Investigating the impact of the education level of construction owners on business performance

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A minor dissertation presented to the Department of Construction Economics and management in partial fulfilment of the requirements for the degree

MSc in Project Management

OCTOBER 2022

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ABSTRACT

The study investigates the impact of the level of education of owners on the performance of the business in the construction industry. Construction companies are key to economic development in South Africa, playing an economic role in the nation's GDP and solving economic problems like unemployment and equitable distribution of wealth, among other things. The construction industry is one of the industries with very high employment potential in South Africa; therefore, the success of the small businesses in the industry is key to the nation's success.

Previous research in the field of business identified several parameters that affect business performance and among these is the human capital of the business (education level of managers and owners). However, limited studies have examined the level of education of business owners and how this impacts the performance of the construction business. So, this study aims to find the common level of education of business owners, the typical performance of the businesses and whether the level of education impacts the performance. The following objectives were used to achieve this; to find out the level of education of business owners in the construction industry; to establish the typical level of performance of construction businesses; to determine the perception of business owners on the impact of education on construction company performance and; to find out whether the level of education of business owners' impacts construction company performance.

A quantitative research design approach was adopted using a questionnaire survey, administered using email, to obtain information from a sample population of 40 contractors that were being managed by Navi Professional consulting on Sanitation projects in the Mpumalanga Province of South Africa. The data collected were analysed using descriptive statistics that include cross-tabulations and histograms of the education parameters. A Chi-square statistical analysis was conducted to test the hypothesis but established that the level of education of construction owners does not significantly impact business performance. Based on the findings, the study concludes that the level of education of the business owner is not a significant factor that impacts the performance of construction businesses. It is therefore recommended that in order to avert failure, construction business owners should learn from their experience and continuos on-the-job training. Further research that examines the impact of the level

of education of construction owners on business performance using a larger sample size is also recommended.

Keywords: Business performance, cidb, construction industry, Education, Financial indicators, formal education, Small Micro Medium Enterprises.

ACKNOWLEDGEMENTS

Firstly, I would like to thank my classmates, family and friends for the support shown during this research; their help was invaluable.

I would also like to acknowledge and thank the following persons who have assisted me in making this research possible:

- My research supervisor Prof A Windapo, for her invaluable assistance and guidance in this thesis and inspiration in getting me to the end of this journey.
- The staff at UCT for never failing to assist me during my research.
- The company I work for (Navi Professional Consulting Pty Ltd) for allowing me to use their resources and time in this study.

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LIST OF ACRONYMS

BBBEE	-	Broad-Based Black Economic Empowerment
cidb	-	Construction Industry Development Board
COVID	-	Corona Virus Disease
GDP	-	Gross Domestic Product
ICT	-	Information and communications technology
NAE	-	Network Approach to Entrepreneurship
NQF	-	National Qualification Framework
PPPFA	-	Preferential Procurement Policy Framework Act
ROI	-	Return on Investment
RoC	-	Register of Contractors
SMME	-	Small Macro and Medium Enterprises

Chapter One: Introduction

This chapter presents the background of the research, the research problem statement, research question, aim of the study, research objectives, research proposition, the significance of the study and the outline of the research report.

1.1 Background of the study

The construction industry plays a significant role in the economy of any nation. The South African government is the dominant player in the Industry since the Industry provides for one of the basic human needs; thus, the positive flow of income makes construction a worthwhile business than working for someone else (Windapo, 2018). Many Small, Medium and Micro-Enterprises (SMMEs) have been borne out of these government initiatives.

Small Businesses play an important role in tackling key economic issues like unemployment and the equitable distribution of wealth (Blackburn and Ram, 2006). They must improve their performance to realise their role (Armstrong, 2015). Several factors, such as political, economic, cultural, management, and employees, affect business performance (Gill *et al.*, 2014). These factors affect how decisions are made to make a profit or loss, leading to the success or failure of the business.

Business performance is an analytic process that enables a business to check how the business performs against set goals (Zin and Manaf, 2019). Several indicators that show how a business performs have been studied in the past, but no conclusive list was established (Ali *et al.*, 2013). However, financial turnover, profit, and the number of employees are said to be the most important measures of business performance since finance, in particular profits, has a robust correlation to creating wealth for a business (Bussin and Blair, 2015).

According to Ali *et al.* (2013), other indicators like Construction Industry Development Board (cidb) grading, repeat jobs and timely completion of projects are also good measures of how small businesses perform. The cidb Register of Contractors is subdivided into nine grades depending on a matrix of the value of previous work done, annual turnover and available capital. To upgrade, a contractor must submit completion certificates, which is also an indicator of client satisfaction. A higher cidb

grade is, therefore, an indicator of the maturity of a company and its ability to perform at a specific level. However, using the cidb grading alone is not enough to check performance since some contractors do not upgrade because the business owner does not aspire to upgrade or by having found a niche market on a lower grade and the business performs well at that level (Windapo and Cattell, 2011).

The National Small Enterprises Act No. 102 of 1996, as amended in 2003, 2004, and 2019, describes an SMME as a company with fewer than 250 employees, with an Annual Turnover of less than Two Hundred and Twenty Million Rand in higher sectors like mining and with an owner who is directly involved in the management of the business (Gazette, 2019). In the construction industry, the threshold is slightly lower than in the mining sector but higher than in most sectors, with an upper limit of the threshold of One Hundred and Seventy Million Rand.

Construction companies are mostly Project-Based Business organisations. A project-Based Business is a company that relies on the execution of projects as the primary business activity (Choi *et al.*, 2018). These companies are called project-based or project-centric businesses. Project Businesses are found in many traditional industry sectors, but they follow the same underlying operational principles; that is to say, they deliver projects for them to survive (Keegan and Turner, 2002). This research will consider companies that operate in a project-driven environment or construction in the built environment and how the education level of owners affects business performance.

Education is measured in the ordered category as primary, secondary, and tertiary levels; however, this research will also include short courses and on-the-job training obtained through experience. Since the education level of business owners has been considered one of the key instruments to increase business success (Liñán *et al.*, 2011), it becomes important to investigate what level of education impacts the business success of construction companies. Thus, the study will examine how the different types of educational experiences of the business owners, be it formal or informal education, will impact their companies' business performance.

According to the international survey undertaken by Armstrong (2015), approximately 53% of projects underperformed, while the figure gets to as high as 90% in natural resource businesses. Such underperformance in South African project-based

businesses has caused small construction companies to have a failure rate as high as 90% (Nemaenzhe, 2011). This poor performance can be attributed to poor decision-making during project execution, sometimes emanating from the business owners' misunderstanding of the project environment. This is the case since most construction companies are project-based firms, meaning the businesses survive through achieving project financial success. Marques *et al.* (2011) posit that business success depends on the ability of the decision-makers to manage project constraints which can lead to either profit or losses in the business. Glaub *et al.* (2014), in their research in the retail sector, established that how a business is managed is key to its success and the owners of these small businesses have a direct influence on its management, but it is not known whether the situation is the same in the construction industry.

Small businesses significantly contribute to any country's gross domestic product (GDP). In South Africa, they contribute 52-57% to the GDP and provide for around 60% of employment. These companies have a significant impact on addressing human social inequalities (Rankhumise and Letsoalo, 2019). That is why there is a need to study the factors that impact business performance like education, to tackle the effects of poor business performance like unemployment, whilst at the same time encouraging the unemployed to start their businesses (Molefe *et al.*, 2018).

To foster the idea of business initiation, the South African government has developed frameworks for emerging contractor development, like Broad-Based Black Economic Empowerment (BBBEE) and the Preferential Procurement Policy Framework Act (PPPFA), to try and stimulate economic growth (Chimucheka, 2013). Despite these efforts, most small construction companies fail to achieve profitability, growth and success (Bushe, 2019).

The education system in South Africa has been built with an emphasis on conditioning and memorisation learning built around an educator-focused method (Hoadley, 2016). In this environment, learning is centred on the learners being docile and obedient to receive and believe in a fixed answer; the educators are just instruments of delivery or communication of knowledge (Leong, 2017). However, to foster the spirit of entrepreneurship and creativity needed by small businesses (Mok, 2005), there is a need to review or abandon this traditional approach in favour of a more progressive

educational approach that is student-centred, which will promote the fulfilment of individual learning needs.

The use of imagination, creativity skills and fostering a sense of inquiry to create an ability to synthesize information is not being nurtured in a traditional classroom (Tan, 2015). This means there is a need for an education system that allows for an opportunity-driven mindset that allows entrepreneurship. The government and tertiary institutions are trying to identify ways to educate the majority of the population to be more creative, innovative, imaginative, and analytical in the way they think (Lozano *et al.*, 2013). The government has identified education as one of the significant factors influencing entrepreneurship initiatives and has tried to improve the education sector through legislation and educational systems reforms (Chimucheka, 2013).

Limited studies have investigated the impact of the business owner's education level on the business's success. Windapo (2018) investigated the factors contributing to the growth of a construction company using a case study research design and concluded that experiential education impacts business performance. However, limited research has investigated whether the formal education of owners of construction companies impacts construction company efficiency, knowledge of construction and business management and the success of the construction company (Tucker, 2007; Graham, 2010; Windapo, 2018). This study will, therefore, investigate the effect of the education level of construction owners on the success of their businesses.

1.2 Statement of the problem

Small construction companies have a high failure rate (Mofokeng, 2013). This has been attributed to poor decision-making and misunderstanding of the business environment by construction company owners. Different frameworks have been developed to try and stimulate economic growth by the government and professional bodies; however, these efforts fail to achieve their intentions (Wallace, 2017). Furthermore, limited studies have investigated the impact of the education level of construction company owners on business success (Tucker, 2007; Graham, 2010; Windapo, 2018). Therefore, this research examines the impact of the owners' education level on construction business performance towards ensuring the survival of the construction companies and addressing social inequalities.

1.3 Research question

What is the relationship between the level of education of construction company owners and business performance?

1.4 Research Aim

To examine whether the level of education of construction company owners is related with construction business performance.

1.5 Research hypothesis

The level of education of construction company owners and the business performance are related; the higher the level of education of the business owner, the higher the performance of their construction company.

1.6 Research Objectives

The research objectives that need to be achieved are to:

a) Find out the level of education of business owners in the construction Industry.

b) Establish the typical level of performance of construction businesses.

c) Determine the perception of business owners on the impact of education on construction company performance.

d) Find out whether business owners' education level relates to construction company performance.

1.7 Research method

The objectives of this study are attained by the use of a quantitative research design approach and the following research method:

- A review of the literature on business performance and factors affecting construction business performance.
- The study analysed secondary data collected from 40 construction companies using a descriptive-analytical technique to assess how the businesses fared in terms of the performance indicators in the past five years. The business owner profile, academic qualification and experience were ascertained.
- Quantitative analyses and interpretation of collected data
- Recommendations and Conclusions were drawn.

1.8 Scope of the study

The research examined the education level of contractors working with Navi Professional Consulting (Pty) Ltd. These contractors worked on 40 sanitation projects in the Mpumalanga Province of South Africa.

1.9 Significance of the Study

The performance and success of small companies provide possibilities for better job opportunities for the rising unemployed population in South Africa. This means the results of this study can help small business owners and South Africa's policymakers to develop sustainable plans that can ensure the survival and performance of small and medium-sized construction companies until they are established as large contractors.

The theory that can be generated from the research could help understand the impact that the level of education of business owners has on construction company performance. The research is undertaken in the Construction Industry, where companies rely on temporal work and therefore provides a unique perspective on the impact the education level of business owners has on company performance.

1.10 Structure of the research report

Chapter one covers the background of the research, the research problem statement, the aim of the study, research objectives, research questions, the significance of the study and the methodology that will be followed in the research.

Chapter two presents a critical review of the current literature and theoretical framework that inform the study. The chapter also outlines the different views of scholars who researched the subject.

Chapter three describes the research design and the methodology that was followed. The chapter will be presented under the following subheadings, the research approach, research design, population of the study, sampling technique and sample size, method of data collection, research instrument, method of data analysis, elimination of bias, limitations of the study and ethical considerations.

Chapter four presents the data collected using tables, figures and narrations of what is observed. This chapter also interprets the findings and discusses them in line with the research objectives and the literature review presented in Chapter Two.

Chapter five provides a summary of the findings and their implications. It also offers practical recommendations on the education level that is ideal for construction business performance. The chapter further suggests areas for future research.

References used in the report follow Chapter five, and an Appendix, which contains the interview protocol and Ethics approval, follows.

Chapter Two: Literature Review

2.1 Introduction

In Chapter 1, a case is presented on a need to investigate the impact of the level of education of the owner on the performance of their business/construction company. Much research has been done on the performance of projects, but little research was done on the business performance side. The review will now set the tone on the broader views in the area of business performance indicators in the Construction Industry and justify the focus of the study. This chapter will review research conducted in Construction Business and Management from the holistic to South African studies. The review starts with an overview of the structure of the South African Construction Industry, followed by education requirements for company owners in construction, access to the business performance of construction companies and then relate the level of education to company performance.

2.2 Overview of the South African Construction Industry

Procurement of construction works by the public sector, including State-owned entities, national, provincial and local government, amounts to around R220 billion per year, which provides the backbone for the economic infrastructure necessary for economic growth and the delivery of public services (cidb, 2017b). Construction procurement also provides for around 1.4 million jobs in the construction sector. Figure 1 below shows the gross fixed capital formation in construction for the year 2018.

