO2 / RQ2 – Explore growth strategies.	DCF – collaboration for adaptation.
"The CIDB should provide small firms with guarantee facilities." (P5)	Institutional intervention need	Collateral and guarantee	Theme 1 – Financial Constraints and Access to Capital	Calls for state bridging finance to level the field.	RO3 / RQ3 – Recommend policy actions.	Institutional Theory.
"We plan our projects in smaller phases to manage cash flow better." (P4)	Phased execution	Adaptive financial management	Theme 1 – Financial Constraints and Access to Capital	Flexible phasing helps maintain liquidity under constraints	RO2 / RQ2	DCF – reconfiguration capability.
"We have learned to negotiate part-payments during progress." (P2)	Negotiated billing	Adaptive financial management	Theme 1 – Financial Constraints and Access to Capital	Learning-based contractual adaptation improves survival	RO2 / RQ2	DCF – sensing and seizing opportunities.
"We now insist on mobilisation advances." (P3)	Risk management	Adaptive financial management	Theme 1 – Financial Constraints and Access to Capital	Firms institute pre-payment terms to protect liquidity.	RO2 / RQ2	DCF – risk mitigation dynamic capability.
"We use spreadsheets and mobile banking to help us track our expenses." (P6)	Cost-tracking innovation	Adaptive financial management	Theme 1 – Financial Constraints and Access to Capital	Basic digital tools enhance transparency and control.	RO2 / RQ2	RBV / DOI – technology as enabling resource.
"We have to cut our overheads immediately when we feel the crunch." (P1)	Cost-alignment agility	Adaptive financial management	Theme 1 – Financial Constraints and Access to Capital	Responsive cost control reflects entrepreneurial resilience	RO2 / RQ2	DCF – transforming capability.

