

# Research Report

October 31  
2016

Knowledge and Skills Transfer between Emerging and Established Contractors.

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## Declaration

We declare this research report is our own unaided work. It is being submitted to the University of the Witwatersrand, Johannesburg. It has not been submitted before for any other degree or examination to any other University.

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Signed on: 31<sup>st</sup> October 2016 at The University of Witwatersrand

## **Acknowledgements**

For a successful study we would like to thank the following:

The School of Construction, Economics and Management for granting us the opportunity to conduct this study, and equipping us with the necessary skills to produce research of this nature.

Our friends and families for their continued support and encouragement throughout the course of the study.

We would also like to acknowledge our supervisor Professor David Root and thank him for his guidance and help, which made the report possible to conclude. Finally we would like to thank the participants in this study, for taking the time to contribute meaningfully to our study. Without them, this study would not have been possible.

## **Abstract**

Emerging contractors in the South African construction industry, owned and managed by HDIs, lack the knowledge and skills to develop into sustainable businesses; underlying most factors, contributing to the hindrance of growth and development among emerging contractors, is a general lack of knowledge. (Martin, 2010)

A study by Martin 2010 was conducted where insight to interactions between emerging and established contractors was provided. Despite the transfer of knowledge however, concern remains over the ability of emerging contractors to develop. This research determines the progress of the respondents previously surveyed by Martin 2010 in order to analyse the effect of skills and knowledge transfer between emerging and established contractors.

An electronic survey is conducted, the results of which are used to deduce the degree to which the emerging contractor has progressed as a result of skills and knowledge transfer, as well as the interaction with emerging contractors yielding the most effective transfer of skills and knowledge.

## 1. Introduction

### 1.1 Background and Motivation

The Apartheid regime in South Africa created extreme distortions in the business world; Luiz 2002 states that the environment created finds big business isolating itself from SMMEs and white business isolating itself from black business. (Luiz, 2002) In the context of the built environment, the South African Government depends on the construction industry as one of its tools to increase the percentage of black-owned contracting enterprises (CIDB, Contractor Development Reports, 2012), in order to restore balance after the years of preferred economic advancement of the white racial group under the Apartheid regime. (Martin, 2010) “Investment in infrastructure underpins the economic growth of any country and provides opportunities for enterprise development, employment creation and poverty alleviation.” (CIDB, Contractor Development Reports, 2012)

Contractors in the South African construction industry are characterised by the grading system of the Construction Industry Development Board (CIDB). The CIDB was established by Act of Parliament (Act 38 of 2000) to promote a regulatory and developmental framework that builds construction industry delivery capability for South Africa’s social and economic growth. (CIDB, About the cidb, 2015) Based on the CIDB’s grading system of one to nine, the industry is characterised by a few large (Grade 7 to 9) companies with substantive financial and technical resources, however on the other hand, as a result of low barriers to entry, a host of smaller enterprises (Grades 1 to 6), many of which face financial, managerial and technical constraints. (CIDB, Contractor Development Reports, 2012) “South Africa is no different to the rest of the world where the greatest number of operators are to be found at the base of the pyramid, and as the pyramid rises, the number of enterprises decreases steadily.” (Board, 2012) According to the CIDB, this is purely a reflection of economic reality.

The Economic Development Department of South Africa states that the construction industry itself has characteristics that sharply distinguish it from other sectors of the economy. “It is fragmented, very sensitive to the economic cycles and political environment and has a significantly high rate of business failure.” (Department, 2014) Emerging contractors in South Africa can be described as those contractors registered within the lower grades of the CIDB Register of Contractors (Grades 1 to 4). They are owned and managed by historically disadvantaged individuals (HDIs) entering the formal economy, and emerging from informality. (Martin, 2010) HDIs include individuals of non-

white racial groups, disabled persons, and women – together making up the majority of the population of South Africa. (Martin, 2010)

Martin 2010 states that emerging contractors lack knowledge and skills to develop into sustainable businesses as these contractors are characterized by low levels of resources and the central role played by their owner/manager. (Martin, 2010) Sustainable businesses within the construction industry are those entities that are able to:

- build up and maintain a healthy cash position;
- achieve and maintain large turnovers;
- generate profits and return on investments;
- rebound after major setbacks.

(Windapo & Cattell, 2011)

According to Goh 2002, knowledge management will be the key to organisational success in this millennium and the ability of an organisation to transfer knowledge is also a key dimension of a learning organisation. “Learning occurs when knowledge in one part of an organisation is transferred effectively to other parts and used to solve problems there or to provide new and creative insights.” (Goh, 2002) Martin 2010 states that interactions with established companies hold opportunities for emerging companies to learn from their experiences and that the acquisition of knowledge is seen as the key factor if emerging contractors are to be empowered in a meaningful way. Martin 2010 further conducts a telephonic survey among emerging South African civil engineering contractors that describes knowledge transfers and provides insight to interactions between emerging and established contractors. Results of the survey revealed patterns of interactions as well as actual knowledge transfers such as long-term slow knowledge transfers, but also *ad-hoc* instant transfers. (Martin, 2010)

Despite the transfer of knowledge and skills however, the CIDB is concerned about the capabilities of lower grade firms on its Register of Contractors to develop. (Windapo & Cattell, 2011) A crippling effect on growth in the emerging sector exists (Adams, 2015) as a result of various factors such as:

- unprofitable tender prices
- abuse of subcontractors by main contractors

- technical difficulties
- poor management in general. (Martin, 2010)

Underlying most of these seeming factors however, is a general lack of knowledge of pricing procedures, contractual rights and obligations, law, management techniques and principals, as well as technology. (Martin, 2010) Although the transfer of skills and knowledge has taken place, whether it has taken place sufficiently or effectively remains in question.

## 1.2 Identification of Problem and Research Question

Emerging contractors in the South African construction industry, owned and managed by HDIs, lack the knowledge and skills to develop into sustainable businesses; underlying most factors, contributing to the hindrance of growth and development among emerging contractors, is a general lack of knowledge. (Martin, 2010)

A study by Martin 2010 was conducted where insight to interactions between emerging and established contractors was provided. Despite the transfer of knowledge however, concern remains over the ability of emerging contractors to develop. This research determines the progress of the respondents previously surveyed by Martin 2010 by analysis of the effect of skills and knowledge transfer between emerging and established contractors; the governing questions for the research presented here can then be formulated as:

*To what degree has the status of the emerging contractor evolved as a result of interacting with established contractors?*

*What form of interaction has resulted in the most effective transfer of skills and knowledge?*

## 1.3 Aim and Objectives

By following up on the respondents surveyed by Martin 2010, this research is primarily aimed at determining the form of interaction yielding the most effective transfer of skills and knowledge. The objectives of the study are therefore:

- To map the progress of the respondents of the study conducted by Martin 2010;

- To determine the different form of interaction between the established and emerging contractors yielding effective skills and knowledge transfer;
- To ascertain whether skills and knowledge transfer is effective.

#### **1.4 Hypothesis**

The sample surveyed by Martin 2010 consisted of 528 contractors, all of whom were registered between Grades 1 and 4 on the CIDB Register of Contractors. Of this population, it is expected that, since this initial study, a portion has evolved and upgraded on the Register, others have remained in their initial position, and the rest have exited the industry.

The study by Martin 2010 confirms that the above mentioned contractors engaged in interactions with established contractors. The hypothesis formulated is therefore, that those emerging contractors who have grown and developed since the survey by Martin 2010 have received effective transfer of skills and knowledge; those who have not managed to evolve since the study have received an insufficient transfer of skills and knowledge; and those who have exited the industry lacked the transfer of skills and knowledge required to remain in operation.

#### **1.5 Assumptions and Limitations**

In conducting the survey, it has been assumed that the contractors surveyed by Martin 2010 have experienced the same industry and market conditions during the period between the original study and this research.

With regard to limitations to the research, in determining the growth and development of the emerging contractors, external factors such as aid and funding have not been taken into account. The focus is rather on the commissions secured by the emerging contractors and the success or failure of their endeavours.

#### **1.6 Contribution**

Following up on the study by Martin 2010, where emerging contractors registered between Grades 1 and 4 on the CIDB Register of Contractors were surveyed, the research is aimed at determining the growth and development of these contractors as a result of skills and knowledge transfer by the

analysis of the form of interaction with their established counterparts as well as the degree to which their status in industry has evolved.

The research makes contributions towards skills and knowledge transfer in the construction industry, how support may be given to emerging contractors as well as insights to additions that can be made to existing developmental programs for emerging contracting entities.

### **1.6.1 Body of knowledge**

The primary aim of this research is to determine the form of interaction between established and emerging contractors that yields the most effective transfer of skills and knowledge. It is a contribution to the body of knowledge as it is an indication of the effect of skills and knowledge transfer on the growth and development of emerging contractors.

### **1.6.2 Practice**

The research contributes to the practice of contracting in the construction industry of South Africa as it allows for:

- A better enhancement for learning
- An understanding of skills and knowledge transfer
- An improvement to the interventions in the industry such as developmental programs for emerging contractors.

