

Obstacles to Risk Management Implementation in Construction Small and Medium Enterprises in South African

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Abstract

Risk management implementation (RMI) in construction projects is often affected by several obstacles which can endanger the achievement of project objectives. Regrettably, there is a paucity of empirical studies investigating these obstacles in the South African construction industry (SACI), especially in the small and medium enterprises (SMEs) sector. Hence, the current study sought to investigate the major obstacles hindering the IRMP at project level of SMEs. A structured questionnaire consisting of eighteen factors was used to collect data from SMEs who were conveniently sampled. The data was analysed using the Statistical Package for the Social Sciences (SPSS) version 23, computing descriptive statistics. The results indicated that: unsupportive organisation culture, lack of qualified personnel and inadequate training were the major obstacles hindering the IRMP. The results of the study could provide professionals in the CI with information on factors that hinder the IRMP in construction projects of SMEs. This will enable construction SMEs to conscientiously incorporate RM in their professional work and that would result in better project performance.

Keywords: Obstacles, RMI, construction SMEs.

1. Introduction

The risky and challenging nature of the SACI leads to its rather poor reputation in comparison to other industries (Shunmugam and Rwelamila, 2014). The rate of challenging projects in this industry is among the highest of all industries (Rounds and Segner, 2011). Shunmugam and Rwelamila (2014) indicated that organisations in the CI face major difficulties in meeting their projects' planned schedules in the most cost effective manner and at the desired quality. Many authors (Zhao et al. 2015; Beasley et al. 2010; Smit, 2012; Zou et al. 2006) have emphasised that in order to achieve the project objectives in terms of time, cost and quality, organisations have to implement risk management (RM). Additionally, Skeen (2012) articulated that driving a culture of risk awareness and management adds value to the entire organisation resulting in overall improved project management ability. However, there is an assertion that although RM has been a topic of great interest, very little

is actually practiced or carried out correctly (Laryea 2008; Taroun, 2012). A study by Chihuri and Pretorius (2010) found that in SA, RM was also not widely used in the engineering and construction environment, and there was a lack of actual adoption and RM. Cooke-Davies (2002) study established that project success is highly dependent upon RMI. Rounds and Segner (2011) described it as one of the most capable areas and critical procedures that help to complete projects successfully. In order to improve the performance of the CI, some studies indicate casual relationships between RMI and project success (Funston, 2003). Therefore, it could be argued that awareness of and subsequent RMI could contribute to the enhanced project performance. Furthermore, empirical evidence has shown that some construction organisations in SA that do not implement RM, often resulted in project exceeding budgeted cost and behind schedule (Shunmugam and Rwelamila, 2014; Chihuri and Pretorius, 2010). The Association for Project Management (APM) (2013) stated that resources to support RMI and its continued application are unrealistic for SMEs and beyond their capability and affordability. Previous studies have reported a number of obstacles hindering RMI in the SACI (Chihuri and Pretorius, 2010; Shunmugam and Rwelamila, 2014; Fischer, 2016). These studies were conducted among large contractors and did not consider small and medium contractors. Furthermore, a review of literature in SA indicates limited studies on SMEs pertaining to obstacles in implementing RM. Hence, the current study was undertaken to fill this gap by investigating the obstacles impeding RMI at project level of construction SMEs. The results of the study will boost the knowledge of industry practitioners on the obstacles impeding RMI. In addition, other construction firms can use the obstacles identified in this study to prepare their customised list of obstacles.

2. Literature Review

Heppner and Heppner (2004) indicated that literature review is one of the key features of carrying out a study and also as a way to be aware of what has already been covered on the topic in order to establish the trends in the solutions that are being proceeded to resolve the various problems that face mankind. Hence, it was compulsory to review literature related to RM in construction in order to establish the obstacles hindering RMI.