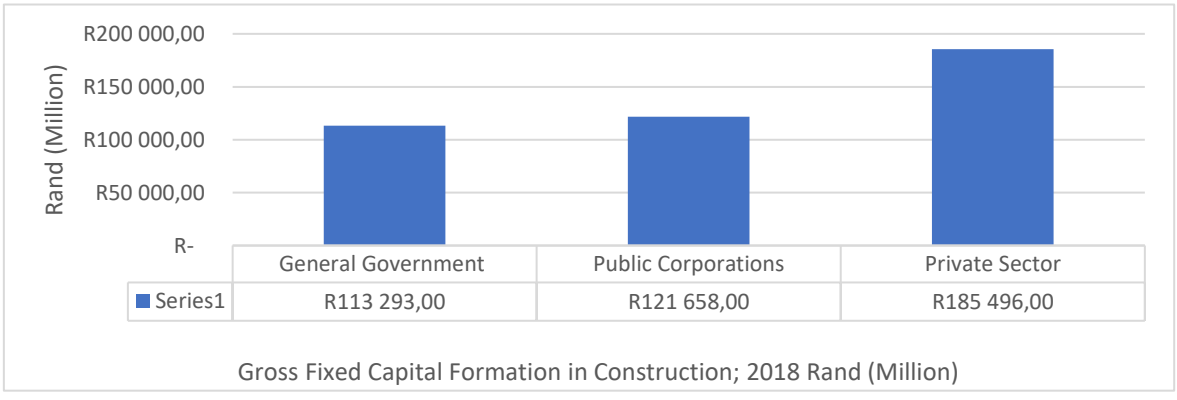

Figure 1 Gross Fixed Capital Formation in Construction; 2018 Rand (Million)
Source; (cidb, 2017b)

Figure 1 shows a total expenditure on construction works and related activities amounting to more than R430.2bn in 2018, highlighting the great strategic importance

of the South African construction sector to the country. Stats-SA (2019) states that the construction sector shed around 142,000 jobs in the first quarter of 2019. While the sector still employs over 8% of the country's labour force and construction output accounts for around 4% of Gross Domestic Product, the sector is under significant pressure as spending on infrastructure declined, the local economy failed to grow, and concerns mounted about the expropriation of land without compensation (Veitch, 2019).

The Industry is experiencing shrinking profit margins, cost overruns, labour disruptions and poor productivity, a shortage of skilled workers and the rising cost of inputs (Veitch, 2019). Turnover in the construction sector declined 8.6% year-on-year in the fourth quarter of 2018, while real growth in construction activity slowed to 1.1% year-on-year, down from 2.3% in the previous quarter (Veitch, 2019). Table 1 shows the number of contractors registered in the general building and civil engineering categories per province in 2015. This shows that the higher the cidb grade, the fewer the companies compete for work.

Table 1: cidb Register of Contractors (RoC) by province

Number of Contractors					
Grade	GB	CE	Grade	GB	CE
Eastern Cape			Mpumalanga		
9	2	2	9	1	2
7 & 8	62	63	7 & 8	62	85
5 &6	123	198	5 &6	179	189
2 to 4	447	552	2 to 4	308	338
Free State			North West		
9		4	9	1	1
7 & 8	38	42	7 & 8	42	54
5 &6	72	97	5 &6	109	71
2 to 4	205	200	2 to 4	343	184
Gauteng			Northern Cape		
9	47	63	9	0	0
7 & 8	285	347	7 & 8	14	13
5 &6	461	459	5 &6	25	35
2 to 4	1256	712	2 to 4	139	115
KwaZulu-Natal			Western Cape		
9	4	4	9	7	12
7 & 8	118	116	7 & 8	50	45
5 &6	240	247	5 &6	90	76
2 to 4	1233	377	2 to 4	286	189
Limpopo			South Africa		
9	4	4	9	67	102
7 & 8	85	116	7 & 8	756	937
5 &6	220	247	5 &6	1519	1731
2 to 4	376	377	2 to 4	4593	4556

Source: (cidb, 2017b)

2.3 Education Requirements for Company Owners in Construction

The South African government has identified education as one of the significant factors influencing SMME initiatives and has tried to improve the education sector through legislation and educational systems reforms (Chimucheka, 2014). Education also gives business owners a sense of independence, self-confidence and autonomy at the same time, making the individuals aware of any alternative business choices (Do Paço *et al.*, 2015). Education is said to broaden an individual's abilities; this makes them better prepared to perceive business opportunities in support of entrepreneurship. It also provides knowledge that individuals can use to develop new business opportunities and sets a foundation for good business management.

The research by Dias and Teixeira (2017) emphasized that business success is a derivative of the business owner's life experiences, which means the existence of links between the education level of the business owners, experience on a job through on-the-job training with business success (Dias and Teixeira, 2017). However, South Africa's education system has been built with an emphasis on conditioning and memorization learning built around an educator-focused method (Hoadley, 2012). In this environment, learning is centred on the learners being docile and obedient to receive and believe in a fixed answer; the teachers are just instruments of delivery or communication of knowledge (Leong, 2017). There is, however, a need to incorporate other experiences, as was shown in Sir Francis Bacon's theory of ideology and culture, which fosters the idea that knowledge is power and power is acquired through different educational experiences such as formal and informal (Leong, 2017).

According to cidb (2015), most of the owners of Grade 1 SMMEs in South Africa have reasonable educational backgrounds with some work experience in the industry, but they lack training and skills development short courses. Before these people established their businesses, they knew what to expect in the Industry and the challenges they could face. After graduating from various educational institutions, most owners often become skilled or general labourers in construction companies, giving them an insight into what to expect when they open their own businesses (Misko, 2008). Such hands-on training, apprenticeships and internships often provide people with valuable training in trades like carpentry and plumbing, which can be used as a substitution for a formal education background (Misko, 2008).

In the USA, it is common for business owners to have at least a tertiary education qualification to work as a contractor, with programs such as construction business, site planning, designing, construction methods, contract administration, building codes and standards, as well as mathematics, accounting and information technology that focus on various aspects of construction (Sacks and Pikas, 2013). This is the same in South Africa, where, although it is not a requirement for construction companies, it can be noticed that most construction businesses that are performing tend to have owners holding at least a tertiary qualification (Unger et al., 2009). Those business owners with higher qualifications, although very few, tend to have businesses that perform well since they have a better understanding of the business than those with lower qualifications (Van Praag, 2003). This notion is a consistent general human capital theory that educated individuals are likely to run faster-growing businesses than less educated individuals; thus, competencies are required to grow a company, thus having an educated owner will enable the business to perform better (Windapo and Cattell, 2011).

2.3.1 Formal education

For the context of this study, formal education shall refer to the type of educational experience that follows a curriculum meant to develop knowledge and skill. Some scholars (Furdas and Kohn, 2010) confirm the notion by proposing the idea that formal education's influence on an individual to form a business is uncertain. Nevertheless, a skill can be developed through higher formal education by profiling students and helping them through entrepreneurship programs to be innovative and creative, aiding the formation of SMMEs (Carr *et al.*, 2018). In this light, higher education could help aid business performance for those who can start their businesses (Entrepreneurs).

This implies that entrepreneurial skills are, thus, a combination of the knowledge obtained from formal education and the experiences that have been acquired by the individual (Debarliev *et al.*, 2020). Nevertheless, Mayombe (2017) states that informal institutions also cover entrepreneurship curricula to foster the formation of new small businesses.

2.3.2 Informal education

There is a continuing theme in research (Ngaka *et al.*, 2012; Peeters *et al.*, 2014; Alif *et al.*, 2020) that formal education is not the only path to learning, but there are other

less formal that can achieve the same results. Informal education provides another learning pathway that can achieve the same empowerment in a social structure that formal education does not provide. Informal learning is mainly concerned with influencing behavioural change in the attitude of individuals (Rogers, 2014). Baseska-Gjorgjieska *et al.* (2012) view that as part of entrepreneurship-based education, the programs should include a kind of training that would enable informal education to develop entrepreneurial attributes.

Leong (2017) also reiterates the importance of informal education through mentorship programs designed to guide business owners in the right direction. Mentors help new and existing small business owners by providing advice so that mistakes already made are not repeated whilst providing a better perspective on business ideas. According to Gross and Rutland (2017), non-formal or on-the-job training is a form of the experience-based education process that guides a person through constructing values, knowledge and skills from direct, hands-on experiences. This experiential learning is designed to provide students with necessary experiences in the proper context, including designing, implementing, evaluating, and feedback (Zhang *et al.*, 2019). Experiential learning is beneficial for students to experience situations in a contextual environment that fosters positive aspects while still allowing mistakes and failures to occur during the learning process (Claiborne *et al.*, 2017).

2.4 Review of the Business Performance of construction companies

The performance of construction companies in South Africa will be considered in the following sub-sections.

2.4.1 Performance of construction companies

The government generally awards construction projects to construction companies in South Africa based on their technical and financial capacity in the execution of projects, but despite this procedure and other contributions by the construction organizations in delivering high-profile construction projects, many government departments report that construction companies perform poorly (Oyewobi *et al.*, 2014). Construction companies in South Africa operate in a complex and fragmented project environment where projects are unique and exhibit different characteristics coupled with an ever-changing demand from the industry stakeholders like investors, clients, communities and consulting professionals (Oyewobi *et al.*, 2013). Such complexities

make it very hard for construction companies to perform very well due to the different expectations from the various stakeholder, who at times have very contrasting objectives in the projects, making it very difficult to succeed in all aspects (Alaloul *et al.*, 2016).

South African construction companies mainly rely on government funding for work, and with the government lowering expenditure since 2017, the Industry has been in steady decline (Stats-SA, 2019). This decline in expenditure means stiffer competition among the construction companies, and hence they tend to price projects downwards, meaning lower profits and poor performance (Crampton, 2017). The construction Industry's output value, in reality, has shrunk by 3.3% in 2019 (Stats-SA, 2019). Such a decline is caused by the economic slowdown, along with poor consumer and investor confidence, which means private and public sector investments in the construction industry are lower. This decline is bound to continue due to increasing national debt amid a depression (Crampton, 2017).

Furthermore, the construction industry is bound to shrink in 2020 due to the COVID-19 outbreak, coupled with a nationwide lockdown that started on the 26th of March 2020. According to Stats-SA (2019), the Industry's value-add at constant 2010 prices declined by 5.3% year-on-year in the first quarter of 2020, and it is estimated that the Industry should contract further in the coming quarters, as most of the construction activities were temporarily halted in April and May 2020, before the Industry was allowed to resume operations in June 2020, reducing the performance of companies significantly. Also, it is expected that the declining building permits for both residential and non-residential buildings will weigh on the Industry's output over the short and medium terms (Wood, 2020), which will impact company performance negatively.

The construction industry output accounts for about 4% of total GDP; the sector is experiencing shrinkage in profits, cost overruns, labour disruptions and poor productivity, a shortage of skilled workers and a rising cost of inputs (Stats-SA, 2019). Turnover in the construction sector declined 8.6% year-on-year in the fourth quarter of 2018, while real growth in construction activity slowed to 1.1% year-on-year, down from 2.3% in the previous quarter (Stats-SA, 2019).

As the construction business environment becomes ever more competitive and intense, both large and small businesses find it hard to survive (Jang *et al.*, 2019). This

slowdown has caused some major construction companies to retrench and keep a low number of employees to try and weather the storm and survive (Mthethwa, 2019). A clear sign of this is the closure of some big companies like Basil Read and business rescue for Group Five (G5, 2020); these problems have not spared the smaller firms (Bushe, 2019).

2.4.2 Business performance indicators

Performance indicators are tools used to measure how a business performs over time, manage resources, and formulate a corporate strategy that ensures growth and sustainability (Skibniewski and Ghosh, 2009). Research in the contemporary business environment has shown the importance of performance indicators with the expression, "If you cannot measure it, you cannot manage it" (Gao et al., 2017). The quote has pushed businesses from manufacturing to the technology sector to develop efficient and systematic performance indicator systems. Table 2 below shows the indicators of business performance distributed by author, year and number of times cited.

Table 2: Indicators of business performance

S/No	Indicator of business performance	Author	No. of times cited
1	Upgrade on the cidb Register of Contractors	(Gasa, 2012); (Tubane, 2017); (Hubbard, 2020); (Windapo and Cattell, 2011)	4
2	Profitability	Ali et al. (2013); Wang et al. (2010); (Schaltegger and Wagner, 2017));	3
3	Growth	Ali et al. (2013); (Tuominen *et al.*, 2016)); (Chan, 2009);	3
4	Asset value	(Hany Abd Elshakour *et al.*, 2013); (Horak *et al.*, 2001); (Strouhal *et al.*, 2018)	3
5	Customer satisfaction	(Horta *et al.*, 2010); (Ali *et al.*, 2013); (Omonori and Lawal, 2014);	3
6	Return on investment	(Tuominen *et al.*, 2016); (Bassioni *et al.*, 2004)	2
7	Market share	(Ali *et al.*, 2013);	1
8	Safety	(Tripathi *et al.*, 2018)	1
10	Staff turnover	(Ali *et al.*, 2013)	1
11	Financial stability	Ali et al. (2013); (Hany Abd Elshakour *et al.*, 2013)	2
12	Cashflow	Ali et al. (2013); (Windapo and Cattell, 2011)	2
13	Financial turnover	(Tuominen *et al.*, 2016)); (Tripathi *et al.*, 2018)	2
14	Number of employees	(Tuominen *et al.*, 2016); (Coles *et al.*, 2012); (Ali *et al.*, 2013)	3
15	Quality	(Wang *et al.*, 2010); (Ali *et al.*, 2013)	2
16	Successful tenders' rate	(Ali *et al.*, 2013)	1
17	Risk control	(Schaufelberger, 2003)	1
18	Continuous improvement	(Ali *et al.*, 2013)	1
19	Technological capability	(Ali *et al.*, 2013);	1
20	Number of new customers	(Ali *et al.*, 2013)	1

The need for the same development of systematic performance measures is a requirement of construction companies due to the complex nature of the project environment (Latiffi et al., 2009). Kagioglou et al. (2001) found that most construction businesses depend on financial performance indicators. However, there is a need for key performance indicators (KPIs) that reflect on the business characteristics, like the labour force and some other problems in performance management (Beatham et al., 2004).

The following sub-sections review 11 construction business performance indicators extracted from Table 2 that are the most relevant to the research.

2.4.2.1 Upgrade on the cidb Register of Contractors

The Construction Industry Development Board (cidb) Register of Contractors was designed to measure construction businesses' performance with growth, service delivery, and enterprise development and create sustainable enterprises (Windapo, 2018). The construction industry generally requires a very high level of management and technical capability because a mistake by management can lead to substantial financial, social, and governmental losses (Hubbard, 2020). In order to help the nation realize the gain and avert losses, the cidb was established by the South African Act of Parliament (Act 38 of 2000) (Quinot, 2020) with a mandate to promote and improve the contribution of the construction industry in meeting the nation’s developmental goal. The board, therefore, classifies registered contractors in grades based on their history and capabilities derived from previous work completed. This, therefore, means that a movement across grades over some time or to a high grade can be a sign of business performance (Windapo and Cattell, 2011).