## **1.7 Conceptualisation**

### **1.7.1 Philosophy**

The research adopts a positivist philosophy and a deductive approach. Positivism as a method of research was introduced or first used by Auguste Comte in the 19th century (Vine, 2009). It takes on a more deterministic, empiricist approach in which effects have to have some causes, where there is direct observation, quantitative measurement and an objective prediction of the relationship between variables (Vine, 2009). According to Vine (2009), the one thing about positivism that seems to be negative is the fact that it is a method that separates the researcher from the actual research or what is being evaluated. It is impossible for the researcher to observe without their values being challenged and their interests being interfered with. It is for this same reason that positivism today is called post-positivism and also because there is acknowledgement from different researchers that there can never be absolute truth (Vine, 2009). Truth and reality are free and independent of the

observer- this is an ontological principle (Aliyu et al 2014). According to Aliyu et al (2014), the methodologies that most positivists swear by are confirmatory analysis, quantitative analysis, lab experiments, nomothetic experiments and deductive logic.

### 1.7.2 Concepts and Constructs

The research is based on concepts of:

- Knowledge transfer
- Organizational learning
- Economic development

### 1.7.3 Theoretical Perspectives

Theoretical perspectives include:

- Life cycles of business
- Acquisition of knowledge
- Failures and capacity enlargement

## 1.8 Outline

The study will be presented in five chapters:

**Chapter 1** details the introduction to the research and describes the background to the study, the research problem and research questions; this is followed by assumptions and limitations of the study, as well as the contributions and conceptualisation. In the chapters to follow, some of the concepts that have been briefly defined are further clarified, the fieldwork is presented, and conclusions are drawn from the findings.

In **Chapter 2**, relevant literature is reviewed such as Knowledge and Skills Transfer, and the impact of interactions between established and emerging contractors.

The conceptualisation of the research, briefly mentioned above, is clarified in detail in **Chapter 3**. The research design is defined as well as the research strategy. Following the determined approach of the research are the methods of the empirical work to be employed. Limitations and ethical considerations are then described.

**Chapter 4** will detail the investigation itself: the survey tool, the sample population, data collection, and findings.

Conclusions are then drawn from the findings in **Chapter 5** and recommendations are made.

## 2. Literature Review

### 2.1 Introduction

The South African construction industry has undergone a transformation process, which has led to the introduction of emerging contractors into the market (Martin and Root, 2010). These emerging contractors fail to develop into independent business enterprises because of the lack of construction project knowledge and experience where project relations are concerned. Furthermore, according to Bowen et al, an opinion survey of South African construction professionals regarding ethical behaviour within the construction industry reveals that South African contractors seem to possess a reputation for unethical conduct. “The range of problems encountered includes collusion, bribery, negligence, fraud, dishonesty and unfair practices.” (Bowen, et al., 2007) This coupled with poor central management of the organisation contributes to the challenges faced by emerging contractors. Only “appropriate” interactions with established contractors can help emerging contractors overcome their inability to grow (Martin and Root, 2010).

A study by Arditi et al indicates that budgetary and macroeconomic issues represent 83% of the reasons for construction company failures. “Firms that take vigorous administrative measures to address budgeting issues and that react promptly to economic conditions by implementing appropriate strategic policies should be able to avoid failure.” (Arditi, et al., 2000) It has been assumed that each of the respondents have experienced the same market conditions, therefore the financial management of the entity is an indication of the development of the emerging contractor.

Knowledge and skills transfer is taking place between emerging and established contractors; this statement is confirmed by the results of the study undertaken by Martin 2010. The effect of knowledge and skills transfer has therefore been assessed by the level of development the emerging contractors have experienced. From this, the researchers determine the effect of skills and knowledge transfer on the growth and development of emerging contractors.

### 2.2 Knowledge and Skills Transfer

As previously stated, with regard to interactions and learning between emerging and established contractors, Martin 2010 finds that emerging contractors, owned and managed by historically disadvantaged individuals, lack knowledge and skills to develop into sustainable businesses. It is the

transfer of knowledge and skills that is crucial to the development and advancement of emerging contractors.

Insufficient transfer of knowledge to emerging contractors in the industry is one of the leading causes of their failure. Although Martin 2010 confirms knowledge transfer has taken place, the key is for transfer to take place at a sufficient level that would help emerging contractors survive the industry and eventually grow (Malongane, 2014).

According to Goh (2002), a firm's competitive advantage depends on its knowledge, that is: what it knows, how it uses what it knows, and how fast it can know something new. "Knowledge transfer is also a key dimension of a learning organisation." (Goh, 2002)

Martin (2010) describes six areas of knowledge that can be transferred, namely:

- operational improvement,
- people management,
- obtaining finance,
- formal systems,
- strategy,
- market entry.

(Martin, 2010)

South African emerging contractors generally have low levels of: experience, required skills and required formal training, and this ultimately leads to their downfalls and cuts them out of the running for bigger jobs. (Malongane, 2014) The process of knowledge and skills transfer may be enhanced by the support of, or enforcement by, relevant regulatory bodies such as the government and the CIDB (Malongane, 2014).

The main factors that impede the growth and development of the emerging contractors or the emerging sector as a whole of the construction industry include:

- The inability of these new construction businesses to access finance and credit as well as management training.
- The public fiscal capacity and the inability to get the private sector to finance initiatives to support and invest in small construction businesses.

- Emerging contractors do not have adequate capital, skilled personnel, proper functioning equipment and suitable management skills i.e. they do not have access to established contractors long enough to pick up and learn the really important things about the construction business. (Malongane, 2014).

### 2.3 Developmental Programmes

In its 2013 issue, the CIDB revealed that the construction sector is one of many sectors in the South African economy that does not grow as a result of factors such as bid-rigging during tendering processes and the fact that up and coming contractors are never given the platform to showcase what they can actually do; it is always the same contractors dominating the scene of production. The established contractors are seen as having a lack of commitment and goodwill towards the emerging contractors; established contractors are not giving the emerging ones as much time as they need to grow.

The Black Business Council in the Built Environment has been collaborating with the industry's trusted established contractors to try and come up with some transformation strategies to help emerging contractors adapt to the ways of doing business in this industry and in turn help the entire industry grow (Martin,2012). In 2013, the SA Federation of Civil Engineering Contractors (Safcec) confirmed that they have been able to initiate talks between the established and emerging contractors of the civil engineering profession. The federation has 410 member contractors and 205 of these are emerging contractors, this is just to show that some organisations are really doing all they can to ensure that emerging contractors are fit for competition and that they are not excluded in any way.

In the past the emerging contractors were treated as subcontractors by the established contractors but now Safcec is fighting for these emerging contractors to be recognised as prime contractors in larger projects (Munshi, 2013). Emerging contractors should start being involved in big decision making processes for the projects they are involved in. The transformation of the entire industry, skills and knowledge transfer as well as empowerment are all very vital if South Africa is to achieve world-class building plans and standards (Munshi,2013). This approach will also open doors for better job creation.

One of the provinces that really take emerging contractor development seriously is Kwa-Zulu Natal; the province's department of public works has an Emerging Contractor Development Programme. The programme aims to help promote the strategy of the BBBEE Act so as to contribute to the broader national priority of economic development. This programme seeks to help emerging contractors particularly those in the CIDB levels 1-5 to advance from being emerging contractors to being self-sustainable business enterprises (Masakhe ECDP Handbook, n.d). Emerging contractors often fail due to lack of knowledge held by the key staff of these organisations (Martin, 2012). South Africa has internationally recognised and active construction companies that also persistently dominate the local market; this means is that there is a well-established and conducive environment for emerging contractors to operate. This said, however, these emerging contractors cannot do it on their own (Martin, 2012). Their growth into self-sustainable businesses as suggested by the KZN ECDP is largely dependent on the help that comes from their seniors.

Governmental policies and regulations like the BBBEE Act and the Preferential Procurement Act encourage the established contractors to work together with emerging ones to help them gain knowledge, skills and project-based interactions for them to survive this industry that is forever transforming (Martin,2012).

#### **2.4 Interactions and Impacts**

The interactions between the emerging and established contractors in Martin 2010 were described as either being partner-like, mentor-protégé, or purely contractual in nature (Martin, 2010). A partnership arrangement, in this context, is where an agreement, either verbal or non-verbal, exists between the emerging and established contractors. Within the original study, this relationship was typically seen where an established contractor used the services of an emerging contractor due to the nature of the work or as a result of the location of the project. According to Martin (2010), a mentor-protégé relationship is established when there is trust or familiarity between the core members of the respective organisations. This implies that the established contractors took a 'special interest' in the emerging contractor and that the relationship was built over time. Finally, the relationships that were contractual in nature, strictly abided by their contractual requirements and obligations. There was often little or no previous history of interaction between these contractors.