Sample Raw Data Extract (from Interviews)	Initial Code	Sub-Theme / Category	Main Theme	Interpretive Meaning	Linked Research Objective / Question	Associated Theoretical Lens
"CIDB renewal and compliance take too long." (P1)	Lengthy administrative process	Complex Compliance Requirements	Theme 2 – Regulatory and Institutional Barriers	Bureaucratic delays limit tender eligibility and discourage small firms.	RO1 / RQ1 – Identify regulatory barriers to start-up scalability.	Institutional Theory – administrative rigidity as structural constraint.
"Each client wants different documents. COIDA, tax clearance, BBBEE..." (P3)	Duplicated compliance requirements	Complex Compliance Requirements	Theme 2 – Regulatory and Institutional Barriers	Conflicting document requirements across agencies create confusion.	RO1 / RQ1	Institutional Theory – misaligned regulatory frameworks.
"We lose points for minor paperwork issues." (P5)	Paperwork penalties	Complex Compliance Requirements	Theme 2 – Regulatory and Institutional Barriers	Administrative inflexibility penalises small firms for technical errors.	RO1 / RQ1	Institutional Theory – procedural inflexibility.
"Compliance is expensive; we hire consultants." (P4)	Costly compliance processes	Complex Compliance Requirements	Theme 2 – Regulatory and Institutional Barriers	External consultants add financial pressure, disadvantaging small firms.	RO1 / RQ1	DCF – resource reallocation due to institutional pressure.
"If one certificate expires, the system blocks you out." (P2)	Administrative rigidity	Complex Compliance Requirements	Theme 2 – Regulatory and Institutional Barriers	Automated disqualification undermines continuity of engagement.	RO1 / RQ1	Institutional Theory – institutional rigidity.
"Tendering favours established firms." (P3)	Systemic bias	CIDB Grading Limitations and Market Segmentation	Theme 2 – Regulatory and Institutional Barriers	Regulatory grading perpetuates inequality and restricts new entrants.	RO1 / RQ1	Institutional Theory – path dependence in industry systems.
"Even if we perform well on small jobs, we're stuck at Grade 2 or 3." (P5)	Stagnant CIDB progression	CIDB Grading Limitations and Market Segmentation	Theme 2 – Regulatory and Institutional Barriers	Lack of performance recognition locks out competent firms.	RO1 / RQ1	DCF – learning and progression constraint.
"Bigger contractors dominate higher-value projects." (P4)	Market concentration	CIDB Grading Limitations and Market Segmentation	Theme 2 – Regulatory and Institutional Barriers	Entrenched incumbents capture large contracts, reducing opportunities for others.	RO1 / RQ1	RBV / Institutional Theory – resource dominance and market barriers.
"We tried upgrading our CIDB grade, but they asked for financial statements." (P1)	Financial documentation barriers	CIDB Grading Limitations and Market Segmentation	Theme 2 – Regulatory and Institutional Barriers	Formal accounting requirements exclude informal yet successful businesses.	RO1 / RQ1	Institutional Theory – formalisation as exclusion mechanism.
"Government should consider capacity and skills, not just past contract values." (P2)	Competence-based reform suggestions	CIDB Grading Limitations and Market Segmentation	Theme 2 – Regulatory and Institutional Barriers	Advocates for performance-based grading reform to incentivise skill development.	RO3 / RQ3	DCF – policy learning and reform capability.
"Paperwork discourages small players." (P3)	Administrative fatigue	Bureaucratic Procurement and Institutional Inefficiency	Theme 2 – Regulatory and Institutional Barriers	Excessive documentation deters participation in tendering processes.	RO1 / RQ1	Institutional Theory – bureaucratic overload.
"We spend weeks compiling a tender and never get feedback." (P4)	Lack of transparency	Bureaucratic Procurement and Institutional Inefficiency	Theme 2 – Regulatory and Institutional Barriers	Absence of feedback hinders learning and improvement.	RO3 / RQ3	DCF – feedback as learning loop.
"Tenders take months to be awarded." (P5)	Slow adjudication	Bureaucratic Procurement and Institutional Inefficiency	Theme 2 – Regulatory and Institutional Barriers	Lengthy award processes delay project implementation.	RO1 / RQ1	Institutional Theory – slow administrative turnaround.
"When tenders are re-advertised, we lose more money." (P1)	Repetitive tender cycles	Bureaucratic Procurement and Institutional Inefficiency	Theme 2 – Regulatory and Institutional Barriers	Re-tendering wastes resources and creates uncertainty.	RO1 / RQ1	DCF – instability reducing adaptive capacity.
"Sometimes it feels like tenders are already decided." (P2)	Perceived corruption	Bureaucratic Procurement and Institutional Inefficiency	Theme 2 – Regulatory and Institutional Barriers	Lack of transparency fosters distrust and perceived unfairness.	RO1 / RQ1	Institutional Theory – institutional legitimacy erosion.
"Different agencies do not talk to each other." (P4)	Institutional fragmentation	Institutional Fragmentation and Policy Incoherence	Theme 2 – Regulatory and Institutional Barriers	Poor inter-agency communication creates duplication and confusion.	RO3 / RQ3	Institutional Theory – policy fragmentation.
"We attended training with CIDB, but after that, no one followed up." (P2)	Lack of continuity	Institutional Fragmentation and Policy Incoherence	Theme 2 – Regulatory and Institutional Barriers	Absence of continuous institutional engagement undermines learning.	RO3 / RQ3	DCF – discontinuous learning.
"Government keeps changing tender rules." (P5)	Policy instability	Institutional Fragmentation and Policy Incoherence	Theme 2 – Regulatory and Institutional Barriers	Regulatory uncertainty discourages long-term planning and investment.	RO3 / RQ3	Institutional Theory – inconsistent institutional norms.
"Policies look good on paper but they don't work." (P1)	Policy-practice gap	Institutional Fragmentation and Policy Incoherence	Theme 2 – Regulatory and Institutional Barriers	Weak implementation undermines intended developmental goals.	RO3 / RQ3	DCF – poor policy-to-practice learning.
"We need one-stop centres for compliance." (P3)	Coordination recommendation	Institutional Fragmentation and Policy Incoherence	Theme 2 – Regulatory and Institutional Barriers	Suggests centralised coordination to streamline compliance processes.	RO3 / RQ3	DCF – institutional reconfiguration.