2.4.2.2 Profitability

Profit refers to the business earnings left after the expenses have been deducted (Kyssima *et al.*, 2020); there are two different ways to measure profit, gross profit and net profit (Önder and Altintaş, 2017). Gross profit is revenue, minus production costs, while net profit is the figure left over during a specific period after all expenses have been deducted. For construction purposes, (Ishmaila, 2011) proposes using net profit because it can be measured successively and can be used to measure growth and performance.

2.4.2.3 Growth

In general, business growth is when a business starts to expand, seeking new options to generate more profit (Christensen *et al.*, 2016). However, in construction, it is a function of the industry growth trends, which include having more projects and upgrading the cidb register, topped with financial indicators like the growth of the owner's equity and value creation. Growth can, therefore, be seen as a measure of a company's performance (Ali *et al.*, 2013).

2.4.2.4 Financial stability

By definition, financial stability in business indicates that the business is continuing to grow in profitability whilst the expenses stay more or less the same or with little variability (Ward, 2016). Financial stability is crucial in providing opportunities for business growth and expansion (Vovchenko *et al.*, 2017). When a company continually sees increasing profitability, this can afford the business in the construction industry to take up more projects simultaneously. Financial stability also makes financing easier from financial institutions, increasing the business's liquidity and ultimately improving performance (Harelimana, 2017).

2.4.2.5 Cashflow

Business cash available, also known as the cash position, can be defined as the amount of money the business has in its bank account. Windapo and Cattell (2011) established that a business's strength/ capacity is the number of cash reserves it has. Because of how the public sector payment system works, which mandates a 30-day payment system (Heever, 2016) on top of the working period, this means that an investment in the public sector has a 60-day turnaround period at a minimum on which the business has to continue working efficiently without funds. So, without a good cash flow, it would be difficult for the business to perform and even survive.

2.4.2.6 Return on investment

Return on Investment (ROI) is a business performance indicator that can be used to evaluate the efficiency of an investment (Romero, 2011). The DuPont firm introduced the Return on Investment (ROI) in the 20th century as a Measure and the pyramid of financial ratios (Aminiar *et al.*, 2020). This measure indicates how the business is doing when it is viewed as an investment, which most construction businesses are,

with their project-based financial model. The business performance comes from the performance of each project undertaken which is an investment on its own.

2.4.2.7 Financial turnover

Turnover is the total money a business makes in a period usually measured in accounting over one year (Schaltegger and Burritt, 2017). It is also referred to as the gross revenue or income. It is an important measure of how a business performs, so having a higher turnover from one year to another is a sign of the growth of a business, and hence if a firm can maintain a high financial turnover, it is said to be performing well. Chepngetich (2016) study of SMMEs in Kenya found that financial institutions also use high turnover to evaluate the ability of a business to borrow money. The need for finance to run operations and the ability to get good cheap loans is a function of the annual business turnover.

2.4.2.8 Number of employees

Coles *et al.* (2012: 151) noted that besides the mechanization of the Industry, construction remains a high labour-content industry. Therefore, the numbers of non-clerical, managerial and permanent employees within the business show the firm's size and is an indicator of business performance.

2.4.2.9 Asset value

The size of a business is reflected in its investment in assets, particularly fixed assets, since they are acquired through huge capital outlays that are more or less permanent. These assets are obtained and retained by the business as a means of production, which in turn brings revenue. Examples of such assets include but are not limited to land, buildings, machinery and furniture. They, in turn, show how the business is performing, meaning businesses with a more significant asset base can be said to perform well.

2.4.2.10 Customer satisfaction

The service industry's most widely used model to gauge customer satisfaction is the SERVQUAL model, where the service and quality are used, denoting customer satisfaction (Jayasundara *et al.*, 2009). In the model, the customer’s expectations form the standard to which the client evaluates the experience of the services received. The

customer is said to be satisfied if the experience exceeds the standard (positively disconfirmed) and dissatisfied with their experience if the service quality is below standard (negatively disconfirmation) (Angelova and Zekiri, 2011). (Omonori and Lawal, 2014) found that higher customer satisfaction leads to relationship strength with clients, and collaboration has also been found profitable, which is true in the construction industry. Companies use different customer satisfaction methods to develop and monitor product or service offerings to manage and improve customer relationships (Omonori and Lawal, 2014). Construction companies are currently employing these techniques to improve their business performance (Kärnä *et al.*, 2004).

2.4.2.11 Quality

Quality in construction is when a project has been completed within the defined set parameters, as stated in the Scope of Work and meets the client's expectations (Zafarani, 2011). Quality is a measure of business success that tends to impact getting more work through referrals and by getting multiple projects from one satisfied client (Barrett and Sexton, 2006). Quality is perceived as a critical success factor and should be analysed from the same perspective as the other traditional key success factors in the construction business (Yong and Mustaffa, 2013). Recently, there have been increasing attempts to adopt quality as a tool for continuous improvement like Six-sigma, which already proves its usefulness for quality innovation in the manufacturing industry (Tchidi *et al.*, 2012)). Quality can thus be used on a project basis but not on the entire business.

2.5 Factors that contribute to business performance in the construction industry

Several factors are associated with the business performance of SMME ventures (Rankhumise and Letsoalo, 2019). Past research by (Hult *et al.*, 2004; Madrid-Guijarro *et al.*, 2007; Bhatia and Awasthi, 2018) have in the past investigated different factors impacting performance in different businesses environments. However, Agbim (2013) highlighted that entrepreneurial business success depends on entrepreneurial capability factors. Entrepreneurial capability relates to the ability to use resources adequately in performing tasks in the enterprise. It is, therefore, important to acquire the capabilities that will enhance the venture's success in the context of the

environment in which the business operates. In particular, most businesses start as small enterprises and often from a modest home base to become big, established firms (Windapo, 2018).

Hence, the decision to grow and potentially move from a home base has personal implications for the owner-operator about aspects such as additional risk, both of a financial and emotional nature (Walker and Brown, 2004). Therefore, assets like buildings are highly associated with business performance. Rankhumise and Letsoalo (2019) is of the view that a lack of a proper operating environment could inhibit SMMEs from performing beyond expectation. In other words, where people choose to operate their businesses is an important factor in a business owner's measures of success, as there are different financial pressures attached to whether the business has to pay rent and travelling expenses.

Table 3 below outlines the factors contributing to business performance in the construction industry distributed by author, year and number of times cited. Table 3 shows that the factors contributing to business performance in the construction industry drawn from the literature include training and skills development, technical qualifications and experience, project management competence, project delays and tendering processes. These factors are reviewed in the following sub-sections.

Table 3: Factors contributing to business performance

S/No	Factors affecting business performance	Author	No. of times cited
1	Training and skills development	(Gasa, 2012); (Peters and Brijlal, 2011)	2
2	Technical qualifications and experience	(Sweis *et al.*, 2014); (Matta and Ashkenas, 2003)	2
3	Project management competence	(Galvin *et al.*, 2014); (Edum-Fotwe and Mccaffer, 2000)	2
5	The tendering processes	(Marzouk *et al.*, 2013); (Alsendi, 2015)	2
6	Business owner competencies	(Sweis *et al.*, 2014); (Guillaume *et al.*, 2014)	2
4	Project delays	(Assaf and Al-Hejji, 2006)	1

2.5.1 Training and skills development

Lack of skilled labour is one of the causes of business failure in the construction industry (Mafundu and Mafini, 2019). Informal education or experiential training, and a tertiary qualification, enhance the skills that result in competence development (Peters and Brijlal, 2011). Lack of skills development thus impacts small businesses'

performance as it affects how construction companies make decisions (Kolawole and Msheliza, 2020). Gasa (2012) identified the education of business owners as one of the key elements in the country's success and construction business. The development of a curriculum for construction businesses was highlighted as one of the most important factors in the performance and final success of these small businesses (Gasa, 2012). This success could be borne out of continuous development courses and on-the-job training.

2.5.2 Technical qualifications and experience

Lack of technical qualification and experience of business owners or managers were found to be among the main attributes contributing to poor performance in construction industry projects (Sweis *et al.*, 2014). A study conducted in the German construction industry shows that a society with high technical workers and technical business owners has a higher success rate in the execution of their projects, and ultimately business performance is higher (Matta and Ashkenas, 2003).

2.5.3 Project management competence

Project management competence is defined as the ability to execute projects in a manner that is effective with the use of the knowledge of project management (Galvin *et al.*, 2014). This involves the application of project management knowledge areas and following a methodology set out for the organization. Acquiring knowledge requires a business owner or manager to have completed a project management course and formal education (Edum-Fotwe and Mccaffer, 2000). Since this study focuses on contractors who participate in government infrastructure projects, it becomes important to understand how project management competence affects business performance.

2.5.4 Project delays

In small construction businesses, project delays or timely completion directly affect how the projects perform in project-based businesses. Although project delays can be attributed to the business owner's ability to manage a business, Assaf and Al-Hejji (2006) note that some delays are beyond the business owner's control.

2.5.5 The tendering processes

Frameworks for emerging contractor development, like Broad-Based Black Economic Empowerment (BBBEE) and the Preferential Procurement Policy Framework Act (PPPFA), were enacted to help improve the performance of SMMEs by actively supporting the procurement of small businesses (Chimucheka, 2013). This procurement or the tendering process is a key factor that affects businesses that are project-based in government infrastructure projects (Muzondo and McCutcheon, 2018); because of this South African procurement legislation, the most important criteria of getting new work is governed by the competitions Act, meaning clients regard cost as the most important criteria for appointment of contractors and this has a significant bearing on profits of a business (Marzouk et al., 2013). The low-price strategy has led to issues such as cost overruns, poor quality work and delays (Alsendi, 2015). That, in turn, leads to low-profit margins, and the result is that even if a project is managed well by the business, the margin will lead to poor financial performance at the business level.

The other requirement, BBBEE, is a programme launched by the South African government that seeks to address inequalities by encouraging businesses to integrate black people into the workspace (Webster and Francis, 2019). It also supports black businesses by giving back to poor community members that were historically disadvantaged (Ponte *et al.*, 2007). Businesses are awarded points they can claim on a BBBEE certificate, giving them a higher chance of obtaining government contracts.

2.5.6 Business Owner competencies

A study by Sweis et al. (2014) examined the most critical factors that affect business performance for construction companies participating in public infrastructure projects. The study established that the most common factor affecting business performance is related to the company owner’s ability to carry out their work correctly, that is, the owner's competence. Competence is defined as a person's ability to effectively perform a particular job task to achieve a particular goal (Guillaume *et al.*, 2014). Since competence has a lot to do with the knowledge acquired from formal and informal education, it highlights the importance of education in the performance of small businesses.

2.6 The Impact of education of business owners on Business performance

Muzondo and McCutcheon (2018) established that the personal attributes of business owners are a critical factor that affects the founder's ability to overcome initial barriers in starting a business and achieving sustainable growth. In comparison, (Lund and Karlsen, 2020) concluded that a combination of informal on-the-job training and formal education is a key factor that lays the foundation for business performance. Education also increases the motivation and energy needed to run a business meaning the more the owner of a business is educated, the greater the possibility of the SMME to perform and ultimately succeed (Shah and Sultan, 2018).

Education, on its own, is one of the most extensively researched entrepreneurial variables (Boldureanu *et al.*, 2020) and is linked to both the ability to start a business and sustain it. Education is directly related to acquiring wisdom, discipline, skill, motivation, and some form of self-confidence (Moyano *et al.*, 2020). These factors enable small business owners to cope with the problems they face and lead to good business performance. According to (Peters and Brijlal, 2011), small business owners with higher levels of formal education and informal experience are more likely to succeed due to their ability to gather and analyse information.

Earlier studies on the subject by (Bruno *et al.*, 1987) which researched high-tech businesses, found three categories of poor business performance; of the three categories, education emerged as a dominant factor causing or leading to poor business performance but with no single consensus (Cooper *et al.*, 1994; Brijlal *et al.*, 2013; Marullo *et al.*, 2018). Several factors have been highlighted as being responsible for small business failure, but there is no single definitive and exhaustively conclusive list of the factors, which means that there is no consensus among scholars and experts on the causes of poor business performance.

Although basic literacy seems to be a requirement for starting a new business (Brijlal *et al.*, 2013), the adoption of Information and communications technology (ICT) and connectivity in business has become another key factor that affects how a small business performs. For small business owners to compete in the global market, they need to adapt to the new age, meaning they need to get some form of education in the IT world. The Network Approach to Entrepreneurship (NAE) is a prominent theoretical viewpoint in the research of businesses and is becoming one of the popular

perspectives in studies about self-employment and small business formation (Cavusgil and Knight, 2015). Zarefard and Cho (2018) emphasize the need for technology competencies among small business owners as a necessary tool for small business performance in this knowledgable economy and competitive business environment.

Understanding marketing is also seen as a tool that can enhance small businesses' performance. It can be argued that business performance is highly correlated with business marketing. According to, Rankhumise and Letsoalo (2019) business marketing challenges are caused by a lack of suitable marketing strategy, a factor related to the owner's education and constraints of marketing resources available to the business owner. As emphasized by Gilmore *et al.* (2006), marketing characteristics in SMMEs are governed by constraints such as limited resources and a lack of understanding of the market environment. SMMEs generally suffer from a lack of marketing expertise due to the business owner/manager's underdeveloped skill set in marketing. Similarly, Rankhumise and Letsoalo (2019)reiterated that network marketing relationships could improve business performance. The idea is based on the principle of knowledge sharing, which in turn accelerates innovation and fosters gains by creating a better reputation for the business.