For the purpose of our study, we will not differentiate between male and female participants because literature does not substantiate that the gender of the participants from the emerging contractors will play a role in the success rate of the contractor. According to Martin (2010), although contract driven contexts yield skills transfer and explicit learning, in order for contractors to develop a deeper understanding of routines, it is suggested that collaborations based on trust and partnership-like relationships may yield better results. We therefore anticipate that the mentor-protégé relationship would result in an on-going relationship and mentorship. This would further need to be substantiated in literature when carrying out the research project.

According to Martin (2010), the content of the transfer of skills included financial, technical, and managerial techniques. The financial aspects included the management of funds, cost control methods in terms of spending and ensuring that there is a steady cash flow. For the purpose of our study, we will assume that all emerging contractors who underwent this process obtained the above-mentioned skills, techniques and knowledge from the established contractors.

A key understanding to be considered is which methods of skills transfer was initially adopted by the emerging and established contractors, and which method appears to have benefited the emerging contractors most. The initial study noted that the transfer mechanisms are influenced by both internal and external factors. It is our understanding that often, contractors who underwent training in the form of working as a subcontractor often adopt the principals, and managerial techniques etc. of the established contractor and will, when carrying out their projects.

In order to conduct an effective longitudinal study, an instrument to measure the growth of the emerging contractors would need to be developed. In order to thoroughly investigate the growth of the emerging contractors, according to Windapo (2013), an investigation into the challenges that affect the performance, development, and growth of the contractors must be taken into account. Additionally, for the purpose of this study we will explore the factors that give rise to contractor development and growth and will measure the growth according to the Greiner Model and the Five Stages of Business Growth. This takes the following into account:

Growth through creativity – ultimately resulting in a crisis of leadership

- Characteristics thereof state that the emerging contractors are small and the company is relatively young. The organizational structure is characterized by being informal and the

employees are loyal. With regard to the emerging contractors, this would typically be the founders of the contracting business.

Growth through direction – ultimately resulting in a crisis of autonomy

- The characteristics of this stage are typically that the businesses are expanding with a new inflow of jobs. This ultimately requires the managers to appoint middle level management or additional staff to control the primary processes of the businesses. Rules and procedures become more standardized and a central co-ordination system is formed.

Growth through delegation – ultimately resulting in a crisis of control

- The founders, at this stage will delegate most
- Growth through coordination – ultimately resulting in a crises of red tape
- Growth through collaboration – ultimately resulting in a crises of growth
- Growth through alliances

It is by understanding the various stages of growth and factors of crises that will inevitably result from this growth, in conjunction with obtaining the contractors CIDB grading, that we can establish the growth of the emerging contractors. Furthermore, to assess the current market conditions and its effect on the emerging contractors, we will assess the five main factors affecting the organization by carrying out a brief study using Porters Five Forces. This study takes the following into account:

- Bargaining power of suppliers
- Bargaining power of customers
- Threat of new entrants
- Competitive rivalry with industry
- Threat of product substitutes

By using the aforementioned models, we can, by utilizing qualitative means, measure the growth of the emerging contractors and understand how the emerging contractors have developed within the market.

The researchers anticipate in carrying out the study that a number of the emerging contractors whom the researchers will contact will no longer be operating within the same environment.

According to Windapow (2013), the CIDB has reported that business failure, defined as the inability of a firm to pay its obligations when they are due, is exceptionally high amongst South African construction companies. A study carried out by Windapow and Cattell (2011) revealed that the total number of contractors registered in 2010 compared to 2009 had decreased by 8%. These findings indicate that there is a high rate of enterprise failure and this reflects a high level in demand volatility, high levels of non-completion, poor management and low levels of productivity.

According to Windapo (2013) significant growth in the construction industry is dependent upon price stability in material costs. At the time that the emerging contractors were established, the country was undergoing a boom in the construction sector as a result of the requirements for the FIFA World Cup in 2010. Both the emerging contractors and the established contractors, based in one of the hosting sites, the researchers therefore placed in a prime position to further their respective companies' business prospects.

According to Windapow (2013) the following factors are perceived to have an impact of challenges on the construction industry performance.

- Increases in the costs of building material
- Access to affordable mortgage/credit
- High interest rates
- High rate of enterprise failure/delivery capacity and performance
- Mismatches between available skills and required skills
- Availability of infrastructure
- Availability of suitable land
- Public-sector capacity
- Poverty
- Critical global issues/globalization
- Procurement policies/capacity for sustainable empowerment
- Technology

Windapow (2013) further stipulates that that according to contractors in the Western Cape, it is perceived that the mismatch between available skill and required skills is the largest challenge faced

by contractors. This is followed by an increase in the cost of building materials and a high rate of enterprise failure/delivery capacity and performance.

#### **2.4.1 Mentorship**

Mentorship provided by the established contractors through various development programmes gives some emerging contractors access to the theoretical and practical training and this benefits them in the long run thereby ensuring their growth and development. Mentorship has been described by many researchers as the main element around which all construction work and therefore success revolves (Malongane, 2014). In order to ensure the growth and change of an inexperienced contractor; ensure that they develop into fully-fledged and capable contractors who execute contracts with a higher value and risk profile, mentorship is incredibly necessary and crucial (Malongane, 2014).

Mentorship ensures the accelerated growth and development of the selected contractors (those part of the mentorship programmes) and this helps them fight or deal with the challenges that the industry is bound to throw at them. They are then afforded the opportunity to be exposed to the big industry players that have tons of experience to show them the ropes. The process of knowledge and skills transfer mentorship included, is rather difficult in the construction industry because the different projects in the industry have different lengths. This means that if an emerging contractor is being mentored by an established contractor that is on a short-term contract, they do not have enough time to interact, for the emerging contractor to learn properly (Malongane, 2014).

The construction industry is one with very low barriers to entry and this means that it presents vast opportunities to Historically Disadvantaged Individuals in South Africa. Because of this fact, an environment that enables or gives new participants a chance to grow and transform into better businesses is what needs to be fostered, this and the fact that the construction industry plays an indispensable role in the South African economy (Buthelezi, 2013).

Over the past few years, since South Africa's newly found freedom that is, there has been really great support for the Historically Disadvantaged Individuals especially for the black-and women-owned businesses, but this is only for the general contracting category and not the specialist services (Buthelezi, 2013). Procurement has been the single driver of small enterprise development but as it stands, other programmes are needed to enhance the rapid growth of the emerging construction businesses that are still trying to grow (Buthelezi, 2013).

A CIDB survey conducted on the difference between emerging and established contractors showed that established regarded tendering as less important because of the relationships they already have with the private or public clients and the same survey showed that emerging contractors enter the market or the industry at the lower end/level and it is not as easy for them to get contracts for work because they do not have these relations as yet. According to Buthelezi (2013) this lower level entrance the emerging contractor are at is also said to be very unsustainable and success is not always guaranteed.

#### **2.4.2 Training and mentorship**

This is one way of ensuring that the supply side constraints that the emerging contractors face are not as harsh as they usually would. Mentorship plays an essential role in the growth of any emerging contractor. Most emerging contractors say that they need help with things such as the compilation of their accounts and invoices as well as pricing contracts and this is the knowledge that only the established/ successful industry participants have (Buthelezi, 2013).

The other reason why it is vital for emerging contractors to join different mentorship programmes is that banks as the providers of financial assistance in the industry, view emerging contractors that are mentored more positively than those that do not participate in these mentorship programmes completely (Buthelezi, 2013). So now not only is it important for the established contractors to transfer knowledge and skills, it is also very vital for the emerging contractors to be willing to receive the knowledge with the intention of using it for their benefit.

Mentorship is seen as a perfect supplement for the inexperience and the unconvincing track records that emerging contractors have (Buthelezi, 2013). Another fact that will assist greatly in ensuring the development and growth of the emerging contractors into large-scale, sustainable contractors is the ability of the entire industry to attract and accelerate the development of the built environment professionals. Most small construction businesses are one-person or family owned and their growth depends largely on the availability of professional capability hence it is so important to join mentorship programmes provided by certain established contractors (Buthelezi, 2013).

Construction as a business is synonymous with high risks, low profit margins as well as high levels of capital investments in things such as manufacturing of materials so the empowerment of the emerging contractors depends on transformation and mentoring models that are innovative and help open up business opportunities for the Historically Disadvantaged Individuals of the industry. These

successes of these models in turn depend on the emphasis placed on them by the government for example through the Black Business Empowerment (Buthelezi, 2013). For any contractor development programme, it is important to monitor particular aspects of the process to ensure that knowledge is indeed being shared by the participants. Things to be monitored include the emerging contractor's skills development, as well as their business and financial performance (Buthelezi, 2013).

Most researchers studying emerging contractors have put forward these three points as to what needs to be done to improve the knowledge and skills transfer process in the industry (Malongane, 2014).

- Provision of guidance and advice to the selected emerging contractors in the areas in which they need to improve or even change their competencies.
- They need to improve their key staff's managerial, commercial, administrative as well as their technical skills.
- Business systems in the construction industry should be developed with emerging contractors in mind.