Sample Raw Data Extract (from Interviews)	Initial Code	Sub-Theme / Category	Main Theme	Interpretive Meaning	Linked Research Objective / Question	Associated Theoretical Lens
"Our team learns on the job." (P1)	Informal learning	Skills Shortage and Informal Training	Theme 3 – Human Capital and Skills Development	Reliance on on-site experiential learning due to lack of	RO1 / RQ1: Identify skill challenges affecting scalability.	RBV / DCF: Human capital as valuable internal resource shaped through experiential learning.
"We lack skilled artisans, especially electricians and plumbers." (P3)	Technical labour shortage	Skills Shortage and Informal Training	Theme 3 – Human Capital and Skills Development	Highlights an undersupply of certified artisans essential	RO1 / RQ1	RBV – specialised skills as rare resources influencing competitiveness.
"Good supervisors are hard to find." (P5)	Supervisory skill gap	Skills Shortage and Informal Training	Theme 3 – Human Capital and Skills Development	Reflects deficiency in mid-level technical leadership ca	RO1 / RQ1	RBV / DCF – leadership as adaptive managerial capability.
"Our workers leave once they gain experience." (P4)	High turnover	Retention and Workforce Stability	Theme 3 – Human Capital and Skills Development	Limited career progression and better pay elsewhere c	RO1 / RQ1	Institutional Theory – labour market pull factors.
"We cannot afford to pay high salaries." (P2)	Low wage affordability	Retention and Workforce Stability	Theme 3 – Human Capital and Skills Development	Start-ups' financial constraints undermine workforce r	RO1 / RQ1	RBV – economic resource constraint.
"We train workers and they leave for bigger firms." (P3)	Loss of trained labour	Retention and Workforce Stability	Theme 3 – Human Capital and Skills Development	Investment in training doesn't yield long-term benefit	RO1 / RQ1	DCF – weak internal learning loops.
"We need mentorship from experienced contractors." (P6)	Lack of mentorship	Mentorship and Managerial Skills Development	Theme 3 – Human Capital and Skills Development	Absence of structured mentorship limits leadership ca	RO2 / RQ2:** Explore growth strategies and learning mechanisms.	DCF – capability building through external learning.
"There are no proper training programmes that focus on small contractors." (P3)	Training gap	Mentorship and Managerial Skills Development	Theme 3 – Human Capital and Skills Development	Institutional training frameworks overlook SMEs' spe	RO3 / RQ3:** Recommend targeted policy support.	Institutional Theory – institutional neglect of SME capacity building.
"We rely on YouTube and online videos to learn estimating." (P2)	Self-driven online learning	Mentorship and Managerial Skills Development	Theme 3 – Human Capital and Skills Development	Demonstrates entrepreneurial adaptability in learning	RO2 / RQ2	DCF – self-learning as adaptive capability.
"Leadership and record keeping are important; I wear many hats." (P2)	Multi-role leadership	Managerial Overstretch	Theme 3 – Human Capital and Skills Development	Overdependence on founders reflects managerial bott	RO1 / RQ1	RBV / DCF – managerial routines as key resources.
"Every project teaches us something new." (P5)	Experiential adaptation	On-the-Job Learning	Theme 3 – Human Capital and Skills Development	Continuous experiential improvement substitutes for	RO2 / RQ2	DCF – learning-by-doing as dynamic capability.
"If we could get short courses on project management, it would help." (P6)	Upskilling aspiration	Mentorship and Training Support	Theme 3 – Human Capital and Skills Development	Indicates willingness to improve but lack of access to	RO3 / RQ3	DCF – need for institutional learning infrastructure.
"We have potential, but our management systems are weak." (P4)	Limited management systems	Organisational Competency Deficit	Theme 3 – Human Capital and Skills Development	Weak management processes undermine scalability de	RO1 / RQ1	RBV – organisational routines as competitive differentiators.
"Young people are not interested in construction." (P1)	Youth disengagement	Workforce Renewal Challenges	Theme 3 – Human Capital and Skills Development	Limited new entrants create long-term succession cha	RO3 / RQ3	Institutional Theory – declining attractiveness of the sector.