2.1 Challenges facing Small and Medium Construction Enterprises

Despite being the lifeblood of SA economy (Sayed and Sunjka, 2016), the SA SMEs sector is still inundated with several challenges which include lack of resources management and lack of trained professionals (Smit, 2012). These challenges have impacted the overall execution of and application of project management concepts and principles among the stakeholders. Although previous SA studies (Thwala and Phaladi, 2009; Abor and Quartey, 2010) have addressed project management challenges such as poor procurement systems, lack of management capacity and lack of available resources to equip managers to operate their businesses effectively, they have never addressed the factors hindering the IRMP directly. Furthermore, The Institute of Risk Management South Africa (IRMSA) Risk Report (2015) indicated that poor project management was one of the main causes of delays and disruptions in SA construction projects. These challenges could worsen the current state of poor project performance of SMEs globally.

2.2 Risk Management Status of the South African Construction Industry

Regardless of the initiatives deployed by the SA government to improve project management and quality performance, project overruns continue to occur in SA (Shunmugam and Rwelamila, 2014); for example, the Gautrain project which was only ready two years after its baseline completion date and cost R14 billion over budget (South African Politics, 2013). A further example is an R2.5 billion contract for a multi-product pipeline between Durban and Gauteng for Transnet was estimated to cost R23.4 billion and the completion date was almost 3 years late (Guern Le, 2013). The continuing ineffective project risk management of the CI in the form of cost and time overruns, poor quality achievement, project not meeting technical requirement, project not achieving user/client satisfaction, provided the catalyst for a new approach to RM in the form of consolidated construction RM and regulatory compliance legislation such as the Construction Regulations of 2003. This legislative framework required new multi-stakeholder interventions (Abor and Quartey, 2010). However, Taroun (2012) indicated that there was a very little commitment to conforming to basic requirements, let alone promoting a culture of RM. SMEs contractors could hardly maintain their RM tools and equipment and regarded RMI as costly activities. Improvement of the standard of RM performance of construction SMEs could inevitably be helped by continuous monitoring and review of their RM performance.

2.3 Obstacles hindering risk management implementation (RMI)

A study conducted by Fischer (2016) identified seven obstacles to RMI namely Lack of time, lack of knowledge, lack of potential benefits, project not large enough to warrant the use or RM tools and techniques, lack of funds, lack of joint RM and competition amongst small construction companies. Fischer (2016) undertook a study on RM and presented three significant barriers to effective RM which included lack of a formal RM system, a lack of joint RM shortage of knowledge and or techniques. Furthermore, Chihuri and Pretorius studies (2010) listed the following obstacles in their study: lack of appreciation of the benefit associated with RMI, inadequate time to implement RM effectively on fast paced projects, deficiency in project risk management knowledge, perception that project RM is costly.

In this study, a total of eighteen (18) obstacles were identified, as shown in Table 1. Confronted with these obstacles, firms in various industries tend to find it difficult to fully implement RM practices and the percentage of companies adopting or implementing RM was not high (Zhao et al. 2015). According to Beasley et al. (2010), 46 percent of the global respondents had a formal RM process while only 11 percent of American respondents possessed a complete RM process.

A recent study conducted by Zhao et al. (2015) reported that none of the Singapore-based Chinese construction firms had high-level RMI. Likewise, a study conducted on SA contractors established that there was insufficient knowledge/understanding of the RM processes and a lack of adequate skills to carry out processes (Shunmugam and Rwelamila, 2014). These findings indicate the importance to investigate the hindrances faced by these firms to implement RMP.

Insufficient RM knowledge and the compromising attitude of personnel might be a significant obstacle to RM as it obstructs comprehensive and open risk discussions (Smit, 2012). The CIDB (2008) report in SA pointed out that small and emerging contractor encountered challenges in obtaining a formal education. The lack of formal education could hinder the IRMP. Management's priorities (Smit, 2012) and reluctance of management to discuss sensitive information in different firm units (Funston, 2003) were also identified as obstacles to RMI.

A further obstacle to RM activities originates from the uncertainty about how RM adds value to a firm (Kleffner et al. 2003). To overcome this, robust support for RM activities, along with clearly defined and communicated expectations of the value the firm aims to derive from the RM process, is important in establishing a strong risk culture (Schröder, 2006).