Emerging contractors often lose out on real work in the construction industry because of the collusions between the bigger companies. When these emerging contractors do not get help from already successful and established companies, their growth is hindered or slowed down and they are forever side-lined when it comes to getting the jobs that really matter to help them advance as competitors in the industry (Martin, 2012).

## 2.5 Summary

Therefore, the problem identified is also not the process, but rather how it is being administered and received but the settings of the industry that make other contractors lack progression even after interacting with their experienced or established counterparts. The industry has interconnected structural problems and is quite volatile, which requires quick adaption (Malongane, 2014). The nature of the industry automatically kicks some of the trying contractors out of the market even though they might have been prepared through the knowledge and skills transfer process by the established contractors. The opposite also happens to be true for the contractors who entered the

industry not so long ago and are still surviving; they adapted quickly enough to weather the storms of this industry.

### 3. Research Methodology

#### 3.1 Conceptualisation

##### 3.1.1 Theoretical perspective

It has been assumed that knowledge transfer took place during the initial study and that all emerging contractors who participated in the survey received a certain level of skills from their established contractor counterparts. The original study took the CIDB grading of the respective emerging and established contractors as a measure of the level at which the contractors were in 2008. The researchers have suspected that having received knowledge from the interactions with the established contractors, the emerging contractors would have grown and that the CIDB grading would have increased over the years.

Nonetheless, the researchers further suspected that there are a number of emerging contractors who are no longer practicing or have not changed in terms of their grading's. This could, among other issues, be a choice of the contractor and should therefore be considered when interpreting the data from the survey. Admittedly, this circumstance is a limit for this study, but could be further investigated by understanding;

- The pattern of interaction between the emerging contractor and its respective established contractor.
- In terms of the projects that the contractor is currently involved in, how the contractor has changed since the initial study.
- Whether the contractor is practicing in the same manner as it was during the original study.
- Whether the contractor is comfortable with the current size of the business and furthermore whether the owner intends to grow the business further or is seeking a higher grade according to the CIDB standards.

##### 3.1.2 Organisational development

The Greiner Model is the most appropriate mode of measuring the development of the organization as a whole. By ascertaining what the current structure of the contractors are and understanding what type of projects the business is capable of handling and the value of such projects, the researchers have been able to discern the stage of the business according to the five stages of a business lifecycle as outlined by the Greiner Model. The following stages are categories that the contractors either have experienced or are experiencing:

Stage one: During this phase the contracting companies are young and small and have a flat organizational structure. At this stage it is expected that the contractors will be trying to establish a clientele base and maintain relationships with their existing clients and established contractors.

Stage two: The researchers anticipate that the contractors that survived the initial crises would then focus on building a greater rapport in industry. The nature and complexity of the projects being carried out would put pressure on the owners to hire additional staff to cope with the demand and services. The contractors will establish an organizational structure that recognizes a leader and no longer boasts a flat means of communication.

The Greiner Model can therefore be used to deduce, through qualitative means, the current stage at which the business is currently operating in. It will also provide insight into what the next crises would be and whether, at this rate, the business will grow to the next stage and will ultimately be able to expand and subsequently increase in rating according to the CIDB grading.

### **3.2 Research Design**

The research philosophy is an over-arching term that relates to the development of knowledge and the nature of the knowledge (Saunders, Lewis & Thornhill 2009:138). It is therefore by considering the manner in which the qualitative and quantitative data is interpreted, that the data obtained from the study should be understood. The two major ways of going about understanding the research philosophy is: ontology and epistemology. According to Saunders (2009) ontology is concerned with the nature of reality, that is, objectivism and subjectivism, where objectivism “portrays the position that social entities exist in reality external to social actors concerned with their existence”, and the latter refers to social phenomena that are created from the perceptions and consequent actions of the participants concerned with their existence. For the purpose of this study, an objective ontological approach will be adopted.

The ‘Research onion’ has been developed for researchers to systematically examine; the research philosophy, approach, strategies, choices, time horizons, and techniques and procedures in data collection and data analysis.

### 3.2.1 The Research Onion

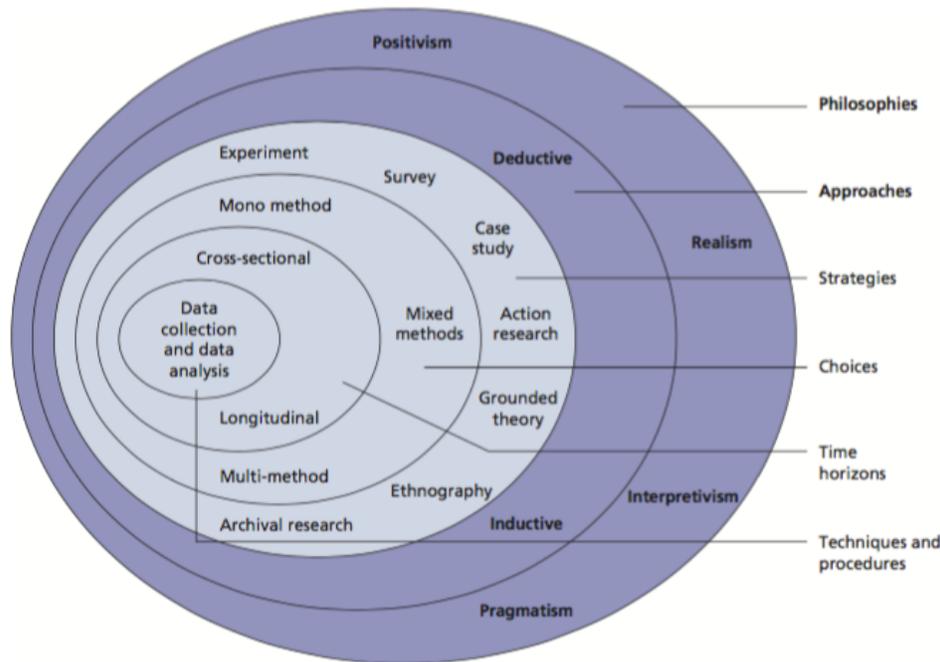


Figure 1: Research Onion

Source: Saunders, Lewis & Thornhill (2009)

Further, epistemology concerns what constitutes acceptable knowledge (Saunders et al. 2009). The epistemological position reflects the attitudes or feelings of the researcher towards the respective topic. According to the Research onion, various philosophical groundings could be used in construing the literature and data used in this study, however a positivist stance will be adopted. This philosophical stance allows the researchers to generate a research strategy which would ultimately use existing theory to develop hypotheses, to be tested then confirmed or refuted, resulting in further development of the theory that can be tested by further research. The assumption thereof is that “the researcher is independent of and neither affects nor is affected by the subject of the research” (Remenyi et al. 1998:33). Because the research is largely based on a study conducted by Martin (2010), the aforementioned stance would be best suited for this study.

By virtue of the research philosophy being positivist, a deductive approach will be adopted. According to Saunders et al. (2009) this allows the researcher to deduce a hypothesis from theory, propose the relationship between two theories, concepts or variables, test the hypothesis, examine

the specific outcome and finally, if necessary, modify the theory in light of the findings. Deduction emphasises scientific principals and assists in moving from theory to data. For the purpose of this research this is paramount as the research strategy and choices are largely based on literature and the theoretical framework. Additionally, the approach emphasises the need for the collection of quantitative data and the application of control measures to ensure the validity of data. Accordingly, a structured methodological approach is crucial to ensure that the results are reliable. As it will be discussed in the following sections of this chapter, the deductive approach is crucial in contributing towards the comparisons that the researchers intend to draw when carrying out the study.

### **3.2.2 Research strategy**

The research strategies to be considered are in the form of an experiment, survey, case study, action research, grounded theory, ethnography or archival research. In line with the deductive approach selected, a survey strategy will be carried out. It is best suited to this particular study because it is most commonly used for exploratory and descriptive research. According to Saunders et al. (2009) the survey strategy allows the researcher to collect quantitative data that can be analysed quantitatively using both descriptive and inferential statistics, and through this, be able to suggest possible reasons for particular relationships between variables. Additionally, models of these relationships could be developed based on the findings. Admittedly, researchers complain that this strategy often delays their progress due to their independence on other for information and that the survey strategy is unlikely to be as wide-ranging as those collected by other research strategies. Another drawback with using surveys especially a survey conducted by means of a questionnaire is the capacity for it to be done badly. There are, however, many methods in which a survey can be undertaken and for the purpose of this study, we intend to carry out an electronic survey.

In conclusion, in line with the positivist research philosophy, this study is focused on the causality and law like generalisations, aiming to reduce the phenomena to the simplest elements. The epistemology will only constitute observable phenomena that can provide credible data facts (Saunders et al. 2009).

### 3.3 Survey

#### 3.3.1 Research Credibility

In order for the survey to be undertaken for the purpose of this research, the researchers have taken measures to ensure that the results obtained are credible and that there is a certain level of confidence established in the data obtained. In an effort to reduce the possibility of obtaining a false result, the emphasis of the research design is on: reliability and validity (Saunders et al. 2009:156).