Sample Raw Data Extract (from Interviews)	Initial Code	Sub-Theme / Category	Main Theme	Interpretive Meaning	Linked Research Objective / Question	Associated Theoretical Lens
"We still work manually." (P1)	Manual processes	Limited Access to Digital Tools	Theme 4 – Technological Adoption and Innovation	Reveals reliance on traditional paper-based systems d	RO2 / RQ2: Explore effectiveness of growth strategies and technology adoption.	DOI / RBV: Innovation diffusion influenced by perceived complexity and resource constraints.
"We use WhatsApp and Excel for everything." (P2)	Basic digital communication	Limited Access to Digital Tools	Theme 4 – Technological Adoption and Innovation	Demonstrates adaptation using affordable and accessa	RO2 / RQ2	DOI – compatibility and relative advantage in low-cost adoption.
"Bigger firms use project management software we can't afford." (P3)	Digital divide	Cost of Software and Machinery	Theme 4 – Technological Adoption and Innovation	Highlights inequality in technology access and financi	RO1 / RQ1	RBV – financial capability determines resource competitiveness.
"Technology helps manage costs, but most systems are priced in dollars." (P5)	Currency-based affordability ba	Cost of Software and Machinery	Theme 4 – Technological Adoption and Innovation	Currency-linked software costs make innovation inacc	RO1 / RQ1	DOI – cost and relative advantage affect adoption.
"We want to learn how to use digital estimating tools." (P6)	Lack of technical training	Cost of Software and Machinery	Theme 4 – Technological Adoption and Innovation	Expresses eagerness for digital adoption but limited a	RO2 / RQ2	DCF – sensing and learning capability.
"We rely on manual drawings and spreadsheets for costing." (P4)	Outdated systems	Limited Access to Digital Tools	Theme 4 – Technological Adoption and Innovation	Manual practices slow productivity and limit efficien	RO1 / RQ1	DOI – low innovation diffusion.
"Government should assist small contractors with digital tools." (P4)	Institutional support request	Technology Adoption Support	Theme 4 – Technological Adoption and Innovation	Shows expectation for public-private collaboration in	RO3 / RQ3	Institutional Theory / DCF – ecosystem support for innovation.
"Technology saves time, but no one shows us how to use it." (P2)	Knowledge gap	Awareness and Digital Literacy	Theme 4 – Technological Adoption and Innovation	Lack of structured training prevents adoption even wi	RO2 / RQ2	DCF – lack of learning mechanisms.
"Bigger companies use drones and management software to monitor sites." (P3)	Innovation gap	Low Awareness of Construction Technologies	Theme 4 – Technological Adoption and Innovation	Illustrates the innovation gap between established and	RO1 / RQ1	DOI – early vs. late adoption stages.
"We watch tutorials on YouTube to learn new tools." (P5)	Self-learning through digital pl	Awareness and Digital Literacy	Theme 4 – Technological Adoption and Innovation	Depicts informal innovation learning driven by entrep	RO2 / RQ2	DCF – self-learning as adaptive process.
"We started using mobile apps for timesheets and invoicing." (P6)	Mobile-based innovation	Incremental Technology Integration	Theme 4 – Technological Adoption and Innovation	Demonstrates incremental digital transformation imple	RO2 / RQ2	DOI / DCF – stepwise adoption of compatible technology.
"We share designs via Google Drive now; it's faster than printing." (P4)	Cloud collaboration	Incremental Technology Integration	Theme 4 – Technological Adoption and Innovation	Illustrates cost-effective digital integration improving	RO2 / RQ2	DOI – perceived advantage drives adoption.
"Younger team members are more comfortable with digital tools." (P1)	Generational digital comfort	Awareness and Digital Literacy	Theme 4 – Technological Adoption and Innovation	Younger workers are driving tech adoption through fi	RO2 / RQ2	DOI – social influence in innovation diffusion.
"Digitalisation could help us compete, but training is limited." (P5)	Need for structured capacity bu	Technology Adoption Support	Theme 4 – Technological Adoption and Innovation	Highlights the need for institutional intervention in tra	RO3 / RQ3	DCF – capability upgrading through ecosystem support.
"We need affordable software licences." (P2)	Cost barrier	Cost of Software and Machinery	Theme 4 – Technological Adoption and Innovation	Cost remains a key structural deterrent for innovation	RO1 / RQ1	RBV – resource accessibility and sustainability.
"We are not using BIM or advanced software yet." (P6)	Lag in innovation adoption	Low Awareness of Construction Technologies	Theme 4 – Technological Adoption and Innovation	Demonstrates technological stagnation in smaller ente	RO1 / RQ1	DOI – innovation lag in late adopters.
"Technology is important but we focus on getting projects first." (P3)	Strategic prioritisation of surviv	Cost and Awareness Barrier	Theme 4 – Technological Adoption and Innovation	Suggests resource prioritisation where survival trump	RO1 / RQ1	DCF – constrained resource reallocation.