Another requirement to RM success is that executive management of SMEs must assume primary responsibility for RM in its corresponding areas (DeLoach, 2000). Nonetheless, the complex nature of RM requires expertise that is best utilised if placed in one firm unit that is responsible for supervising the process. This will ensure continuity of RM actions, as well as consistency in application (Smit, 2012). In practice, this is hard to implement as specialized knowledge, skills and experience are required for such a unit, as well as a more active organizational role that goes beyond traditional consultation activities, which may be contrary to the existing firm culture (Schröder, 2006). To be successful, RM should be aligned to the management teams in the different units as this alignment helps in enhancing their understanding of the business functions they support (Kleffner et al. 2003). Further key components for ensuring RM success is the alignment of the RM strategy with the firm's overall business strategy, and the integration of RM into the organisational processes, as risks, are the best managed as close as possible to the source of the risk (Smiechewicz, 2001).

The main obstacle in RMI is the lack of a common risk language, which should support discussions around risks, both holistically and departmentally, and RM methods (Nielson et al. 2005). Each employee interprets and understands business risks differently, which imposes the formulation of a common risk language to ensure that risk is seen in a consistent and comparable way by all parties in the organisation (Smiechewicz, 2001).

Barrese and Scordis (2003); and Schröder (2006) indicated that RM concepts, applications, and capabilities must be embedded into the firm's corporate training curriculum. The importance of training and learning is stressed by Weinstein et al. (2003) who declared that firm and individual learning should support the RM process. Further obstacles highlighted were difficulties in quantifying the risks, the wide span of the risk universe and managers' inability to understand simple risk tools (Zhao et al. 2015).

The lack of quality data, limited access to data due to inadequate integration between systems, lack of data mapping and risk modelling tools, which some authors regard as the largest obstacles in effective RM application (Zhao et al. 2015). The segmental approach towards different types of risks that still prevails in firms (Schröder, 2006).

Table 1: Obstacles to RMI

| Obstacles to risk management practices | Source |
|----------------------------------------------------------|-------------------------------------------|
| Insufficient resources (e.g. time, money, people.) | Smit (2012) |
| Lack of formalized risk management process | Smiechewicz (2001) |
| Lack of risk management techniques and tools | Kleffner et al. (2003) |
| Lack of internal knowledge, skills, and expertise | Schröder (2006) |
| Lack of qualified personnel to implement risk management | Beasley et al. (2010); Zhao et al. (2015) |
| Lack of risk management information systems | Funston, 2003; Zhao et al. (2015) |
| Lack of a common risk language | Nielson et al. (2005) |
| Lack of risk management knowledge | Smit (2012) |
| Inadequate training on risk management | CIDB (2008); Smit (2012) |
| Lack of commitment of the board and senior management | Weinstein et al. (2003) |
| Lack of the board or senior management leadership | Smit (2012); Funston (2003) |
| Lack of a clear risk management implementation plan | DeLoach (2000); Smit (2012) |
| Employees' reluctance to share risk information | Funston (2003); Nielson et al. (2005) |
| Difficulties in quantifying the risks | Zhao et al. (2015) |
| Low data quality | Weinstein et al. (2003); Schröder (2006) |
| Lack of data | Zhao et al.(2015); Schröder (2006) |
| Lack of risk awareness within the organization | Smiechewicz (2001) |
| Unsupportive organization culture | Funston (2003); Smit (2012) |

Case studies

Building on the perceptions detailed earlier, the trends from some other parts of the world on the factors hindering RMI are summarized below:

United Kingdom: Rostami et al. (2015) investigated the factors hindering the RMI among SMEs. It was highlighted that none of the available RM standards explain the fundamental principle of applying RM to the situations that SMEs find themselves in. It was further established that lack of management skills and knowledge in the adoption of RM tools or techniques were the major factors hindering the IRMP among UK SMEs.

Singapore: A survey conducted by Hwang et al. (2013) established that lack of time; lack of budget; low-profit margin; and not economical were the most recurrent hindrances to RMI. Yet, RM was identified to be crucial for project success (Hwang et al. 2013).

Hong Kong: Tummala et al. (1997) study concluded that formal RM processes were used minimally. The time required and the difficulty in interpreting the results of RM processes; the lack of RM skill and resistance to change, were found to be the major barriers to RM implementation; yet the majority of the participants believed that RM could positively contribute to project success (Tummala et al. 1997).

Ghana: A study conducted by Buerthey et al. (2012) established that the majority of professionals who participated in a survey related to RM in the construction industry had no knowledge regarding RM theories and techniques.