Research reliability refers to the extent to which your data collection techniques or analysis process will yield consistent findings. However, it has been asserted that there are four threats to reliability:

1. Subject or participant error - the interviewers are required to contact the population at a suitable time to minimize subject or participation error. This could be mitigated by first contacting the contractor to arrange a suitable time for the interview to take place.
2. Subject or participant bias – the researchers do not anticipate any specific reason for participant bias for this particular study, however, the participants may exaggerate circumstances regarding the contractors well being.
3. Observation error - Prior to conducting the survey, the researchers intend to develop a standardised script that can be adopted for all telephonic surveys. In directly following the procedure outlined by the script, the possibility of respondents steering off the topic or encountering possible deviation errors in the analysis of the survey data can be minimised. Moreover, a structured telephonic interview will be carried out and three female researchers will carry out the interviews using the script and will take note of the responses. The responses will later be collated into a single document to avoid possible observation errors or observation bias.
4. Observation bias – the interviews will be conducted by all three researchers, and each researcher will participate in each interview carried out. By having three interviewers record responses and then collating the findings, room for observational bias will significantly be reduced.

Research validity is concerned with whether the findings of the study are really about what they appear to be about. Threats to the validity include: the history, that is, the opinion that the respondents may have concerning the topic of the survey, testing, instrumentation, morality, maturation and ambiguity.

Generalisations or external validity is another concern of paramount importance. The concern usually expressed about the causes that lead to generalisations is not having an adequate population to truly depict robust results. The aim of the survey is to be able to measure the growth of the emerging contractors from when the initial study was carried out by Martin (2010). Therefore, by using filtering mechanisms, the contractors who are still in business will be established and the contractors who are still operating will be the population targeted for this study. In order to combat issues that may arise due to external validity, the population will not be stratified but will be randomly selected based on whether the contractors are still in operation or not, to a level where the researchers' confidence is 75%.

### **3.3.2 Conduct of Survey**

As described above, the aim of the telephonic survey was to contact all 167 participants from the study carried out by Martin (2010). The population was filtered down, by establishing which of the emerging contractors are still operating within the same environment since the initial study was carried out. The contractors that are no longer operational have not been contacted and have not been included in the study because they are no longer be part of the scope. Only the names of the emerging contractors who are listed on the CIDB register have been analysed as part of the survey. The population was further filtered to participants who are, if not the owner, a respondent with sufficient insight into the companies' history and is considered to be a reliable source of information.

According to Martin (2010) the timing of the phone calls is especially important for gauging the availability and responsiveness of the population. Phone calls made in the morning reportedly gained greater success in participants' willingness to be interviewed. Conversely, phone calls made on Friday afternoons were the least preferred by contractors.

### **3.3.3 Development of Questionnaire**

The development of the questionnaire was driven by the aim to enable the researcher to ascertain the extent at which knowledge and skills transfer has affected the growth of the emerging contractors. The three main considerations in the development of the questionnaire were: each contractor is unique and may have had unique interactions with their respective established contractor, secondly that the contact person within the emerging contractors firm may not be well averse with English which may be limitation in the reliability of the responses.

The development of the questionnaire was based on two main factors:

1. The questionnaire and results based on a previous study carried out by Martin (2010)
2. The literature review and the theoretical framework established. Various questions based on the findings were formulated and compiled into the questionnaire.

The content of the questionnaire was expected to first address whether the emerging contractor is still practicing within the civil engineering industry and whether the CIDB rating of the contractor has either increased or remained the same, then to address whether the emerging contractor is still in contact with its established contracting counterpart and finally to address what stage of growth the contractor is in by taking the five stages of business growth into account and subsequently the current CIDB rating of the emerging contractor.

#### **2.3.4 Survey Protocol**

The three researchers conducted the telephonic interviews from the School of Construction facilities. The interviews were conducted between the month of September, thereafter the data was collected and analysed. In order to contact the contractors, the following procedure was followed:

1. Consent from Ludwig Martin was obtained in order to obtain the contact details of the emerging contractors who took part in the original study. The researchers did not anticipate that this process could delay the anticipated period at which the survey is to be carried out, however, ethical considerations at the time that Martin (2010) carried out the study is to be taken into account. These considerations are discussed further in the chapter.
2. Upon obtaining the details of the contractors, a filtering process commenced by searching for the emerging contractors in the updated CIDB register. Contractors no listed in the current register were assumed to no longer exist or no longer be in practice; they were considered out of the project scope. Correspondingly, the details of the contractors listed on the register were added to the survey population. A random sample of the population was established up to a confidence limit deemed acceptable by the researchers.
3. In several sittings in September, the interviewees contacted the population to establish whether they would participate in the electronic survey according to a structured script
4. The interviewees assumed that should the population agree to answer the questions, it was deemed an acceptance of approval to use the findings of the interview.

The researchers deemed the above stated protocol to be the most feasible and the best method to arrive at reliable and valid results from the emerging contractors.

### **3.4 Ethical Considerations**

As a result of the longitudinal nature of the study, the survey is highly reliant on the researchers being able to obtain the contact details of the emerging contractors who took part in the original study. This data is available from Martin, however, it is imperative that the original ethical clearance obtained by Martin is considered. Based on the original study carried out, it is anticipated that the contractors would wish to continue a confidentiality agreement where the reporting is done anonymously to participate in this study. Voluntary participation and informed consent are essential in ethical research practice.

Additionally, the questions included in the survey are designed to obtain data that can be used to answer the specific research questions analogous with this study. Further questions will be added to the questionnaire for a separate analysis for other researchers. It is therefore imperative that this is expressly communicated to the interviewees.

## **4. Data Presentation and Analysis**

### **4.1 Investigation**

#### **4.1.1 Sample Population**

The research is aimed at following up on the respondents surveyed by Martin 2010 and determining the form of interaction yielding the most effective transfer of skills and knowledge. By mapping the progress of the respondent since the initial study, the researchers have ascertained whether effective transfer has taken place.

In sourcing the sample population, consent from Ludwig Martin was obtained in order to acquire the contact details of the emerging contractors who took part in the initial study. The database created by Ludwig Martin contained 528 contractors. Only 167 of these contractors possessed valid tax certificates. From this number, 67 contractors remained after the filtering process from the CIDB Register of Contractors. Of this population, 26 contractors wished to participate in the study. The sample population therefore consists of 26 contractors.

This reflects the significantly high rate of business failure in the construction industry as stated by the Economic Development Department. Low barriers to entry invites a host of smaller enterprises to the industry, many of which struggle to remain in operation. A pyramid is created where the greatest number of operators are found at the base, and as the pyramid rises, the number of enterprises decreases steadily. (Board, 2012)

#### **4.1.2 Survey**

According to Martin 2010 the most common tools used for surveys are questionnaires and interviews. Access to the appropriate population can also be sought through the use of the following tools: telephonic interviews, postal questionnaires, structured interviews, as well as through the use of web-based surveys (Martin, 2010).

According to Martin (2010), telephonic surveys have many advantages and disadvantages. Advantages include the fact that it only depends on the availability of the researchers, it ensures quick execution of the survey and has no delays that might due to waiting for responses over a long period of time. The most time lost over a telephonic survey is minutes. Telephonic surveys are one of the approaches, like face-to-face interviews, that record the highest response rates. In comparison to the postal questionnaires, telephonic surveys are less costly and when compared to electronic

surveys, the researchers are confident that all the contractors are part of the population since access to telephones and mobile phones is really easy in this era.

The intention was to conduct a telephonic survey, in a similar manner to the initial survey carried out by Martin, however, due to the delay and disruption as a result of student protests at the university, access to the telephone facility was hindered. An electronic survey was then used in order to proceed with the data collection.

#### *4.1.2.1 Survey Tool*

The development of the survey tool was driven by the aim to enable the researchers to ascertain the extent to which knowledge and skills transfer has affected the growth and development of the emerging contractors. The main considerations made in the development of the questionnaire include:

- each contractor is unique and may have had unique interactions with their respective established contractor;
- the contact person within the emerging contractors firm may not be well averse with English which may be a limitation in the reliability of the response;
- although this study is largely based on the initial study carried out by Martin (2010), the questions posed in the questionnaire had to be relevant to the current research.

The questionnaire therefore had to be universal, simple to understand, but still relevant to the requirements of the research. The researchers made use of the survey tool used in the initial survey in order to have the same basis with regard to assessing contractor capability. However, adjustments were made in order for the survey tool to be relevant to current research. The survey tool is available for reference in Appendix A of this document.

#### *4.1.2.2 Survey Protocol*

The survey was undertaken by first contacting the respondents via telephone, using the facilities provided by the School of Construction, and then by issuing the survey electronically via email.

The primary aim of the telephonic contact was to establish whether the respondent is still practising within the construction industry; thus allowing the researchers to proceed with the survey. Once this was established, consent was obtained and confirmation of anonymity and confidentiality was given.