Sample Raw Data Extract (from Interviews)	Initial Code	Sub-Theme / Category	Main Theme	Interpretive Meaning	Linked Research Objective / Question	Associated Theoretical Lens
"We applied for funding but never got feedback." (P1)	Lack of institutional responsiveness	Fragmented Support Programmes	Theme 5 – Institutional Support and Ecosystem Development	Reflects poor administrative responsiveness from suppliers	RO1 / RQ1: Identify institutional challenges affecting start-up scalability.	Institutional Theory: Ineffective governance and feedback mechanisms.
"Different agencies don't talk to each other." (P3)	Poor inter-agency coordination	Ineffective Coordination Among Agencies	Theme 5 – Institutional Support and Ecosystem Development	Illustrates policy fragmentation and duplication of support	RO3 / RQ3 – Recommend ecosystem improvements for enabling environments.	Institutional Theory – policy incoherence.
"You attend a workshop but there's no follow-up." (P2)	Lack of continuity	Limited Post-Incubation Assistance	Theme 5 – Institutional Support and Ecosystem Development	One-off training programmes without follow-up reduce impact	RO3 / RQ3	DCF – lack of institutional learning loops.
"We were promised mentorship and funding, but it stopped halfway." (P5)	Programme discontinuity	Limited Post-Incubation Assistance	Theme 5 – Institutional Support and Ecosystem Development	Discontinuation of initiatives undermines trust and commitment	RO3 / RQ3	Institutional Theory – short-termism in programme implementation.
"Agencies like SEDA and SEFA operate in silos." (P4)	Institutional fragmentation	Ineffective Coordination Among Agencies	Theme 5 – Institutional Support and Ecosystem Development	Reflects lack of coordination between funding, mentorship and support	RO3 / RQ3	Institutional Theory – weak institutional integration.
"Government support focuses on registration, not on actual project access." (P3)	Misaligned institutional priorities	Fragmented Support Programmes	Theme 5 – Institutional Support and Ecosystem Development	Shows disconnect between bureaucratic support activities and SME needs	RO3 / RQ3	Institutional Theory – misalignment between policy intent and impact.
"We attended CIDB training, but after that, no one checked if we improved." (P6)	Absence of post-training evaluation	Limited Post-Incubation Assistance	Theme 5 – Institutional Support and Ecosystem Development	Highlights lack of monitoring and evaluation of development	RO3 / RQ3	DCF – weak feedback and learning mechanisms.
"Different support schemes compete with each other instead of working together." (P4)	Duplicative initiatives	Ineffective Coordination Among Agencies	Theme 5 – Institutional Support and Ecosystem Development	Demonstrates fragmentation and inefficiency in SME support	RO3 / RQ3	Institutional Theory – parallel uncoordinated frameworks.
"We registered with several agencies, but none provided actual work opportunities." (P2)	Implementation gap	Fragmented Support Programmes	Theme 5 – Institutional Support and Ecosystem Development	Indicates institutional inefficiency and failure to link training to opportunities	RO3 / RQ3	Institutional Theory – symbolic compliance vs practical support.
"The system is not friendly to small contractors." (P4)	Bureaucratic gatekeeping	Fragmented Support Programmes	Theme 5 – Institutional Support and Ecosystem Development	Bureaucracy discourages small contractors from engaging	RO1 / RQ1	Institutional Theory – exclusionary institutional systems.
"We created WhatsApp groups to share opportunities ourselves." (P3)	Peer-led collaboration	Informal Support Networks	Theme 5 – Institutional Support and Ecosystem Development	Informal networks substitute for institutional failure and provide support	RO2 / RQ2 – Explore adaptive strategies and informal networks.	DCF – entrepreneurial self-organisation.
"We rely on suppliers and peers for advice instead of institutions." (P5)	Community learning	Informal Support Networks	Theme 5 – Institutional Support and Ecosystem Development	Social capital compensates for weak institutional structures	RO2 / RQ2	RBV / DCF – relational resources as competitive assets.
"If these agencies worked together, we could access funding faster." (P6)	Call for institutional synergy	Ineffective Coordination Among Agencies	Theme 5 – Institutional Support and Ecosystem Development	Suggests that ecosystem integration would accelerate growth	RO3 / RQ3	DCF – coordination capability within institutions.
"We need ongoing mentorship, not just workshops." (P2)	Long-term support demand	Limited Post-Incubation Assistance	Theme 5 – Institutional Support and Ecosystem Development	Entrepreneurs seek continuous mentorship aligned with business needs	RO3 / RQ3	DCF – capability enhancement through sustained learning.
"We don't even know which department to approach anymore." (P1)	Confusion about access points	Fragmented Support Programmes	Theme 5 – Institutional Support and Ecosystem Development	Confusion and overlap across agencies reduce efficiency	RO3 / RQ3	Institutional Theory – lack of system transparency.
"We have ideas but need guidance to execute them." (P5)	Need for capacity development	Informal Support Networks	Theme 5 – Institutional Support and Ecosystem Development	Mentorship void inhibits idea implementation and scaling	RO2 / RQ2	DCF – knowledge as transformative resource.