Tanzania: Chileshe and Kikwasi (2013) study found that awareness of RM process, lack of experience and lack of information were the most significant barriers to implementing risk assessment and management practices by construction professionals.

South Africa: A review of the previous studies by SA researchers on RM in the CI corroborates the results from the global studies. Makombo (2011) study found that the obstacles related to RM were found to be the skills gap amongst the professionals in dealing with such issues, poor scope management and a lack of focus on RM in the project initiation phase; hence, RM is almost always a 'crisis-management' endeavour. Most of the respondents stated that they had not planned RM activities, and there was no formal RM-structure in place. Similarly, a survey among over half of the South African organisation revealed that there was a lack of formal RM policies and procedures, and there was a lack of RM training (Visser and Joubert, 2008). These findings were also identified by Mbachu and Nkado (2007) in their earlier study.

From the foregoing review of the literature, it is apparent that project success is extremely reliant on the aptitude of the project team to deal with risks. Nonetheless, there is a dominant issue of insufficient skills, inadequate training in RM, lack of RM knowledge, and lack of understanding of the RM process.

3. Research Methodology

This section presents the methodology employed to achieve the objective of the study. The target population, method to collect data and the sample used are described. The tool used to analyse data as well as issues pertaining to validity and internal consistency of the measurement instrument were also described.

3.1 Population and data collection

An extensive literature review was conducted in journal articles, conference proceedings, and relevant risk management books. A list of 18 obstacles was identified which were included in the structured questionnaire which was later pre-tested among construction SMEs drawn from the Construction Industry Development Board (CIDB) register of contractors. The respondents rated the obstacles on a four-point Likert scale (1=Very minimal obstacle and 4=a major obstacle), the extent to which each factor has been an obstacle to the implementation of risk management practices for their projects.

3.2 Sample and sampling method

Following the questionnaire pre-testing with SMEs personnel or those who were knowledgeable of RM practices in their organizations, the final refined version of the questionnaire was presented to 225 conveniently sampled SMEs using personal hand delivery and collect method of which 187 questionnaires were returned of which 6 were excluded from the study due to various ambiguity (questionnaire incorrectly answered, respondents' information missing and inadequate information provided). Consequently, the remaining 181 questionnaires were deemed usable representing approximately 80% response rate.

3.3 Data analysis

The Statistical Package for Social Sciences (SPSS) version 23 was employed to analyse the data generated by the research questions. The following statistical methods were used: frequency analysis, percentage, means score, and standard deviation. Frequency and percentages were used to analyse the socio-demographic characteristics of the respondent and the information about the company. Mean and standard deviation values were used to respond to the research questions on the obstacles hindering the implementation of risk management practices. Review of the literature indicates that such approaches have been adopted previously in survey related studies (Visser and Joubert, 2008; Rostami et al. 2015.).

3.4 Validity and reliability

The measurement instrument was also tested for validity and internal consistency. Validity was ensured as a result of conducting an extensive literature review by consulting previous related studies, this was requisite to specify the variables. The questionnaire was reviewed and revised by experts (academics, researcher's promoter, and a professional statistician) before the pilot study took place. Internal consistency was assessed using Cronbach's Alpha. A generally agreed upon minimum limit for Cronbach alpha is 0.70 (Hair et al. 2006). However, a cut-off value of 0.60 is common for exploratory research and values closer to 1 suggest good reliability (Zaiontz, 2014).

4. Survey Results and Discussion

This section presents and discusses the results obtained from the questionnaire survey. Respondents and companies' profile results as well as the ranking of obstacles to risk management implementation are discussed.

4.1 Respondents' information

Table 2 presents the information on respondents. It is obvious that 87.56% of the respondents were either owners or managers of their enterprise, male (81.80%), African/Black (56.40%), had either Matriculation (22.70%) or a Certificate (20.40%), 43.10% of respondents had 10 years' or less experience in construction.