### 4.1.3 Data Collection

The primary means of establishing whether the contractors were still operating was to search for the contractors on the CIDB register. Of the 167 contractors still operational during the time that Martin (2010) had conducted the study, 67, approximately 40 per cent of the contractors had valid tax certificates. By following due process, the researchers began carrying out the telephonic interviews in order to establish consent to partake in the electronic survey. The process involved a maximum of three attempts, during different times of the day to contact the contractors.

Approximately 51 per cent of the contractors obtained from the database used in Martin (2010) study, could not be reached. Additionally, 7 contractors, approximately 10 per cent, informed the researchers that they were no longer operational or expressly did not wish to take part in the survey. Furthermore, one contractor expressed that due to the capacity of his company, he did not possess an email address. Therefore, only 26 contractors from the original survey expressed interest in participating in the survey. Having obtained consent, the researchers distributed the electronic survey, however, the response rate was approximately 20 per cent.

The phone calls were carried out on either a Tuesday or Thursday at different times during the day due to the availability of the School of Constructions phone. Three attempts were made to contact the contractors, and it was noted that the most successful time to obtain positive response were phone calls which had been conducted on a Tuesday morning. Feedback suggests that these phone calls warranted a more positive response because the contractors had a clearer indication of their availability for the week, as opposed to phone calls that had taken place on Thursday where contractors were often under pressure to meet the week's deliverables and were less likely to consider having the time to partake in the survey.

The main barrier proved to be obtaining consent from the contractors and their concern with regard to the time taken to complete the survey. On several cases, respondents would give consent but would later withdraw amidst concerns that the survey will take up too much of the participant's time. An additional issue noted in certain cases was pertaining to language. This proved to be an obstacle for two participants in Kwa-Zulu Natal. For the telephonic portion of the survey, the researchers were able to translate the interview into the mother-tongue of the respondent i.e. in both cases Zulu. The electronic survey however was conducted in English, which may have proven to be an issue faced by those who are not proficient in the language.



## 4.2 Findings

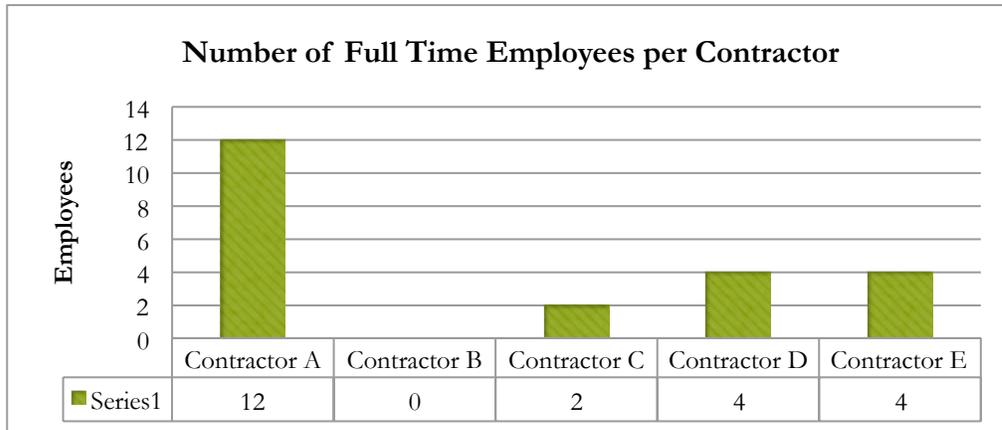
According to the electronic survey, the researchers have deduced that the majority of contractors have undergone various stages of growth according to the Greiner Model. These were greatly influenced by Porter's Five Forces, namely:

- Competitive Rivalry
- Threat of New Entrants
- Threat of Substitutes
- Bargaining Power of Suppliers
- Bargaining Power of Customers

The Greiner Model is the most appropriate mode of measuring the development of the organization as a whole. By ascertaining what the current structure of the contractors are and understanding what type of projects the business is capable of handling and the value of such projects, the researchers would be able to discern the stage of the business according to the five stages of a business lifecycle as outlined by the Greiner Model.

The responses from the survey indicate that all respondent consider themselves or the company that they work for as emerging contractors. Of the five respondents, four considered themselves to be the owners or in a high decision making position in management, whereas one respondent was a project manager working as an employee of the emerging contractor. The range of experience recorded by the contractors was between 11 and 18 years' experience, however, of these, only three contractors have formal training to work in the construction industry. The experience was largely technically based with specific based training in road marking, supervising and water based light civil construction. All respondents have since the initial study, received additional forms of knowledge transfer by working as a subcontractor, as opposed to relying on forms of mentorship or a joint venture agreement.

In response to the question regarding how many full time employees the companies have, the following responses were obtained:

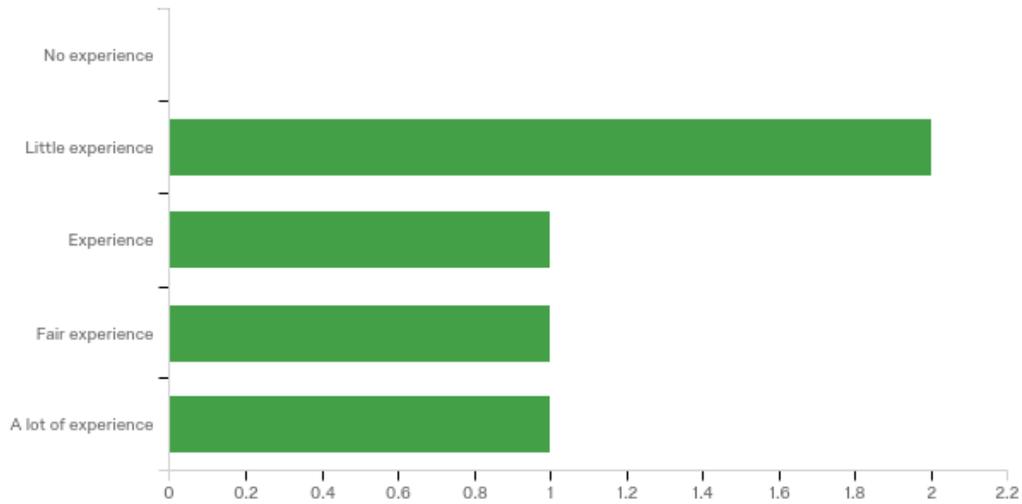


The current annual turnover would also prove to be a key indicator of growth and successful commissions secured by the contractors. In comparison to the survey carried out by Martin (2010), of the 67 contractors that are still operating, the average contractor turnover in 2009 was R2 354 540 per annum, according to the respondents who took part in the follow up study, the average annual turnover is R 1 775 000. The average contract size worked on in the survey conducted in 2009 was R1 506 674 in comparison to the average contract size of R1 310 000 in the 2016 follow up study.

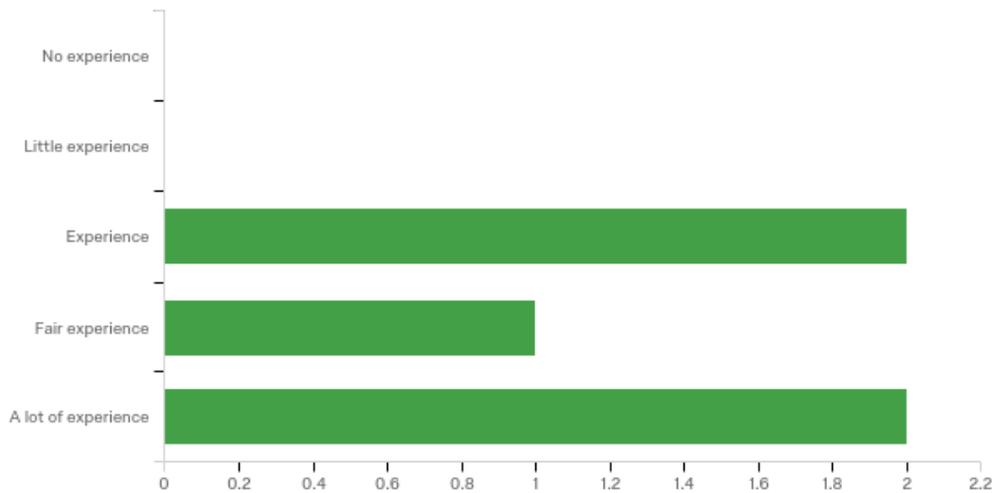
The researchers then undertook to gauge the level of experience that the contractors have in the managerial and administrative aspects of running the construction company. The responses below indicate that the majority of contractors believe that they do not have much experience in the preparation of tender documentation and the submission thereof. In comparison to the survey carried out in 2010, some contractors had expressed that the lack in experience and the skill to complete and submit tender documents, proved to be a hindrance in the securing of additional jobs. This indicatively affected the turnover of the company and the business success. Responses indicate that the contractors are confident in the task relating to organizing and setting up a site and that the majority of participants have a fair amount of experience in keeping records of cash flows and financial documentation. The contractor who admitted to having difficulty managing his finances and cash flow was also the contractor who had no employees. It can be assumed that the contractors who have employees may have secured a resource with the necessary skillset to maintain, update and keep record of the necessary finances.