Sample Raw Data Extract (from Interviews)	Initial Code	Sub-Theme / Category	Main Theme	Interpretive Meaning	Linked Research Objective / Question	Associated Theoretical Lens
"We collaborate with bigger companies to qualify for tenders." (P2)	Strategic partnerships	Market Access and Tendering Opportunities	Theme 6 – Strategic Growth and Competitive Positioning	Partnerships with established firms create access to higher-level projects.	RO2 / RQ2: Explore growth strategies enabling start-up scalability.	RBV / DCF: Collaboration as a capability to leverage external resources.
"Partnering helped us build experience and credibility." (P3)	Learning through collaboration	Strategic Partnerships and Collaboration	Theme 6 – Strategic Growth and Competitive Positioning	Partnerships foster capability transfer and strengthen internal processes.	RO2 / RQ2	DCF – learning through external linkages.
"We get exposure by subcontracting to bigger companies." (P5)	Subcontracting as entry route	Strategic Partnerships and Collaboration	Theme 6 – Strategic Growth and Competitive Positioning	Subcontracting enables entry into formal supply chain.	RO2 / RQ2	RBV – access to networks as intangible resource.
"We focus on smaller projects like maintenance and plumbing." (P4)	Niche market focus	Market Access and Tendering Opportunities	Theme 6 – Strategic Growth and Competitive Positioning	Smaller projects sustain operations and build gradual market presence.	RO2 / RQ2	RBV – niche specialisation as differentiation strategy.
"We collaborate with consultants to prepare tenders." (P1)	Technical collaboration	Strategic Partnerships and Collaboration	Theme 6 – Strategic Growth and Competitive Positioning	Collaboration compensates for internal skill shortages.	RO2 / RQ2	DCF – resource integration for capability extension.
"Branding helps us win private jobs." (P3)	Marketing and visibility	Market Access and Tendering Opportunities	Theme 6 – Strategic Growth and Competitive Positioning	Marketing differentiation and personal branding enhance visibility.	RO2 / RQ2	RBV – reputation as competitive asset.
"We rely on referrals and repeat clients to stay afloat." (P5)	Relationship-based marketing	Market Access and Tendering Opportunities	Theme 6 – Strategic Growth and Competitive Positioning	Long-term client relationships sustain business growth.	RO2 / RQ2	RBV – relational capital as valuable resource.
"We are learning to diversify to stay in business." (P6)	Diversification strategy	Niche Specialisation and Competitive Strategy	Theme 6 – Strategic Growth and Competitive Positioning	Diversification into complementary services mitigates market risk.	RO2 / RQ2	DCF – resource reconfiguration for sustainability.
"We want to grow into infrastructure projects and housing." (P4)	Scaling ambition	Long-Term Growth Vision	Theme 6 – Strategic Growth and Competitive Positioning	Shows aspirational growth orientation reflecting entrepreneurial vision.	RO2 / RQ2	DCF – sensing and transforming capabilities.
"Because the market is saturated, we specialise in green and modular housing." (P6)	Differentiation through innovation	Niche Specialisation and Competitive Strategy	Theme 6 – Strategic Growth and Competitive Positioning	Specialisation in eco-friendly projects provides unique value proposition.	RO2 / RQ2	RBV / DCF – innovation as a differentiation mechanism.
"We plan to register in other provinces to access more projects." (P5)	Geographical expansion	Long-Term Growth Vision	Theme 6 – Strategic Growth and Competitive Positioning	Geographic diversification expands opportunity and reduces regional dependency.	RO2 / RQ2	DCF – strategic scaling capability.
"We train our site supervisors to manage projects independently." (P3)	Leadership development	Strategic Capability Building	Theme 6 – Strategic Growth and Competitive Positioning	Empowering internal leadership improves scalability and resilience.	RO2 / RQ2	RBV – human capital as performance driver.
"We share information on tender adverts among ourselves." (P2)	Informal collaboration	Market Access and Tendering Opportunities	Theme 6 – Strategic Growth and Competitive Positioning	Demonstrates collective competitiveness through peer networks.	RO2 / RQ2	DCF – network-based adaptation.
"We rely on supplier credit to keep operations going." (P4)	Financial collaboration	Strategic Resource Management	Theme 6 – Strategic Growth and Competitive Positioning	Leveraging supplier relationships sustains liquidity during lean periods.	RO1 / RQ1	RBV – relational resources as support capital.
"We now prepare bids months in advance to be more competitive." (P1)	Strategic planning	Competitive Positioning and Readiness	Theme 6 – Strategic Growth and Competitive Positioning	Proactive tender preparation enhances competitiveness.	RO2 / RQ2	DCF – anticipation and learning routines.
"We benchmark against established firms to improve standards." (P5)	Benchmarking and imitation	Strategic Capability Building	Theme 6 – Strategic Growth and Competitive Positioning	Emulating best practices enhances internal processes.	RO2 / RQ2	DCF – learning and continuous improvement.
"We want to formalise our structure and improve administration." (P3)	Organisational formalisation	Strategic Capability Building	Theme 6 – Strategic Growth and Competitive Positioning	Formalisation strengthens governance, compliance, and accountability.	RO2 / RQ2	RBV – structural capital for scalability.
"We are trying to employ qualified project managers." (P2)	Professionalisation of management	Strategic Capability Building	Theme 6 – Strategic Growth and Competitive Positioning	Recruitment of skilled managers enhances operational efficiency.	RO2 / RQ2	RBV – human capital as strategic resource.
"We review our prices and strategies quarterly." (P1)	Strategic reflection and adjustment	Competitive Positioning and Readiness	Theme 6 – Strategic Growth and Competitive Positioning	Continuous strategic reflection fosters adaptability in a dynamic market.	RO2 / RQ2	DCF – dynamic sensing and reconfiguration.