2.7 Summary of the Chapter

The literature review suggests that the lower the level of education of business owners, the lower their business performance would be. The measures of education identified in the literature consist of both formal and informal modes. While other researchers have cited many performance indicators in the construction industry, the majority apply to individual projects, not to business. A few have been found to apply to businesses, and these have been reviewed. Several factors were found to include owner's competence, influence business performance, and business owner competencies have been found to have a huge effect on business performance. It was noted that while a formal education is important, it can be substituted by informal forms of education, including but not limited to continuous development and on-the-job experience. These findings from the literature that the lower the level of education of business owners, the lower would be the performance of their business will now be tested through empirical research using the following hypothesis to guide the direction of the study:

H_A: The level of education of construction company owners and construction business performance are related.

Chapter 3: Research Methodology

3.1 Introduction

In order to test the research hypothesis and meet the objectives of the research, a road map has to be established. This chapter represents the link between the interrelated methods of doing things and what is defined in scientific enquiry (Muchenga, 2016). This means that steps have to be taken in the research journey so that answers can be found in a systematic way that is repeatable (Cooper and Schindler, 2014). A research methodology provides this route in answering the question by choosing from the various methods available to best answer the research hypothesis (Kumar, 2018). The current chapter outlines the research approach, the research design, the population, sampling procedure, methods of data collection, research instrument used, limitations of the study, validity and reliability and ethical considerations.

3.2 Research Paradigm

Considering that this research looks at an area previously studied in other industries, such as retail and services (Soriano and Castrogiovanni, 2012), it was important to test the results of the research if they are consistent in the construction industry business model. Therefore, a positivist research paradigm was adopted to address the issue through hypothesis testing. Positivism and Interpretivism are the two approaches used in research methods in various fields, including construction (Clarke, 2009).

The Positivist paradigm generally takes a quantitative scientific approach, while Interpretivists use the natural, humanistic qualitative approach to research (Krauss, 2005). Epistemology and Ontology are the assumptions that shape how we view reality by underpinning the theoretical perspectives of how the world works and the methodology to be used (Scotland, 2012). With that in mind, the terms objective and subjective come into play in how to learn about the nature of reality (Holden and Lynch, 2004). Muchenga (2016) explains the objectivist approach as not being involved in the research, while the subjectivist approach is the researcher being involved in the research. These are the two extremes in research paradigms. The positivist believes that the world has one view and follows an objectivist, while on the other side of the

continuum, the interpretivists believe the world has many views and follows the subjectivist approach (Flaherty, 2020).

Quantitative research deals with quantifying and analysing variables in order to get results. It involves using and analysing numerical data using specific statistical techniques to answer questions like who, how much, what, where, when, how many, and how. It also describes the methods of explaining an issue or phenomenon through gathering data in numerical form.

3.3 Research Approach

The research approach followed is a quantitative research approach, which was characterized by quantifying and analyzing variables to get results. It entailed the utilization and analysis of numerical data by the use of specific statistical techniques in order to answer the questions (Apuke, 2017). The process followed rigorous quantitative research, which assessed the frequency of a result, growth patterns and chi-square analysis, underpinning the quantitative nature of the study. Quantitative research is a research approach that aims to test theories, determine facts, demonstrate relationships between variables, and predict outcomes. This type of research uses methods derived from natural sciences with a design aimed at ensuring generalizability, objectivity and reliability (Eyisi, 2016).

Various techniques can be used in quantitative research, including a random selection process of the research participants in an unbiased manner, a standardized questionnaire and statistical methods to test hypotheses regarding variables (Williams, 2007). In a quantitative study, the researcher is considered outside of the actual research meaning the results can be expected to be replicable, even if the research is conducted by a different person (Williams, 2007).

3.4 Research Design

A research design is a strategy to answer the research question using empirical data (Wahyuni, 2012). Research design can be qualitative, quantitative, or mixed methods (Almalki, 2016). Under such research designs, researchers can use different research methods, namely experimental studies, correlational studies, surveys, or quasi-experimental review studies (Apuke, 2017). There are also sub-types of research methods, namely experimental design, defining research problems, and descriptive studies (Brink *et al.*, 2006).

The type of research problem in this research requires relationships to be established and data to be collected; therefore, the data collection and quantitative methodology are adopted, and due to the nature of data required, a positivist was adopted (Apuke, 2017).

3.5 The population of the study

The study population comprised 40 construction company owners who are responsible for the day-to-day running of their businesses and undertaking sanitation projects under Navi Professional Consulting in the Mpumalanga Province of South Africa .The population of 40 construction companies on the data base of Navi Professional consulting working on similar projects was used as a case study.

3.6 Sampling technique and sample size

A non-probability but purposive sampling technique was used in this thesis. The use of this method of sampling was informed by the knowledge from other researchers such as Akhtar and Arif (2011); Ponnuswamy and Manohar (2016); Witjaksana and Ali (2019) on the similar subject matter previously studied, compared with what was being investigated from the businesses that were available to the researcher under Navi Professional Consulting. This technique or method allows the deliberate selection of a particular or the whole population of the sampling frame to constitute a sample that is likely to generate useful data for the research (Green and Bricki, 2007).

The study's sample size consisted of all 40 construction company owners that the researcher worked with on Sanitation projects. The sample obtained information from the business owners of the identified businesses. From the sample of 40, two participants declined to participate; two were used for the pilot study and information sourced from 36 company owners was then used for the actual research.

3.7 Method of data collection

The use of questionnaires is a method that is often used in quantitative research and is a valuable method of collecting data from a fairly large number of samples, often called respondents (Lin et al., 2015). The questionnaires were sent to the selected business owners via email.

3.8 Research instrument

Research instruments are tools that are developed by a researcher so that they can achieve the objectives as set out in the research. Therefore, a research instrument is

a designed tool to aid the researcher in collecting data that can be analyzed (Dunemn et al., 2017). Because the whole research is based on the quality of the instrument used for the research to collect the data, it becomes very important to construct an instrument that can collect data that is not biased.

In this study, the questionnaire had structured and semi-structured sections, with the first part collecting demographics like age, education level of owners and business age. The second section collected the data, including performance measures like finance, number of employees and the cidb grading. The last section comprised Likert scale questions that investigated the business owners' perceptions and formed the basis for the quantitative research (see Appendix C).

In order to create a sound instrument, a research backwards method was used; this meant looking at previous research by other researchers and using the information to determine how the questionnaires and the questions will be structured in the whole research (Yildirim, 2014). It should be noted that all the questions used were drawn from the objective(s) of the research and were meant to check the research proposition. The structure of the research instrument was made such that a similar question was grouped in particular sections, allowing ideas to flow. The order or grouping of questions was relevant, as early questions could have led to bias in later questions. Since the Likert scale was used, loaded questions that evoke emotional responses were avoided. The questions were presented on white paper, with no colours or pictures to avoid distractions from the questions. The questions were also numbered, and the questionnaire was kept as short as possible whilst answering the objectives.

Questionnaire items can be either open-ended or closed-ended (Ivis et al., 1997). Open-ended questions ask the question and allow the participants to answer in a way they see fit; closed-ended questions provide a set of options for participants to choose from (Farrell, 2016). Closed-ended items are used when researchers have a good idea of the different responses that participants might make (Farrell, 2016). They are also used when researchers are interested in a well-defined variable or construct, such as participants' level of agreement with some statement, perceptions of risk, or frequency of a particular behaviour. Closed-ended items are more difficult to write because they must include appropriate response options (Colosi, 2006). However, they are relatively

quick and easy for participants to complete. They are also much easier for researchers to analyze because the responses can be easily converted to numbers and entered into a spreadsheet. For these reasons, closed-ended items are much more common and were thus adopted for this research.

3.9 The validity of the Research Instrument

A pilot study is a form of an experiment carried out in research, intending to avoid wasting resources on a research instrument that is not designed well (Berger, 2018). Calitz (2005) states that a pilot test is usually done on participants from the relevant population, but those who participate in the pilot will not be part of the final research. Due to the low number of participants in the research, the pilot study was done using two participants, and the results were analyzed and were logical. Hence the research instrument was deemed appropriate.

3.10 Method of data analysis

Data analysis in quantitative research is done by a process that uses systematical evaluation, illustration, recap and condenses data using statistics. Various techniques can be used to draw inferences from data and to distinguish the various signals (the phenomenon of interest) from the noise (statistical fluctuations) present in the data (Sharma, 2018). The Statistical Software for Social Scientist package (SPSS) and Microsoft excel using descriptive statistics tools, frequency tables and cross-tabulations were used in the data analysis of this research. Cross tabulations, also known as contingency tables, group variables together, thereby enabling the analysis of the correlation between the different variables(Liguori and Moreira, 2018), allowing for the identification of patterns and trends within data sets by use of chi-square data analysis technique.

A chi-square test is a statistical test used to determine whether there is a statistically significant difference between the expected and observed frequencies in one or more categories of a contingency table at a 95% confidence interval (Brezina, 2020). The chi-square statistical technique was used because of the categorical data (level of education) that were tested. The study sought to test the following hypothesis:

H_A: The level of education of business owners' construction company performance is related.

H_o: The level of education of business owners and construction company performance are not related.

To conclude the hypothesis at a 95% confidence, the p-value for the significance test should be less than 0.05 (Di Leo and Sardanelli, 2020). For the test to work, the observations need to be classified into mutually exclusive groups, and the data should be categorical, like in this case. It is also expected that the value of cells in the contingency table should be greater than five in at least 80% of cells and that no cell should have an expected value less than 1, but if the assumption is violated, then the likelihood ratio is used instead of the Pearson value (White and Bennetts, 1996). The data from the survey was then presented in summaries showing the chi-square results in multiple tables. The general recommendation for the use of the chi-square test requires a sample size of not less than fifty (VanVoorhis and Morgan, 2007), however (Scheaffer *et al.*, 1996; Sayassatov and Cho, 2020) used sample sizes less than fifty and cited the sample size as a limitation to their studies.

3.11 Elimination of bias

Bias is defined as any tendency by the researcher to influence the results of a research or a study by one of the following: information bias, selection bias, and confounding bias (Cope, 2014). In research, bias usually happens when a systematic error is introduced in either sampling, testing by selecting, or encouraging certain answers over other answers (Simundic, 2013). Bias can be found at any research stage, including but not limited to the research design, the data collection, the process of data analysis and even the way the research is published. The semi-structured questionnaire is used in this research to eliminate bias for the quantitative part of the study.

3.12 Limitations of the study

The main limitation of the study is difficulty in getting accurate data on financials since some of these contractors deliberately understate profits, limiting the accuracy of the results. Confidential information sometimes may be restricted for use as it can be considered by some to be industry secrets and not meant for public consumption. Furthermore the accuracy of the results of the chi-square test are reduced due to the limitation of the small size of the population (Sayassatov and Cho, 2020).

The research was also carried out under a timeframe limited by the university, as it could have been necessary to measure the performance parameters over time rather than to collect past data, which could have been affected by different parameters which might not be valid today. In order to properly validate the results of the study, it should be replicated at different points when the researcher can observe (Lindsay and Ehrenberg, 1993; Coppock, 2019).

3.13 Ethical considerations

Ethics are rooted in ancient Greek philosophy in the inquiry of the morality of life (Chemhuru, 2017). Ethics refers to the system of principles that govern the considerations about how choices and actions are made (Kooiman and Jentoft, 2009). It is believed that ethics is a branch of philosophy that deals with the dynamics of making decisions on what is right and wrong (Bowen and Prescott, 2015).

In this research, many ethical considerations were made and are explained in the following sub-sections.

3.13.1 Ensuring no harm comes to participants

The research data was collected using emails sent to private emails of the business owners who could answer in a safe environment. The information obtained was processed and kept confidential so that no emotional harm could be drawn from the study while the respondents' identities were not disclosed, and the information used was anonymized (Surmiak, 2018).

3.13.2 Ensuring confidentiality and anonymity

Anonymity in the research was not guaranteed, but all information was treated as confidential and kept securely to be disposed of as soon as the research was done. This research also tried as much as possible to comply with the provisions of the Data Protection Act, meaning care was taken to ensure confidentiality (Langheinrich, 2001). This was ensured by keeping participant files and recordings of interviews secure and away from public consumption.

3.13.3 Ensuring that permission is obtained

Since the study was conducted using company resources, a consent letter from the employer permitting the study to be undertaken using the company resources was

obtained. Each participant was given a consent form with the questionnaire, which was meant to obtain participants' permission and allow them to withdraw from the study if need be (Sim and Waterfield, 2019). Also, permission was sought from the ethics department of UCT, and an ethical clearance shown in Appendix B was obtained.

3.14 Summary of the Chapter

The Chapter outlined the research process, that is, the procedure followed in conducting the research. The chapter highlighted that the research approach used was a quantitative research approach. The method of data collection was through emailed questionnaires to participants. It touched on the method of data analysis used, SPSS and Excel software. Ethical considerations followed in the research were also highlighted and explained, ensuring that no harm came to the participants and ethical clearance was obtained from the university. The methods followed ensured that the data presentation and discussion topic results were valid and thus formed a basis for generalization.

Chapter 4: Data Presentation, Analysis and Discussion

4.1 Introduction

The research was based on the response provided through the use of Questionnaires that were emailed to 40 construction companies. The research participants were the owners of SMMEs and large construction companies that worked on infrastructure projects in the Mpumalanga Province. The study examined whether the education level of business owners had an impact on the performance of their business. This chapter presents the analysis of the data that was obtained and situates the findings within the literature.

4.2 Presentation of Findings

This sub-section presents the profiles of the respondents, who are the business owners, in Tables 4 and 5. The sub-section also describes the business profile in Table 6 and Table 7.

4.2.1 Respondents Profiles

Forty company owners were emailed the research questions, but only 36 were used in the final research, while two were used for the pilot study, and another two declined to participate; the age of these small business owners is shown in Table 4. It can be seen from Table 4 that a significant number of the respondents (86.1%) are aged between 26 and 55 years old. This finding suggests that the age between 26 to 55 years is the most common among the companies supervised by Navi Professional Consulting. A few business owners continue to work above the age of 55, in this case, 11.1%, while a low 2.8% are below the age of 25.

Table 4: Age of Respondents

Age of Respondents		
Age	**Frequency**	**Percent**
18-25	1	2.8
26-35	10	27.8
36-45	10	27.8
46-55	11	30.6
55+	4	11.1
Total	36	100.0

Table 5 shows that the majority of small business owners are still actively involved in the day-to-day running of their businesses, with 52.8% in the CEO positions, 27.8% in

management and 16.7% taking supervisory roles, while 2.8% are engaged in a different role in their business not predefined (other).