The following tables illustrate the subjective view indicative experience that the respondents have, where the x-axis indicates the number of respondents:

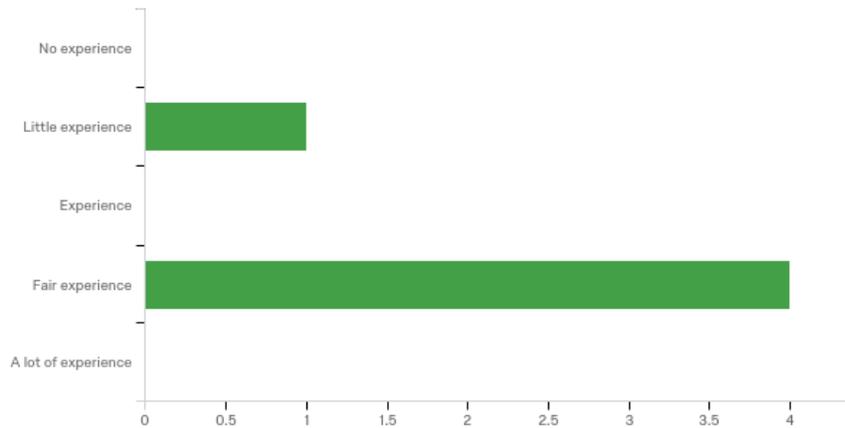
11. - Filling in tender documents and the submission thereof, do you have:



12. - Planning and organizing a site, do you have:

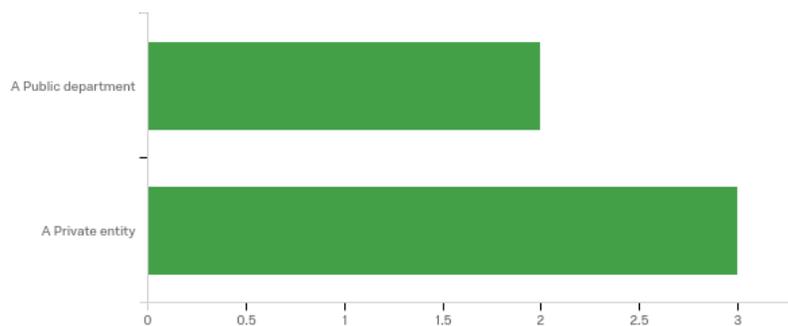


13. - Keeping records of cash flow/finances, do you have:

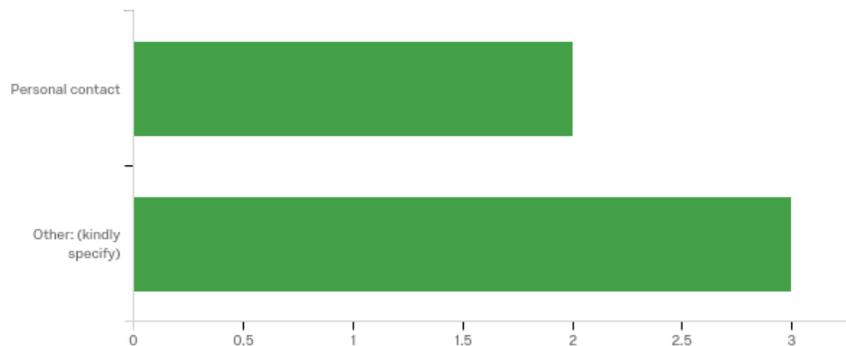


All respondents confirmed that they had worked as subcontractors to main contractors who were both public and private enterprises. Three (3) out of the 5 respondents had reported that this was repeat business and that they had won the contract either through a personal contact or via an associate. These findings remain constant with the survey that had taken place in 2010, where contractors cited that the jobs won were mostly secured via personal contacts. These respondents further iterated that it was difficult to secure government or public sector opportunities due to the size of the contracts. This appears to have changed for 60% of the respondents who had managed to secure public sector opportunities. It can be noted that the jobs secured by these contractors were not obtained via procurement processes, further substantiating the lack of experience in the preparation of tender documentation.

16. - On the most recent subcontracting job, was the client of the main contractor:



## 20. - How did you get in touch with this main contractor?



Sixty (60) per cent of the respondents admitted to having problems with the main contractor with one response indicating that different ways of working played a role in the difficulties experienced during the duration of the contract. The contractors indicated that the main disputes were caused over the control over funds and lack of timeous payment for cash flow purposes, whilst another indicated that racial discrimination played a role in the grievances. However, two out of the five respondents indicated that they had had good working relations with their main contracting counterparts.

Two of the respondents had partaken in a joint venture since the original study, both of which were initiated by the partner in the joint venture. The most common cause of disputes or problems arising from this partnership was over payments and project finances. A further 50 per cent of respondents had received a form of mentorship after the initial study from an established contractor that they had not worked with prior to this encounter. The respondents further state that they had initiated the mentorship had been initiated by them and that they had established contact with the mentors via a personal reference. Further to this, the relationship between the mentor and mentee were described as excellent and that they have had no disputes or problems thus far.

In conclusion, the contractors identified that politics played a role in the procurement process and this greatly impacted their ability to secure work. Although the emerging contractors from the original study had experienced external pressures such as competitive rivalry, the threat of new entrants to the industry and the threat of substitution due to the nature of the works that they carry out and the lack of a selling factor to make them unique.

From the information obtained from the survey, it can be deduced that the majority of respondents have, according to the Greiner Model, evolved from Stage one to Stage two, and who had managed to the crisis of leadership, in order cope with the nature and complexity of projects, and trying to build a greater rapport within industry. The organisational structure within this company would recognise a leader who will delegate tasks and responsibilities with key resources who would manage different portfolios. It is anticipated that should the contractors continue to grow through direction, the next crises that will be faced in the crises of autonomy.

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## 5. Conclusion and Recommendations

### 5.1 Conclusion

The focus of the research presented is on emerging civil engineering contractors in South Africa and the effect of skills and knowledge transfer on their growth and development. Emerging contractors lack the knowledge and skills to develop into sustainable businesses as these contractors are characterized by low levels of resources and the central role played by their owner/manager.

However, interactions with established companies hold opportunities for emerging companies to learn from their experiences; the acquisition of knowledge is seen as the key factor if emerging contractors are to be empowered in a meaningful way.

A study by Martin 2010 was conducted where insight to interactions between emerging and established contractors was provided. Despite the transfer of knowledge however, concern has remained over the ability of emerging contractors to develop. This research aimed to determine the progress of the respondents previously surveyed by Martin 2010 in order to analyse the effect of skills and knowledge transfer between emerging and established contractors; the governing questions for the research presented were formulated as:

*To what degree has the status of the emerging contractor evolved as a result of interacting with established contractors?*

*What form of interaction has resulted in the most effective transfer of skills and knowledge?*

The study by Martin 2010 confirms that the above mentioned contractors engaged in interactions with established contractors. The hypothesis therefore, was that those emerging contractors who have grown and developed since the survey by Martin 2010 have received effective transfer of skills and knowledge; those who have not managed to evolve since the study have received an insufficient transfer of skills and knowledge; and those who have exited the industry lacked the transfer of skills and knowledge required to remain in operation.

A literature review was presented, detailing skills and knowledge transfer, interactions between emerging and established contractors, and factors which could further influence growth such as developmental programs. Following this review, the methodology of the research was discussed as well as the research design, survey, and ethical considerations.

Approaching the investigation, the sample population had decreased tremendously in comparison to the respondents of the initial study, thus reflecting the high rate of business failure in the construction industry. An electronic survey was conducted, the respondents of which have undergone various stages of growth according to the Greiner Model, which is the most appropriate mode of measuring the development of the organization as a whole. All respondents have received additional forms of knowledge transfer, since the initial study, by working as a subcontractor, as opposed to relying on forms of mentorship or a joint venture agreement.

### **5.2 Work Conducted vs. Aims and Objectives**

Driven by the primary aim of this research to determine the effect of skills and knowledge transfer and the form of interaction yielding the most effective transfer of skills and knowledge, the objectives of the study were:

- To map the progress of the respondents of the study conducted by Martin 2010;
- To determine the different form of interaction between the established and emerging contractors yielding effective skills and knowledge transfer;
- To ascertain whether skills and knowledge transfer was effective.

The work presented in Chapter 4 addresses the objectives of the report. An analysis of the results of the electronic survey revealed the current position of the respondent, allowing the researchers to map progress. Subcontracting is the dominant form of interaction among the respondents with their established counterparts; thus subcontracting is the form of interaction yielding effective transfer of skills and knowledge as opposed to mentorship of joint venture agreements.

### **5.3 Recommendations**

The survey conducted revealed the experiences of emerging contractors interacting with established contractors in skills and knowledge transfer. Prior to the survey however, the sharp decline in the number of participants in comparison to the initial study confirmed the high rate of business failure in the construction industry. According to Malongane (2014), the characteristics of South African emerging contractors include:

- Poor cash flows or limited finances to run the businesses.