Table 2: Respondents' information

| | Frequency | Percentage |
|-------------------------------------------|-----------|------------|
| Position | | |
| Owner | 56 | 30.90 |
| Owner/Manager | 40 | 22.10 |
| Project Manager | 31 | 17.10 |
| Manager | 28 | 15.50 |
| Other | 26 | 14.40 |
| Total | 181 | 100.00 |
| Gender | | |
| Male | 148 | 81.80 |
| Female | 33 | 18.20 |
| Total | 181 | 100.00 |
| Population group | | |
| African/Black | 102 | 56.40 |
| White | 47 | 26.00 |
| Asian/Indian | 18 | 9.90 |
| Coloured | 14 | 7.70 |
| Total | 181 | 100.00 |
| Qualification | | |
| Matric | 41 | 22.70 |
| Certificate | 37 | 20.40 |
| HND/Diploma | 29 | 16.00 |
| Honours/BTech/BSc | 27 | 14.90 |
| Basic schooling | 26 | 14.40 |
| Master's degree | 11 | 6.10 |
| No qualification | 5 | 2.80 |
| Doctorate degree | 3 | 1.70 |
| Missing | 2 | 1.10 |
| Total | 181 | 100.00 |
| Experience in construction (years) | | |
| 6-10 | 48 | 26.50 |
| 1-5 | 30 | 16.60 |
| 11-15 | 29 | 16.00 |
| 16-20 | 22 | 12.20 |
| 26-30 | 14 | 7.70 |
| Over 36 | 9 | 5.00 |
| 31-35 | 7 | 3.90 |
| 21-25 | 7 | 3.90 |
| Missing | 15 | 8.30 |
| Total | 181 | 100.00 |

4.2 SMEs profile

Table 3 indicates that 37.60% of SMEs were subcontractors or general contractors (31.50%), working mostly in Johannesburg (41.40%) and Tshwane (30.90%) Metropolitan Municipality. Nevertheless, the subcontractors either operated for the main contractor or were sole trade contractors.

Table 3: SMEs profile

| | Frequency | Percentage |
|---------------------------|-----------|------------|
| Type of contractor | | |
| Sub-contractor | 68 | 37.60 |
| General Contractor | 57 | 31.50 |
| Specialist contractor | 32 | 17.70 |
| Civil contractor | 12 | 6.60 |

| | | |
|------------------------------------------------|-----|--------|
| Home building contractor | 9 | 5.00 |
| Missing | 3 | 1.70 |
| Total | 181 | 100.00 |
| Municipality | | |
| City of Johannesburg Metropolitan Municipality | 75 | 41.40 |
| City of Tshwane Metropolitan Municipality | 56 | 30.90 |
| Ekurhuleni Metropolitan Municipality | 19 | 16.60 |
| West Rand District Municipality | 30 | 10.50 |
| Missing | 1 | 0.60 |
| Total | 181 | 100.00 |

4.2 Ranking of obstacles by respondents

This section reports on the obstacles which could hinder the IRMP in SMEs construction projects. These obstacles were tested for validity and internal consistency. The overall Cronbach's alpha of the factor was 0.765 and the one of each item ranged from 0.731 to 0.775 (Table 4). These values were all greater than the suggested value of 0.60, indicating good reliability (Zaiontz, 2014).

As indicated in Table 4, unsupportive organisation culture (M=3.44; SD=0.670), lack of qualified personnel to implement RM (M=3.43; SD=0.643), inadequate training on RM (M=3.41; SD=0.836), lack of internal knowledge, skills and expertise

(M=3.32; SD=0.565), lack of RM techniques and tools (M=3.30; SD=0.623) and insufficient resources (M=3.30; SD=0.931) were the major obstacles in the implementation of risk management. The standard deviation obtained suggested that the responses of the respondents were not mostly centred on the mean.