Table 5:Owner's Position in Company

Position in company		
Position	**Frequency**	**Percent**
CEO/ Director cadre	19	52.8
Management cadre	10	27.8
Supervisory cadre	6	16.7
Other	1	2.8
Total	36	100.0

4.2.2 Organizational Information

The data collected and presented in Table 6 on the organisation details show that 27,8% and 58,3% of the respondents' businesses operate at the provincial and regional levels, respectively. Very few operate at the local and national levels, 5.6% and 8.3%, respectively. The results show that only 8.3% of the businesses operate at a national level.

Table 6: Region of Operations

Region of operations		
Region	**Frequency**	**Percent**
Local-level	2	5.6
National Level	3	8.3
Provincial-level	10	27.8
Regional level	21	58.3
Total	36	100.0

The study also looked at the area of expertise of the companies, with Table 7 showing that the majority of the businesses as having a focus on one area of expertise, meaning 55.6% undertake solely Building works, 41.7% focus on Civil works and those who do both Building and Civil works constitute only 2,8% of the population.

Table 7: Company Area of Expertise

Area of expertise		
Expertise	**Frequency**	**Percent**
Building and Civil	1	2.8

Civil	15	41.7
Building	20	55.6
Total	36	100.0

4.2.3 Typical Level of Education

The study sought to know the typical level of education of the Construction business owners, and the data was collected and presented in Table 8. The table shows that all the business owners have at least a matric certificate, with 2.8% holding only a matric certificate, 5.6% holding a certificate, 16.7% of the respondents having a postgraduate qualification and 25.0% having an undergraduate degree as the highest qualification. It can be seen that the majority of the owners, 50.0% of the population, hold the highest qualification of a diploma, which seems to be the typical level of education in this population.

Table 8: Typical level of Education

Educational Level		
Highest qualification	**Frequency**	**Percent**
Matric	1	2.8
Certificate	2	5.6
Post Grad	6	16.7
Degree	9	25.0
Diploma	18	50.0
Total	36	100.0

4.2.4 Level of Business Performance

The following sub-sections present the analysis of the levels of performance of the construction companies in the survey; the data shows the current performance of the sample businesses and the growth pattern of the companies between 2015 and 2019 obtained from the company reports. The study focuses on the financial growth of the business by examining the cidb (RoC), turnover, profit, cash available and asset value of the respective businesses.

4.2.4.1 Company Growth on the cidb Register of Contractors (RoC)

The study sought to know how the companies have grown on the cidb RoC between 2015 and 2019. Figure 2 shows the level of performance of the companies on the cidb RoC. It can be seen from Figure 2 that the highest level was achieved by all companies studied in 2019. Also, Figure 2 shows that three companies out of the 36 studied have a cidb grading lower than Grade 5; these companies are small and have joined cidb recently, but they are growing rapidly over the past years. It can be observed from Figure 2 that 83% of the companies are listed in cidb Grade 5 to 7, while three companies are listed in Grade 8. Figure 2 further shows that 31 companies have upgraded once on the RoC in the last five years, while five companies have remained on the same level from 2015 to 2019.

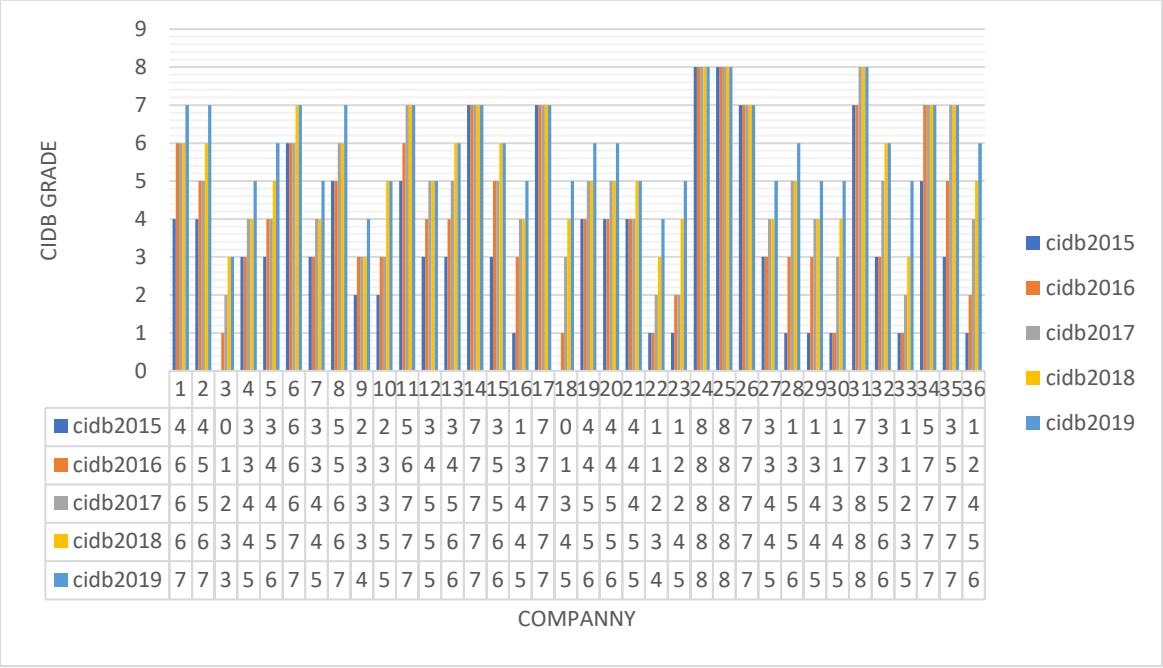

Figure 2: Company Growth on the cidb Register of Contractors (RoC)

4.2.4.2 Distribution of Respondents company by Number of Employees

Figure 3 shows that 50% of the construction companies operate with fewer than 100 employees, and the values fluctuate yearly. Figure 3 shows that the growth with the five-year pattern (2015-2019) has a right-skewed pattern consistent with growth from year one value to year five.

It can be seen from Figure 3 that 38% of the companies had grown, followed by regression in the number of employees, even when their cidb grading was growing.

The same contractor with cidb grade 8 had employees as many as 700 in a particular financial year, but the number also dropped in 2019, and only four companies had employees above 200; all four were large businesses.

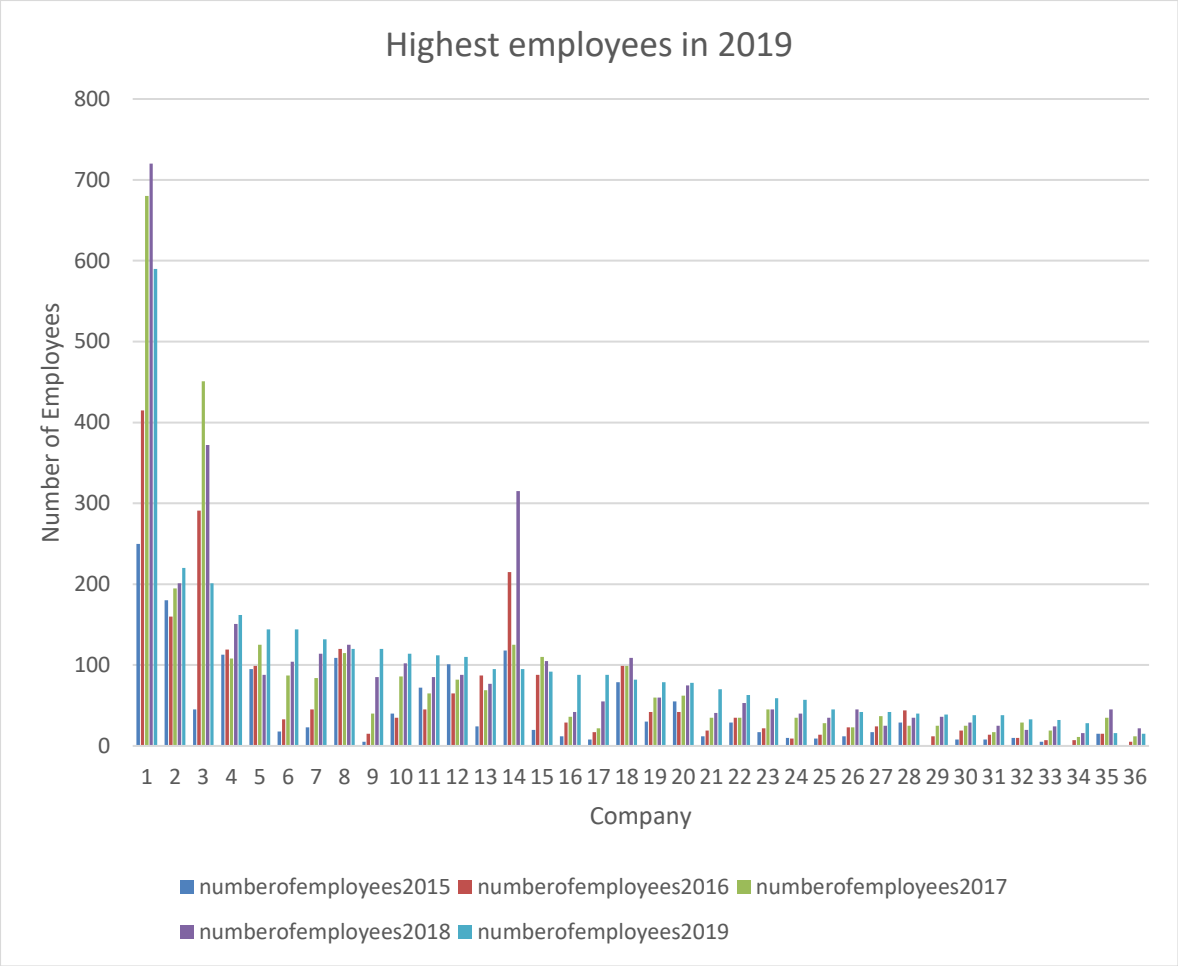

Figure 3: Number of employees

4.2.4.3 Asset Value

Figure 4 shows the growth in the asset value of the companies for over five years (2015-2019). The figure also shows that the asset value of 80% of these companies is below five million Rand, except for six companies that seem to be accumulating assets and are listed in high Grades (Seven and Eight) on the cidb RoC. One of these companies has accumulated assets to a value of 120 million and has operated above 100 million asset value for the past three years. The other five operate between ten million rand and 50-million-rand asset value. It can be seen that the asset value of most businesses has a growth pattern that they are actively sustaining.

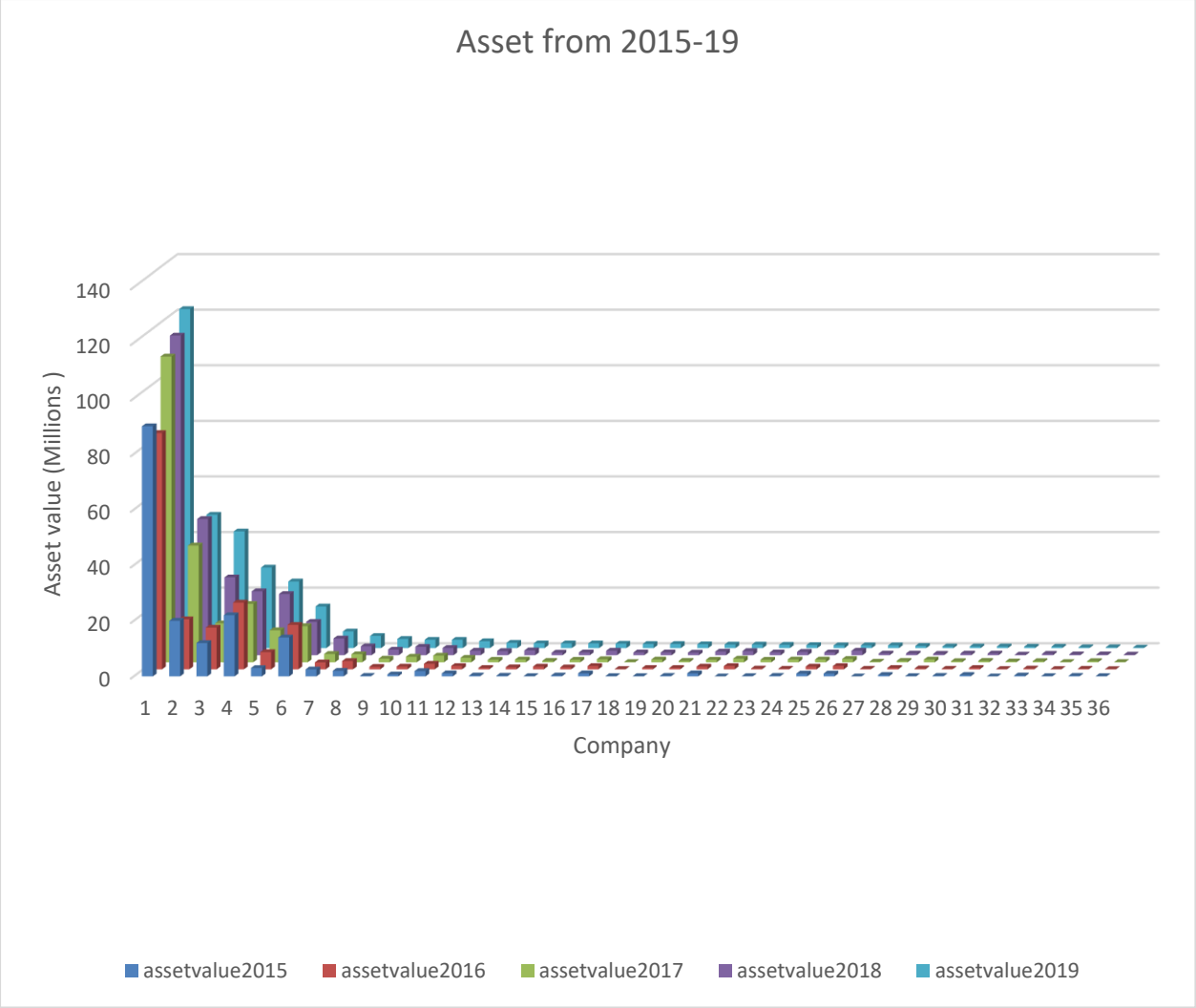

Figure 4: Asset value

4.2.4.4 Available cash

Figure 5 shows the amount of cash available to the companies between 2015 and 2019. Typically, Contractors need cash to run their projects, so it is expected that as the company grows on the cidb R0C, the higher the cash that will be available as a reserve for projects. It can be seen from Figure 5 that most of the companies have less than two Million Rand cash reserves. In contrast, four companies listed in Grades 7 and 8 of the cidb Register of Contractors have between five and eight million Rand in cash reserves.