- Lack of construction related training.
- Lack of required skills for competition on tenders and contracts.
- Lack of employment opportunities.

Although skills and knowledge transfer provides opportunities for emerging contractors to learn from experienced counterparts, research can be made toward further avenues that may be taken to increase contractor development and growth and decrease the rate of failure. This includes government input and developmental programs.

Furthermore, the research presented reflects the experiences of participants in the civil engineering sector. According to Martin 2010, while similarities of knowledge transfers can be expected to exist amongst the building and civil engineering sector, this might need further exploration.

Overall, according to Windapo and Cattell (2011), it is in South Africa's interest for there to be strong growth by emerging black owned contractors towards higher grades on the cidb Register of Contractors. In this regard, further solutions need to be made in accelerating the growth and development of emerging contractors, even beyond the scope of skills and knowledge transfer.

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## **Annexure A: Survey Tool**

A Survey regarding the Development of Emerging Contractors through Skills and Knowledge Transfer

<p>1. Do you see yourself or the company you work for as an emerging contractor?</p> <ul style="list-style-type: none"> <li><input type="radio"/> Yes (1)</li> <li><input type="radio"/> No (2)</li> </ul>
<p>2. Are you the owner of the company?</p> <ul style="list-style-type: none"> <li><input type="radio"/> Yes (1)</li> <li><input type="radio"/> No (2)</li> </ul>
<p>3. What role do you have in the company?</p> <ul style="list-style-type: none"> <li><input type="radio"/> 1 (1) _____</li> </ul>
<p>4. How many years of personal experience within the construction industry do you have?</p> <ul style="list-style-type: none"> <li><input type="radio"/> 1 (1) _____</li> </ul>
<p>5. Have you had any formal training to work in construction?</p> <ul style="list-style-type: none"> <li><input type="radio"/> Yes (1)</li> <li><input type="radio"/> No (2)</li> </ul>
<p>6. What kind of training?</p> <ul style="list-style-type: none"> <li><input type="radio"/> 1 (1) _____</li> </ul>
<p>7. Since the initial survey, what form of knowledge transfer have you received?</p> <ul style="list-style-type: none"> <li><input type="radio"/> Working as a Subcontractor (1)</li> <li><input type="radio"/> Working in a Joint Venture (2)</li> <li><input type="radio"/> Working under Mentorship (3)</li> </ul>
<p>8. How many full time employees does your company have?</p> <ul style="list-style-type: none"> <li><input type="radio"/> 1 (1) _____</li> </ul>
<p>9. What is your current annual turnover?</p> <ul style="list-style-type: none"> <li><input type="radio"/> 1 (1) _____</li> </ul>
<p>10. What is the average contract size you work on?</p> <ul style="list-style-type: none"> <li><input type="radio"/> &gt;R100k (1)</li> <li><input type="radio"/> R100k - R500k (2)</li> <li><input type="radio"/> R500k - R1mil (3)</li> <li><input type="radio"/> R1mil - R5mil (4)</li> <li><input type="radio"/> &lt; R5mil (5)</li> </ul>
<p>11. Filling in tender documents and the submission thereof, do you have:</p> <ul style="list-style-type: none"> <li><input type="radio"/> No experience (1)</li> <li><input type="radio"/> Little experience (2)</li> <li><input type="radio"/> Experience (3)</li> <li><input type="radio"/> Fair experience (4)</li> <li><input type="radio"/> A lot of experience (5)</li> </ul>
<p>12. Planning and organising a site, do you have:</p> <ul style="list-style-type: none"> <li><input type="radio"/> No experience (1)</li> <li><input type="radio"/> Little experience (2)</li> <li><input type="radio"/> Experience (3)</li> <li><input type="radio"/> Fair experience (4)</li> <li><input type="radio"/> A lot of experience (5)</li> </ul>

<p>13. Keeping records of cash flow/finances, do you have:</p> <ul style="list-style-type: none"> <li><input type="radio"/> No experience (1)</li> <li><input type="radio"/> Little experience (2)</li> <li><input type="radio"/> Experience (3)</li> <li><input type="radio"/> Fair experience (4)</li> <li><input type="radio"/> A lot of experience (5)</li> </ul>
<p>14. Reading and understanding drawings and documentation, do you have:</p> <ul style="list-style-type: none"> <li><input type="radio"/> No experience (1)</li> <li><input type="radio"/> Little experience (2)</li> <li><input type="radio"/> Experience (3)</li> <li><input type="radio"/> Fair experience (4)</li> <li><input type="radio"/> A lot of experience (5)</li> </ul>
<p>15. Have you or you company worked as subcontractors before?</p> <ul style="list-style-type: none"> <li><input type="radio"/> Yes (1)</li> <li><input type="radio"/> No (2)</li> </ul>
<p>16. On the most recent subcontracting job, was the client of the main contractor:</p> <ul style="list-style-type: none"> <li><input type="radio"/> A Public department (1)</li> <li><input type="radio"/> A Private entity (2)</li> </ul>
<p>17. Was the main contractor you most recently worked for:</p> <ul style="list-style-type: none"> <li><input type="radio"/> An established contractor (1)</li> <li><input type="radio"/> An emerging contractor (2)</li> </ul>
<p>18. Have you worked for this main contractor before?</p> <ul style="list-style-type: none"> <li><input type="radio"/> Yes (1)</li> <li><input type="radio"/> No (2)</li> </ul>
<p>19. How often?</p> <ul style="list-style-type: none"> <li><input type="radio"/> 1 (1) _____</li> </ul>
<p>20. How did you get in touch with this main contractor?</p> <ul style="list-style-type: none"> <li><input type="radio"/> Personal contact (1)</li> <li><input type="radio"/> Other: (kindly specify) (2) _____</li> </ul>
<p>21. How would you describe your working relationship with this main contractor?</p> <ul style="list-style-type: none"> <li><input type="radio"/> Many problems (1)</li> <li><input type="radio"/> Some problems (2)</li> <li><input type="radio"/> No problems (3)</li> <li><input type="radio"/> Good (4)</li> <li><input type="radio"/> Excellent (5)</li> </ul>
<p>22. If the working relationship was not so good, would you say that different ways of working played a role?</p> <ul style="list-style-type: none"> <li><input type="radio"/> Often (1)</li> <li><input type="radio"/> Not so often (2)</li> <li><input type="radio"/> Rarely (3)</li> <li><input type="radio"/> Almost never (4)</li> <li><input type="radio"/> Never (5)</li> </ul>
<p>23. What was the most common cause of disputes problems, if any?</p> <ul style="list-style-type: none"> <li><input type="radio"/> 1 (1) _____</li> </ul>

24. If the working relation was good, can you comment on what worked well? ○ 1 (1) _____
25. Have you or your company worked with another company in a Joint Venture (JV) before? ○ Yes (1) ○ No (2)
26. Was the most recent JV partner: ○ An established company (1) ○ An emerging company (2)
27. Have you worked with this company before? ○ Yes (1) ○ No (2)
28. How often? ○ 1 (1) _____
29. Who initiated the joint venture? ○ You (1) ○ Your JV partner (2)
30. How did you get in touch with this partner? ○ Personal contact (1) ○ Other: (kindly specify) (2) _____
31. How would you describe your working relation with this JV partner? ○ Many problems (1) ○ Some problems (2) ○ No problems (3) ○ Good (4) ○ Excellent (5)
32. If the working relationship was good, would you say that different ways of working played a role? ○ Often (1) ○ Not so often (2) ○ Rarely (3) ○ Almost never (4) ○ Never (5)
33. What was the most common cause of disputes/problems, if any? ○ 1 (1) _____
34. If the working relation was good, can you comment on what worked well? ○ 1 (1) _____
35. Have you or your company received mentorship from another company before? ○ Yes (1) ○ No (2)
36. Was the most recent mentor: ○ An established company (1) ○ An emerging company (2)
37. Have you worked with this company before? ○ Yes (1) ○ No (2)

38. How often? <input type="radio"/> 1 (1) _____
39. Who initiated the mentorship relationship? <input type="radio"/> You (1) <input type="radio"/> Your mentor (2)
40. How did you meet your mentor? <input type="radio"/> Personal contact (1) <input type="radio"/> Other: (kindly specify) (2) _____
41. How would you describe your working relation with this mentor? <input type="radio"/> Many problems (1) <input type="radio"/> Some problems (2) <input type="radio"/> No problems (3) <input type="radio"/> Good (4) <input type="radio"/> Excellent (5)
42. What was the most common cause of disputes/problems, if any? <input type="radio"/> 1 (1) _____
43. If the working relation was good, can you comment on what worked well? <input type="radio"/> 1 (1) _____
44. Do you have any further comments on you experience as an emerging contractor? <input type="radio"/> 1 (1) _____
45. These are all the questions. Thank you for your time.