Table 4: Obstacles to implementing risk management

| Obstacles to RM implementation practices | Mean | SD | Cronbach' alpha (0.765) | Rank |
|------------------------------------------------------|------|-------|-------------------------|------|
| Unsupportive organisation culture | 3.44 | 0.670 | 0.775 | 1 |
| Lack of qualified personnel to implement RM | 3.43 | 0.643 | 0.742 | 2 |
| Inadequate training on risk management | 3.41 | 0.836 | 0.731 | 3 |
| Lack of internal knowledge, skills, and expertise | 3.32 | 0.565 | 0.745 | 4 |
| Lack of risk management techniques and tools | 3.30 | 0.623 | 0.757 | 5 |
| Insufficient resources (e.g. time, money, people) | 3.30 | 0.931 | 0.762 | 5 |
| Employee's reluctance to share risk information | 3.25 | 0.761 | 0.746 | 6 |
| Lack of the board or senior management leadership | 3.18 | 0.653 | 0.755 | 7 |
| Lack of commitment of the board or senior management | 3.17 | 0.695 | 0.747 | 8 |
| Lack of risk management information systems | 3.15 | 0.628 | 0.758 | 9 |
| Lack of formalised risk management process | 3.15 | 0.619 | 0.760 | 9 |
| Lack of a clear risk management implementation plan | 3.14 | 0.569 | 0.755 | 10 |
| Lack of risk management knowledge | 3.13 | 0.746 | 0.744 | 11 |
| Lack of data | 3.03 | 0.759 | 0.769 | 12 |
| Lack of risk awareness within the organisation | 3.01 | 0.601 | 0.760 | 13 |
| Lack of a common risk language | 3.00 | 0.650 | 0.749 | 14 |
| Difficulty in quantifying the risks | 2.86 | 0.684 | 0.768 | 15 |
| Low data quality | 2.85 | 0.792 | 0.762 | 16 |

SD: Standard deviation

These findings indicated that the corporate culture of construction SMEs in Gauteng do not support RMI. Also, the behaviours directed by the corporate culture were not conducive to

RMI. This finding was similar to the findings of Zhao et al., (2015), where unsupportive organisation culture was found as the major obstacle to RMI within construction companies operating in Singapore. The lack of qualified personnel as a hindrance to RM practices is in line with the findings of Klemetti (2006) who established that lack of education was a significant obstacle to implementing RM in construction. The staff qualified to implement RM must possess the knowledge, skills, and experts relating to RM in order to be actively involved in RMI. Without these qualified staff, SMEs would face the difficulty in carrying RM. Under these circumstances, SMEs should employ external consultants to provide training programs for the relevant staff, or to help initiate RM. The results of inadequate training on RM were consistent with those of Tam et al., (2004) who established that inadequate training posed difficulty in implementing RM in various industries. Without adequate training, the personnel would not clearly understand RM philosophy and policy. Furthermore, the application of RM techniques and tools, the potential benefits and risk-aware culture would not be built up across the firm, even if an RM program had been initiated. These results are also in accordance with the results of Karimi et al. (2010) who established that many construction firms in developing countries are small to medium construction enterprises and hence, do not have the facilities to provide for training. The current findings on lack of internal knowledge, skills, and expertise echoed the findings of Smiechewicz (2001) that reported the low-level of RM knowledge among Chinese construction; these contractors were not likely to possess adequate internal knowledge, skills, and expertise relevant to RM and most of them obtained these resources from the parent companies.

5. Conclusions and recommendations

The study sought to investigate the obstacles to RMI among construction SMEs in SA. Findings indicated that unsupportive organisation culture, lack of qualified personnel, inadequate training were deemed to be the major obstacles to the implementation of RM at project level of SMEs. In order to raise the awareness of implementing RM benefits, there is a need for a 'cultural shift' in the mindset of senior management and relevant stakeholders within the SACI. In addition, the organisations should also be encouraged to engage or utilise internal auditors through the application of enterprise risk management (ERM) as part of the RMI. To assist contractors with the training issues associated with RMI, the government could further focus on the development of vocational training and apprenticeships for its citizenry and relevant professionals. This would act as a source of skills for the majority of the SA employees. Findings of this study further reinforce the observation that, despite the quest of the SACI to remain competitive, it is faced with a number of challenges. These challenges undoubtedly have an impact of implementation of practices such as RM. This paper further sheds light and provides insights on the understanding of the obstacles hindering the implementation of RM within the SACI, an area previously under-researched. Furthermore, this study makes a contribution to the body of knowledge on the subject within a previously unexplored context.

Regardless of the achievement of the study objectives, there were boundaries to the conclusions. The study was conducted in South Africa; however, it was delimited to the province of Gauteng. The surveyed respondents were small and medium enterprises in the CI; hence, the findings of this study may not be representative of the entire country.

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