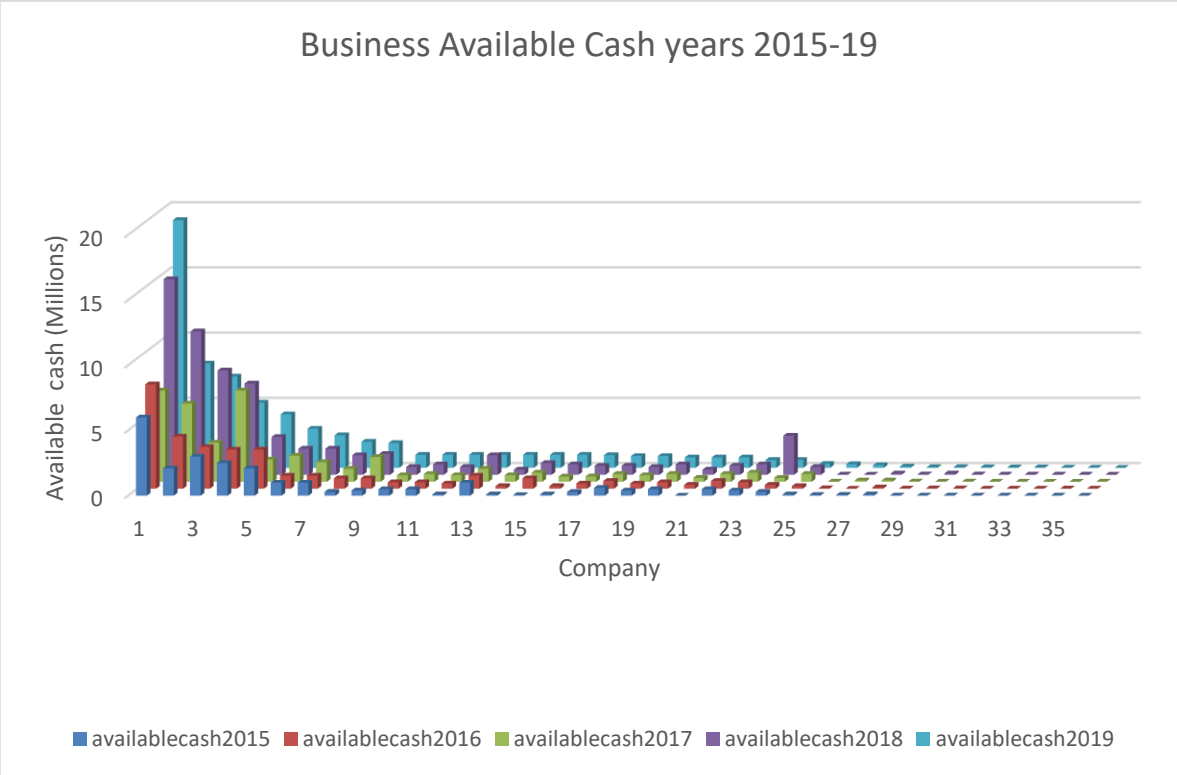

Figure 5: Available cash

4.2.4.5 Annual Profit

The companies' annual profit over the period 2015-2019 is presented in Figure 6. Figure 6 shows that the profit margins for 30 of the contractors sampled are 3 million Rand or less per year over the five years (2015-2019). Three companies show negative growth in terms of profits over the period 2015 – 2019, whilst the rest have positive growth.

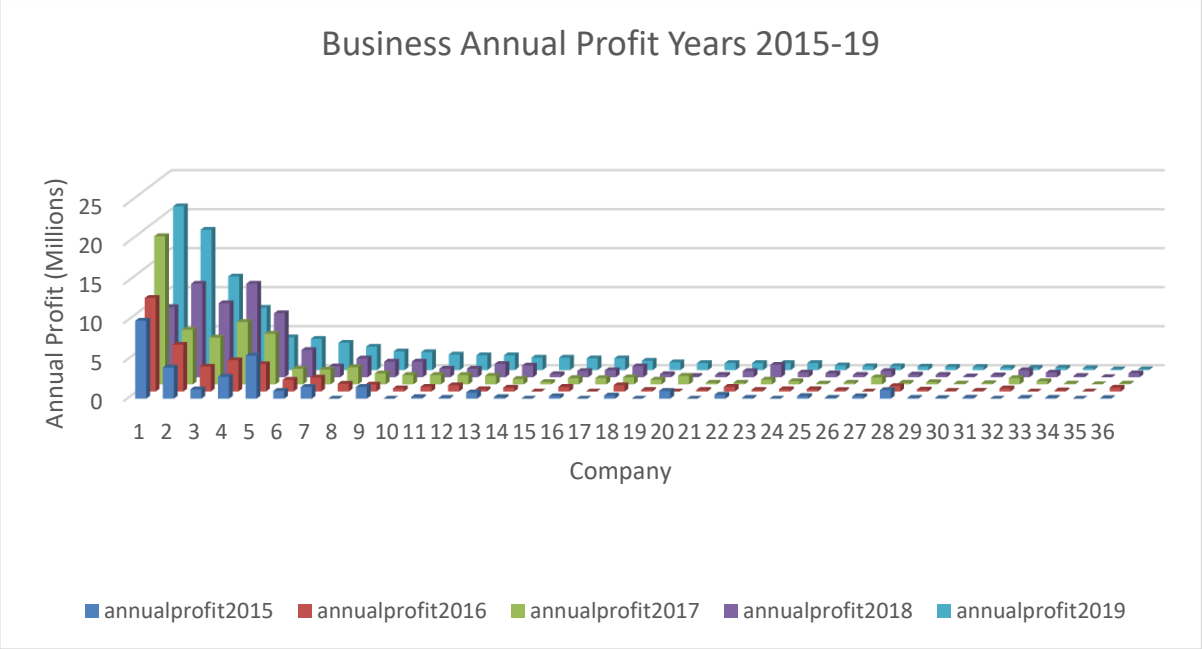

Figure 6: Annual Profit

4.2.4.6 Annual Turnover

The study sought to know the Annual Turnover of the sampled companies. The data collected on the annual turnover of the construction companies are presented in Figure 7. It can be seen from Figure 7 that six companies have a turnover of above 10 million Rand whilst the rest still operate below that threshold.

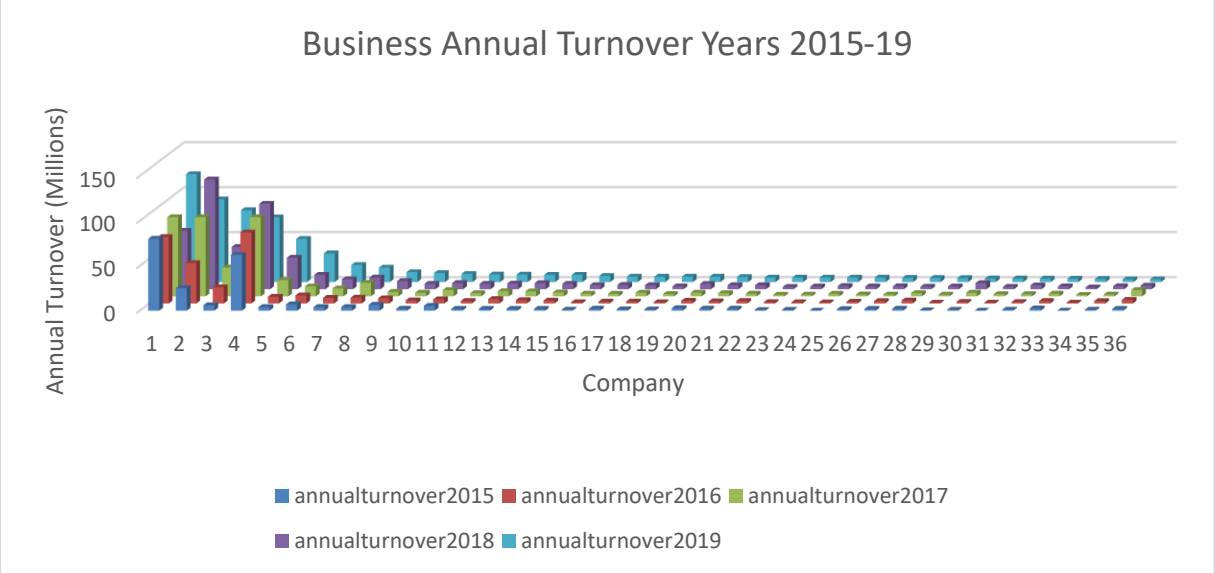

Figure 7: Annual Turnover

4.3 Perception of Business Owners Regarding the impact of the CEO on Construction Company Performance

The study sought to investigate the perception of the business owners on the impact of the level of education of the CEO on construction company performance. Table 9 shows the business owners' perspective on the impact of the CEO's level of education on different named aspects of business performance.

Table 9: Perception of business owners on the impact of the level of Education of the CEO on construction company performance

Statements on the impact of formal education on SMME construction company performance	Level of Agreement					Total	Mean Item Score (MIS)	Rank
	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree			
Experience of the work has a higher impact on business performance than formal education	0	1	7	13	15	36	4.2	1
Formal education has helped me to learn easily at the initial stage of the business	0	4	1	18	13	36	4.1	2
Formal education has contributed to the performance of the business	2	2	2	20	10	36	3.9	3
Formal education helps me in the day-to-day decision-making of the business	0	6	9	16	5	36	3.6	4
Continuous Development short courses are necessary for higher business performance	0	3	16	11	6	36	3.6	4
Formal education helps me to understand the market trends	2	4	16	8	6	36	3.3	6

It can be seen from Table 9 that the business owners see the experience as having the highest impact with a mean score of 4.2, followed by formal education helping the CEOs in the early stage of business, with a mean score of 4.1 and a ranking of two. The business owners perceived that formal education contributed to the performance of their business; this was ranked three with a mean score of 3.9. Furthermore, the owners perceived that formal education helped in day-to-day decisions of making a business and that continuous development of short courses was necessary for high business performance, which was both ranked four with a mean score of 3.6. At the same time, they perceived that formal education helps them understand the market trends, with a mean score of 3.3.

Table 9 above shows that 20 out of the 36 owners who responded by agreeing, ten out of 30 strongly agreed with the proposition. This shows how highly the business owners believe education contributes to their business performance. Table 9 also shows that 18 owners agree and 13 strongly agree that education helped them in the initial stages of their business. Whilst four owners disagree, and one is neutral.

It can also be seen from Table 9 that six construction company owners disagree, and nine are neutral to the notion that education aids in the day-to-day decision-making of the business, whilst 16 agree with the idea and five strongly agree. It can be observed that the majority of business owners view education as an important element in their decision-making.

Table 9 also shows that two Construction company owners strongly disagree, four disagree, and 16 are neutral to the view that education helps SMME owners understand the market trends, whilst eight agree, and six strongly agree with the statement. From Table 9, it can be seen that the owners perceive the importance of experience over formal education on business performance; table 9 shows that only one owner, seven owners across all spreads, are neutral whilst 13 agree and 15 strongly agree.

Although continuous courses are not prerequisites, 17 owners believe this form of education aids higher business performance. Table 9 also shows that three business owners disagree with the belief, while there are 16 neutral responses.

4.4 Data Analysis

The study investigates whether business owners' education level impacts business performance. Using the data presented in Table 10 to table 17 on the Level of Education and the performance indicators, the relationship between the level of education of the owners and construction company performance is investigated using the chi-square inferential statistical technique presented below.

4.4.1 The education level of the Owner versus business growth on the cidb RoC

Table 10 shows that the owner with matric has grown the company to a Grade 5 cidb going concern despite having an older company. The other two with certificates qualification have companies listed in Grade 4 and Grade 5 on the cidb Register of Contractors. Furthermore, Table 10 shows that construction company owners with a

diploma are fairly spread across all levels of company registration, and those with degrees and postgraduate qualifications are managing companies listed in Grade 5 and upwards on the cidb Register of Contractors.

Table 10: Education versus cidb grading

Education * cidb2019 Crosstabulation								
Count								
		cidb 2019						Total
		3	4	5	6	7	8	
education	matric	0	0	1	0	0	0	1
	certificate	0	1	1	0	0	0	2
	Diploma	1	1	6	5	3	2	18
	Degree	0	0	2	2	5	0	9
	Post Grad	0	0	2	1	2	1	6
Total		1	2	12	8	10	3	36

4.4.2 The education level of the Owner versus business growth on the financial growth

Furthermore, Table 11 presents the cross-tabulation between the financial growth parameters between 2015 and 2019 and the owners' level of education. Table 11 shows employee growth, financial turnover growth, profit growth, growth in cash available and asset value for each company.

Table 11 shows that the owner with matric has a business listed in cidb Grade 5. A cidb Grade 5 company is still an SMME despite the age of the business. It can be seen from Table 11 that the business has a good employee growth of 360%, annual turnover growth of 50% and profit growth of 66,67%. The two owners with a certificate level of qualification have their businesses listed on cidb Grade 4 and 5, respectively. One of the businesses shows growth on all five parameters, and the other shows a -10% growth in profit.

The diploma qualification is the common level of education for the owners, with 18 out of the total of 36 owners with this level of qualification. Grade 7 and 8 owners have accumulated assets while their businesses have significant asset growth. These same owners also seem to have a very low employee growth; despite the high value of

annual turnover, a follow-up was done, and it was seen that they made use of sophisticated technology instead of labour were necessary.