ANNEXURE F: CERTIFICATE OF EDITING



Certificate of language editing

30 October 2025

Johannesburg

To whom it may concern

Text editing of the dissertation titled ‘Scaling Construction Start-ups in Gauteng, South Africa: Overcoming Challenges for Growth’

I, **Babra Mudzudzu**, hereby confirm that I have edited the textual content of Chapters One, Two, Three, Four, Five, and Six of this dissertation. The editing focused on identifying and correcting language errors and inconsistencies to enhance clarity and coherence. The client retained full discretion to accept or reject the suggested edits using the MS Word Track Changes function.

Proofreading or verification of in-text citations and the reference list for accuracy, formatting, or completeness did not form part of the editing scope.

Thank you for the opportunity to be of assistance.

Signed

Babra Mudzudzu

Bachelor of Laws (LLB) (Univen)

Accredited Text Editor (ATE) – English & French

ANNEXURE G: SIMILARITY REPORT

Mini Dissertation_Tafadzwa

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STUDENT PAPERS

ANNEXURE H: SUPERVISORS PERMISSION TO SUBMIT



ANNEXURE F – CERTIFICATE OF RELEASE (IIE007)

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PART 1	Student
Names:	Tafadzwa Calvin
Surname:	Wurayayi
Student number:	[REDACTED]
Email:	[REDACTED]
Contact number:	[REDACTED]
Degree:	Master of Business Administration
Title of Study:	Scaling Construction Start-ups in Gauteng, South Africa: Overcoming Challenges for Growth
I confirm that my proposal has been prepared in accordance with the guidelines of The Independent Institute of Education on the submission of a Master's / Doctoral proposal.	
[REDACTED]	31-10-2025
Signature of candidate	Date

PART 2	Supervisor and co-supervisor
Supervisor title, first and last names:	Dr Chante Botha
Co-supervisor title first and last names:	N/A
I confirm that the candidate's proposal has been prepared to my satisfaction and in accordance with the guidelines of The Independent Institute of Education on the submission of a Master's / Doctoral proposal.	
[REDACTED]	31/10/2025
Signature of supervisor	Date
[REDACTED]	
Signature of co-supervisor	Date