Table 11: Financial growth performance (2015-2019) and education level of construction company owners

Financial Growth Perfomance v Education Level								
				Employees Growth	Turnover growth	Profit Growth	available cash growth	asset value growth
education	matric	1		360%	50,00%	66,67%	0,00%	0,00%
		Total	N	1	1	1	1	1
	certificate	1		163%	48%	-10%	186%	450%
		2		250%	200%	43%	400%	1100%
		Total	N	2	2	2	2	2
	Diploma	1		296%	315%	320%	300%	1600%
		2		300%	350%	1000%	10%	500%
		3		470%	135%	140%	100%	1400%
		4		230%	161%	150%	200%	200%
		5		10%	69%	82%	200%	329%
		6		483%	127%	400%	100%	45%
		7		42%	155%	1800%	100%	58%
		8		185%	300%	900%	60%	60%
		9		633%	320%	200%	50%	18%
		10		147%	114%	80%	50%	200%
		11		540%	362%	533%	125%	67%
		12		52%	16%	-24%	95%	32%
		13		136%	50%	110%	217%	36%
		14		-19%	357%	300%	150%	7%
		15		7%	580%	200%	200%	0%
		16		2300%	344%	800%	1900%	500%
		17		400%	417%	575%	375%	108%
		18		400%	444%	300%	100%	20%
		Total	N	18	18	18	18	18
	Degree	1		117%	376%	400%	400%	467%
		2		4%	70%	-59%	367%	500%
		3		22%	300%	300%	567%	140%
		4		375%	733%	450%	900%	533%
		5		1000%	456%	500%	900%	1400%
		6		247%	114%	138%	234%	686%
		7		474%	1233%	186%	133%	250%
		8		700%	1100%	900%	281%	700%
		9		375%	1000%	188%	900%	1550%
		Total	N	9	9	9	9	9
	Post Grad	1		38%	188%	471%	0%	100%
		2		9%	300%	60%	200%	127%
		3		56%	300%	700%	60%	50%
		4		43%	375%	133%	0%	120%
		5		325%	255%	75%	267%	600%
		6		347%	268%	350%	100%	140%
		Total	N	6	6	6	6	6
	Total	N		36	36	36	36	36
a. Limited to first 100 cases.								

Other company owners with degrees have a very high growth rate across all parameters, suggesting that owners with higher education tend to do better in construction. It can also be deduced that at the degree level, there is a tendency to specialise, meaning that most owners have construction-related degrees and experience and their understanding of the industry is much better.

All business owners with postgraduate degrees also show good growth in their businesses across all parameters except for growth in cash available for two owners. This trend of no growth does not necessarily mean there is no cash available but only that the owners might keep a fixed amount that is optimum for their operation, which is an expectation for owners who have undertaken advanced studies.

4.4.3 Education level of the owners versus growth in the number of employees

Table 12 shows the cross-tabulation between the education level of owners and the growth in the number of employees.

Table 12: education level vs growth of number of employees

Crosstab							
Count							
		employeegrowth1					
		negative growth	0 to500	501 to 1000	1001 to 1500	2001 +	Total
education	matric	0	1	0	0	0	1
	certificate	0	2	0	0	0	2
	Diploma	1	14	2	0	1	18
	Degree	0	6	2	1	0	9
	Post Grad	0	6	0	0	0	6
Total		1	29	4	1	1	36

It can be seen from Table 12 that the business of an owner with a diploma qualification is experiencing negative employment growth, whilst the majority of owners (29) have a positive employment growth rate of between 0% to 500%, four owners, two with diplomas and two with degrees have employment growth of between 501% to 1000%. One owner with a degree has employee growth of between 1001% to 1500%, and the last with a diploma has a growth above 2001%.

A chi-square analysis was done and showed a p-value greater than 0.05; therefore, the null hypothesis was accepted, meaning that there was no statistically significant relationship observed between the education level of business owners and employee growth rate, as presented in table 13.

Table 13: Chi-square statistic- Education level versus employee growth

Education level versus employee growth			
	Value	df	p-value
Pearson Chi-Square	7.655[a]	16	.958
Likelihood Ratio	8.956	16	.915
Linear-by-Linear Association	.003	1	.956
N of Valid Cases	36		
a. 23 cells (92,0%) have an expected count of less than 5. The minimum expected count is ,03.			

4.4.4 The education level of the owners versus growth in asset value

Table 14 presents the cross-tabulation between the education level of business owners and growth in the asset value of their businesses. It can be seen from Table 14 that 28 companies have a growth in assets of between 0% and 500% range which is the common level of operation over five years (2015 – 2019). Six companies show growth in asset value of between 501% to 1000%, whilst one company with an owner with a diploma shows growth in the range of 1001% to 1500% and one owner with growth in assets of the range 1501% to 2000%.

Table 14: Educational level versus growth in asset value

Crosstab						
Count						
		assetvaluegrowth1				Total
		0 to500	501 to 1000	1001 to 1500	1501 to 2000	
education	matric	1	0	0	0	1
	certificate	2	0	0	0	2
	Diploma	16	1	1	0	18
	Degree	4	4	0	1	9
	Post Grad	5	1	0	0	6
Total		28	6	1	1	36

Chi-square analysis showed a p-value greater than 0.05; therefore, the null hypothesis was accepted, meaning there was no statistically significant relationship observed between the education level of business owners and asset value, as presented in table 15.

Table 15: Chi-square- education level versus asset value growth

Education level versus asset value growth			
	Value	df	p-value
Pearson Chi-Square	11.786[a]	12	.463
Likelihood Ratio	11.802	12	.462
Linear-by-Linear Association	1.046	1	.306
N of Valid Cases	36		
a. 18 cells (90,0%) have an expected count of less than 5. The minimum expected count is ,03.			

4.4.5 The education level of the owners versus growth in cash available

Table 16 presents the cross-tabulation between the education level of business owners and growth in the liquid assets of their businesses.

Table 16: Education level of the owners versus growth in cash available

Crosstab					
Count					
		availablecashgrowth1			
		0 to500	501 to 1000	1501 to 2000	Total
education	matric	1	0	0	1
	certificate	2	0	0	2
	Diploma	17	0	1	18
	Degree	5	4	0	9
	Post Grad	6	0	0	6
Total		31	4	1	36

Table 16 shows that 31 of the 36 companies have an available cash growth of between 0% and 500%, whilst four business owners with a degree have growth in cash of between 501% to 1000%, and one business owner with a diploma has a growth of between 1501% to 2000%.

A chi-square analysis was done and showed a p-value greater than 0.05; therefore, the null hypothesis was accepted, meaning there was no statistically significant relationship observed between the education level of business owners and available cash growth, as presented in table 17.

Table 17:Chi-square Test- Education level versus available cash growth

Education level versus available cash growth			
	Value	df	p-value
Pearson Chi-Square	14.323[a]	8	.074
Likelihood Ratio	13.926	8	.084
Linear-by-Linear Association	.047	1	.829
N of Valid Cases	36		
a. 12 cells (80,0%) have an expected count of less than 5. The minimum expected count is ,03.			

4.4.6 The education level of the owners versus growth in profit

Table 18 presents the cross-tabulation between the education level of business owners and the growth in profit of their businesses.

Table 18: Education level of owners versus growth in profit

Crosstab						
Count						
		Profit growth1				
		negative growth	0 to500	501 to 1000	1001 to 1500	Total
education	matric	0	1	0	0	1
	certificate	1	1	0	0	2
	Diploma	1	11	5	1	18
	Degree	1	7	1	0	9
	Post Grad	0	5	1	0	6
Total		3	25	7	1	36

Table 18 shows that three companies with owners with a diploma, certificate and degree have a negative profit growth, meaning the businesses are not growing in terms of how much profit is being made. Twenty-five owners had a profit growth of between 0% to 500%, whilst seven owners obtained between 501% to 1000% profit growth, and lastly, one owner with a diploma had between 1001% to 1500% growth in profit.

The Chi-square analysis showed a p-value than greater 0.05; therefore, the null hypothesis was accepted, meaning there was no statistically significant relationship observed between the education level of business owners and profit growth rate, as presented in table 19.

Table 19: Chi-square Test- Education level versus profit growth

Education level versus profit growth			
	Value	df	p-value
Pearson Chi-Square	8.251[a]	12	.765
Likelihood Ratio	7.543	12	.820
Linear-by-Linear Association	.002	1	.961
N of Valid Cases	36		
a. 18 cells (90,0%) have an expected count of less than 5. The minimum expected count is ,03.			

4.4.7 The education level of the owners versus growth in annual turnover

Table 20 presents the cross-tabulation between the education level of business owners and growth in the annual turnover of their businesses. Table 20 shows that 32 owners in all categories have an annual turnover growth of between 0% to 500%, whilst one owner with a degree is in the range of 501% to 1000%. It can be seen that three owners with a degree have a growth of between 1001% to 1500%.

Table 20:Education level versus annual turnover growth

Crosstab					
Count					
		Annual turnover growth1			
		0 to500	501 to 1000	1001 to 1500	Total
education	matric	1	0	0	1
	certificate	2	0	0	2
	Diploma	18	0	0	18
	Degree	5	1	3	9
	Post Grad	6	0	0	6
Total		32	1	3	36

A chi-square analysis was done and showed a p-value greater than 0.05; therefore, the null hypothesis was accepted, meaning there was no statistically significant relationship observed between the education level of business owners and annual turnover growth rate, as presented in table 21.

Table 21: Chi-square Test- Education versus annual turnover growth

Education versus annual Turnover growth			
	Value	df	p-value
Pearson Chi-Square	13.500[a]	8	.096
Likelihood Ratio	12.751	8	.121
Linear-by-Linear Association	1.325	1	.250
N of Valid Cases	36		
a. 12 cells (80,0%) have an expected count of less than 5. The minimum expected count is ,03.			

4.5 Test of Research Hypothesis

The following hypothesis was stated to guide the direction of the study:

H_A: The level of education of construction company owners and construction business performance are related.

Ho: There is no significant relationship between the education level of the construction company owners and the performance of their companies.

The growth aspects of the construction companies that were tested for association with the level of education of the construction company owners using chi-square tests showed no significant relationship between the two variables at the 95% level of confidence. Based on these findings, the null hypothesis that there is no significant relationship between the construction company owners' education level and their companies' performance is accepted.

4.6 Discussion of Findings

The findings obtained from the study of the Education Level of the owners of construction businesses and its impact on business performance will be discussed under the following headings.

4.6.1 Level of Education of Construction Business Owners

Table 8 in section 4.2.3 shows that all company owners have a matric certificate, and 2.8% hold only a matric certificate. Furthermore, 50%, 25% and 16,7% of the sample hold a diploma, bachelor's degree and a postgraduate diploma, respectively. This shows that a basic literacy level is required for a person to run a sustainable business

(Njoroge, 2013); the finding verifies that no owner has less than a matric qualification. This is in line with literature stating that a basic level of literacy is needed when one starts a business, which is provided by the matric level (Njoroge, 2013).

In this research, we are also dealing with construction businesses, so it is worthy to note that there is a degree of specialisation (Lim and Alum, 1995) in the field, and most owners start as employees in other construction companies, so their education background tends to have a bias towards minimum qualifications required to work in construction, which is either a certificate or a diploma. Hence the high spread of qualifications is the diploma education level.

4.6.2 Level of Performance of Construction Businesses

Figure 2, section 4.2.4.1 shows that 83% of the companies are listed in cidb Grade 5 to 7, while three companies are listed in Grade 8. It should be noted that a higher cidb grade is an indicator of the maturity of a company and its ability to perform at a specific level (Windapo and Cattell, 2011). The figure further shows that 31 companies have at least upgraded once on the ROC in the last five years, with five remaining on the same level from 2015 to 2019. As seen, some contractors have not upgraded, which leads to the conclusion that using the cidb grading alone is not enough to check performance since some contractors do not upgrade because the business owner does not aspire to upgrade or by having found a niche market on a lower grade and the business is performing well at that level (Windapo and Cattell, 2011).

Figure 3 shows that 50% of the construction companies operate with fewer than 100 employees, and the values fluctuate yearly. This is attributed to the fact that the world is becoming increasingly automated, with the bigger companies that can afford the automation and hence enjoy labour savings (Feng and Graetz, 2015). However, the system in South Africa pushes for contractors to create jobs and therefore gives incentives for job creation. This, therefore, keeps the labour number fairly high among the large construction companies, with a typical policy of up to 30% budget allocation being spent on the workforce on most projects (McCutcheon, 2018).

Figure 4 also shows that the asset value of 80% of these companies is below 5 million Rands, except for six companies that seem to be accumulating assets and are listed in high Grades (7 and 8) on the cidb RoC. This could be due to the procurement

system at these high cidb levels, which requires that they list assets (plant and equipment) they own as part of the bidding process for jobs; this requirement proves the contractor's capacity to do work (Kelman, 2008).

Typically, contractors need cash to run their projects, so it is expected that as the CIDB grading grows, the cash available as a reserve for projects should also grow (Cui *et al.*, 2010). That is why it can be seen from Figure 5 that most of the companies typically operate at a cash level that is less than two Million Rand cash reserves, while four companies listed in Grades 7 and 8 of the cidb Register of Contractors have between five and eight million Rand in cash reserves.

Figure 6 shows that the typical profit margins of the contractors sampled are 3 million Rand or less, with growth in terms of profits over the period 2015 – 2019 but a decline in some instances. This is typical in the construction industry as the number of projects fluctuates yearly (Segerstedt and Olofsson, 2010); the profits also change in that respect.

Figure 7 shows that six companies have a turnover above 10 million rands whilst the rest still operate below that threshold. The six companies with high turnover are typically listed in Grade 7 and 8 contractors, and this is due to the potential growth in more work of higher value due to their cidb Grade (cidb, 2017a).

4.6.3 Perception of Construction Business Owners on the Impact of Education on Construction Business Performance

Table 9 in section 4.3 shows that 20 out of the 36 owners who responded by agreeing, ten out of 30 strongly agreed with the proposition. This shows how highly the business owners believe education contributes to their business performance. This is in line with literature by Gasa (2012) on attitudes to curriculum content from the perspectives of the small business sector in the Eastern Cape that identified education of business owners as one of the key elements in the success of the country and of the construction business.

Table 9 also shows that 18 owners agree and 13 strongly agree that education helped them in the initial stages of their business. Whilst four owners disagree, and one is neutral. This notion agrees with the literature that the education of owners helps the business in its initial stages (Rideout and Gray, 2013). This belief is mainly fostered in

technology companies since they require a high level of innovation drawn from education (Chesbrough and Crowther, 2006). Since most of these business owners take part in the daily decisions of the business and are a crucial part of the business in its early stages, their education level helps them to understand the industry requirements.

Table 9 also shows that two Construction company owners strongly disagree, four disagree, and 16 are neutral, meaning 20 owners do not see the importance of education in their marketing efforts of the businesses, the reason being that the business gets jobs via a predefined tender process which is relatively easy to understand and generic (Pautz *et al.*, 2003). So, most of these contractors might feel there is no need to understand any market trend, hence the high number of neutral answers. However, this view can also be attributed to the SMME's owner marketing challenges due to the lack of suitable marketing strategy, a factor related to the owner's education and constraints of marketing resources available to the SMME owners (Rankhumise and Letsoalo, 2019).

It can also be seen from Table 9 that six construction company owners disagree, and nine are neutral to the notion that education aids in the day-to-day decision-making of the business, whilst 16 agree with the idea and five strongly agree. This is the same as in studies on the subject by (Bruno *et al.*, 1987), which researched high-tech SMMEs and identified three categories for poor business performance; of the three categories, education emerged as the dominant factor causing or leading to poor business performance but with no single consensus (Cooper *et al.*, 1994; Brijlal *et al.*, 2013; Marullo *et al.*, 2018).

Table 9 shows that only one owner, seven owners across all Grades, are neutral whilst 13 agree and 15 strongly agree. This trend is true since the nature of construction jobs requires experience, and upgrading on the cidb RoC requires the company to have the experience, which translates to performance (cidb, 2017a). So, it is normal for business owners to perceive the experience as being more important than education. However, Informal education or experiential training, and a tertiary qualification, enhance the skills that result in the development of competence (Peters and Brijlal, 2011). Although continuous development courses are very important in refreshing

those who know and adding knowledge, they are not prerequisites for getting new work in the construction industry (Kent and Becerik-Gerber, 2010).

4.6.4 The Relationship between the Level of Education of Construction Business Owners and Construction Business Performance

From the observations that all the business owners have at least a matric education level, this is consistent with literature that at least a basic education is required to start and run a business. This observation of no one lower than matric means that having a formal education impacts the establishment and survival of construction businesses (Rideout and Gray, 2013).

From results observed in Section 4.4 on growth patterns, it can be seen that there is no significant relationship pattern between the level of education the business owners have and the performance parameters, and this was also supported by the data observed in section 4.5, which showed a p-value greater than 0.05; therefore, the null hypothesis was accepted, meaning there was no observed association between education level and all the performance parameters.

4.7 Summary of the Chapter

This chapter showed the data collected using tables, figures and narrations of what was observed. This chapter also interprets the findings and discusses them in line with the research objectives and the literature review presented in Chapter Two. The results of the research findings discussed are then summarised, and conclusions are drawn in the next chapter.

Chapter 5: Conclusions and Recommendations

5.1 Introduction

This chapter summarises the research findings and then presents the conclusions that can be drawn from the whole research. Recommendations are then presented together with the areas of further study.

5.2 Revisiting the Research Objectives

The study examines whether the level of education of construction business owners impacts business performance in the South African construction industry. The objectives of the study were to:

- find out the level of education of business owners in the Construction Industry;
- establish the typical level of performance of construction businesses;
- determine the perception of business owners on the impact of education on construction business performance; and
- find out whether the level of education of business is related to construction business performance.

5.3 Summary of findings

Forty construction companies working on sanitation projects in the Mpumalanga province of South Africa were purposively selected for the study. The findings of the study are summarised below.

The study found that the diploma level is the typical level of education of owners, and none of the owners has qualifications less than matric. The companies in the study typically operate in cidb grades 5 to 7; their employees are in the range of less than 100. The asset value of 80% of the companies is less than five million, and the cash available is in the region of two million or less. The annual profit is in the range of three million, and the annual turnover is ten million and below for 83.33% of the companies. These high growth rates observed and the number of employees indicates that the companies are performing well.

Owners perceive Experience as being more important than formal education, with a mean score ranked one, followed by formal education helping in the early stages of

the business. Formal education helping in business performance ranks third, while formal education helping in the day-to-day decision is ranked fourth, together with continuous development for higher performance. Lastly, the owners see formal education as not being of help in the understanding of markets.

Since the p-value was greater than 0.05; therefore, the null hypothesis was accepted, meaning there was no observed association between the level of education of business owners and construction company performance parameters, which is supported by the perception of business owners that job experience is the most important parameter for business performance.

5.4 Conclusions

The business owners perceive that experience significantly impacts business performance more than formal and continuous education, that formal education does not impact their ability to market the business and that experience is more important than formal education. Based on this finding and the results of the hypothesis tested to guide the direction of the study that the level of education of the business owner and the performance of the construction business are not significantly related, the research concludes that although it is advantageous to have a higher level of education, as suggested by the literature, it is not necessary to attain a very high level of education for businesses to perform.

All the contractors seem to be growing on almost all growth parameters except for a few indicators like profit growth, cash available growth and asset growth that show one or two contractors with negative performance figures. Nevertheless, the negative growth in these aspects does not necessarily indicate poor performance; it can be a matter of business priority. Furthermore, the cidb grading is a parameter that has more to do with the business experience, so upgrading the business to have work of higher value is better. It can be concluded that the higher the grading on the RoC, the better the business in terms of the growth parameters.

5.5 Recommendations

The following recommendations are made towards improving the performance of construction businesses in the South African construction industry.

Contractors should acquire experience through practice beyond a basic level of education to improve the chances of business performance, particularly in the field of construction. Additionally, continual development courses are necessary to refresh and cement the knowledge of running complex projects.

The common level of operation of the contractors according to the cidb registration is Grade five to seven, so in support of the existing policies like the BBBEE, the government should put in place a mechanism to educate the contractors on how to upgrade on the cidb register from Grade one to Grade seven to nine (large companies). It is also worth noting that public sector employers should add more contractor development programs in their procurement systems to guide and help contractors so that they can grow more quickly to higher grades.

Owners perceive that formal education does not assist them with marketing, so it would be best to attend short courses on tendering to assist business owners in marketing their businesses so that they have more work and improve in terms of performance measures.

5.6 Area of Further Research

In order to validate the results, it is recommended that multiple studies across different provinces, with a larger sample size, are carried out; the financial performance of the business is an area that needs to be further studied since it has other variables that affect it like years of experience of the business and grading on the RoC.

It is also recommended that the study be carried out on a larger population so that a more generalised conclusion can be drawn from a wider range of contractors and the study be segmented such that financial measures are measured across a particular Grade of contractors for example, Grade seven contractors only.

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APPENDIX A: Letter of Consent and Confidentiality

Consent to Participate in a Research Study

Title of the Study: Investigating the impact of the education level of construction SMME owners on business performance

Introduction

- You are being asked to be in a research study named above.
- The research will involve two stages filling in an email form and a follow up online interview.
- The interview will be conducted on skype or any other online platform comfortable to you.
- The interviews will be follow-up questions, to the ones in the questionnaire to try and establish the reasoning of the answers should they be contrary to known theory.
- The Questionnaire will take 10 to 30 mins of your time and the interview will take between 20 to 30 mins.
- You were selected as a possible participant because you are a contractor in the South African Construction Industry.
- We ask that you read this form and ask any questions that you may have before agreeing to be in the study.

Purpose of Study

- The study evaluates whether the level of education of construction SMME owners impacts on business performance.
- Ultimately, this research may be presented as a paper.

Description of the Study Procedures

- If you agree to be in this study, you will be asked:
- Your Business Information
- Your educational level

Risks/Discomforts of Being in this Study and Data Security

- Your confidential data likely to cause harm to reputation when collected is stored securely and disposed of soon after research
- There are no other reasonably foreseeable (or expected) risks.

Benefits of Being in the Study

- No material benefit will be given for participation.

Confidentiality and anonymity

- This study since it involves interviews it cannot guarantee anonymity but all information is treated as confidential. Furthermore, we will not be collecting or retaining any information about your identity.

Payments

- No Payment will be made for participation.

Right to Refuse or Withdraw

- The decision to participate in this study is entirely up to you. You may refuse to take part in the study *at any time* without affecting your relationship with the investigators of this study. Your decision will not result in any loss or benefits to which you are otherwise entitled. You have the right not to answer any single question, as well as to withdraw completely from the interview at any point during the process; additionally, you have the right to request that the interviewer not use any of your interview material.

Right to Ask Questions and Report Concerns

- You have the right to ask questions about this research study and to have those questions answered by me before, during or after the research. If you have any further questions about the study, at any time feel free to contact me, [*Silas Makalichi*] at [*mklsil001@myuct.ac.za*] or by telephone at [*074 959 7010*].

Consent

I freely consent to take part in this study. I understand that I am participating freely and without being forced in any way to do so. I also understand that I can stop participating at any point should I not wish to continue. I also confirm that the purpose of the study has been fully explained to me. I understand that this is a research project whose purpose is not necessarily to benefit me personally in the immediate or short term. I also understand that my participation will remain confidential.

Participant signature ……. Date ……

APPENDIX B: Ethics in Research (EIR) Approval

Application for Approval of Ethics in Research (EIR) Projects
Faculty of Engineering and the Built Environment, University of Cape Town

ETHICS APPLICATION FORM

Please Note.
Any person planning to undertake research in the Faculty of Engineering and the Built Environment (EBE) at the University of Cape Town is required to complete this form before collecting or analysing data. The objective of submitting this application *prior* to embarking on research is to ensure that the highest ethical standards in research, conducted under the auspices of the EBE Faculty, are met. Please ensure that you have read, and understood the EBE Ethics in Research Handbook (available from the UCT EBE, Research Ethics website) prior to completing this application form: http://www.ebe.uct.ac.za/ebe/research/ethics1

APPLICANT'S DETAILS		
Name of principal researcher, student or external applicant		Silas Makalichi
Department Preferred email address of applicant:		Construction Economics and Management miksil001@myuct.ac.za
If Student	Your Degree: e.g., MSc, PhD, etc.	MSc
	Credit Value of Research: e.g., 60/120/180/360 etc.	60
	Name of supervisor (if supervised):	Prof Abimbola Windapo
If this is a research contract, indicate the source of funding/sponsorship		Self
Project Title		Investigating the impact of the education level of construction SMME owners on business performance

I hereby undertake to carry out my research in such a way that:

- There is no apparent legal objection to the nature or the method of research, and
- the research will not compromise staff or students or the other responsibilities of the University;
- the stated objective will be achieved, and the findings will have a high degree of validity;
- limitations and alternative interpretations will be considered;
- the findings could be subject to peer review and publicly available; and
- I will comply with the conventions of copyright and avoid any practice that would constitute plagiarism.

APPLICATION BY	Full name	Signature	Date
Principal Researcher/ Student/External applicant	Silas Makalichi	Signed by candidate	12/05/2020
SUPPORTED BY	**Full name**	**Signature**	**Date**
Supervisor (where applicable)	Abimbola Windapo		12 May 2020

APPROVED BY	Full name	Signature	Date
HOU (or delegated nominee) Final authority for all applicants who have answered NO to all questions in Section 1; and for all Undergraduate research (including Honours)	Louie van Schalkwyk		11 June 2020
Chair: Faculty EIR Committee For applicants other than undergraduate students who have answered YES to any of the questions in Section 1.	Louie van Schalkwyk		11 June 2020

APPENDIX C: Structured Questionnaire

Questionnaire

Section A: Demographics of business owner

What is your Age?

18 -25		25-35		35-45		45-55		55 and above	

What is your highest level of education?

No matric		matric		certificate		Diploma		Degree		Post graduate	

Kindly indicate your position in the organization

CEO/Director cadre

Management cadre

Supervisory cadre

Other please specify

……..

Please state your area of expertise (e.g. building construction)……

Please state the number of years of experience held in the construction industry (e.g. six years)……

Section B: Business Information

Location of head office …….

Company age (e.g. 10 years) …….

Region of operation:

Local level

Provincial level

Regional level (operate in more than one province)

National level

International level

Kindly indicate the number of construction projects (e.g. 10) undertaken in the last five years (2015 to date) ……..

Area of expertise of the company:

Building construction	
Civil engineering	
Mechanical engineering works	
Building and civil construction	
Special construction/specialist works	

Section C: Performance Indicators

CIDB Grade

Kindly indicate your company Grade on your cidb Register (e.g. GB 4)?

2015 ……..

2016 ……..

2017……..

2018……..

2019……..

Number of Employees

Kindly indicate the number of employees (e.g. 200) engaged by the company in the following years:

2015 ……..

2016 ……..

2017……..

2018……..

2019……..

Annual Turnover

What is the turnover (e.g. 1 Million Rands) of the company in the following years of operation?

2015 ……..

2016 ……..

2017……..

2018……..

2019……..

Annual Profit

What is the gross profit (e.g. 1 Million Rands) accrued by the company in the following years of operation?

2015 ……..

2016 ……..

2017……..

2018……..

2019……..

Available Cash

How much cash reserves (e.g. 1 Million Rands) was available to the company in the following years of operation?

2015 ……..

2016 ……..

2017……..

2018……..

2019……..

Asset Value

What is the current asset value (e.g. 1 Million Rands) of the company in the following years of operation?

2015 ……..

2016 ……..

2017……..

2018……..

2019……..

Section D: Business Owners perceptions

Kindly indicate your level of agreement on a scale of 1 to 5 (where 1 is strongly disagree and 5 is strongly agree) with the following statements on the impact of formal education on construction company performance.

	Statements on the impact of formal education on construction company performance	Level of Agreement				
		Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
	Formal education has contributed to the performance of the business					
	Formal education has helped me to learn easily at the initial stage of the business					
	Formal education helps me in the day-to-day decision making of the business					
	Formal education helps me to understand the market trends					
	Experience of the work has a higher impact on business performance than formal education					
	Continuous Development short courses are necessary for higher business performance					